Resource and Reserve Estimation For Yang Zhuang Iron Project, Shandong Province, People's Republic of China For China Zhongsheng Resources Holdings Limited

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1 EXECUTIVE SUMMARY

China Zhongsheng Resources Holdings Limited (together with its subsidiaries, "Shandong Xingsheng Mining Company Limited" or "the Client") commissioned Micromine Consulting Services ("MCS", a division of Micromine Proprietary Limited) in January of 2011 to complete a JORC standard reporting guidelines compliant resource and reserve estimation report for the Yang Zhuang Iron Project ("the Project"), located in Shandong province, People's Republic of China. MCS contracted the writing of several sections of the report that had no material bearing on the resource and reserve estimate result to Jones Lang LaSalle Corporate Appraisal and Advisory Limited ("JLL"). JLL compiled the database for the project that was subsequently validated by MCS. The JORC standard reporting guidelines compliant resource and reserve estimation report would be used for a submission to the Stock Exchange of Hong Kong Limited ("HKEx") and would conform to the Chapter 18 requirements of the exchange.

This report updates a resource and reserve estimation completed by MCS in June 2011. The client again commissioned MCS in September of 2011 to complete an update of the reserve estimation for the project due to the changes in modifying factor information. These included increased production capacity and decreased capital costs. The previous resource estimate has remained unchanged while the reserve estimate has been updated. The effective date of this report is the 17th April 2012.

The Yang Zhuang iron mine is located 4 km north-west of Yangzhuang village, Yishui County, Shandong Province, Peoples Republic of China.

Shandong Xingsheng Mining Company Limited applied for the exploration and mining licenses for the Yangzhuang Iron Ore district in September, 2002. The current exploration licence T37120080802012961 is valid from 4th January 2011 to 31st December 2012. The current mining permit C3700002008082120000682 has an area of 3.9093 km^2 and is valid from 20th June 2011 to 20th June 2019. Licences and permits were issued by the Shandong Provincial Bureau of Land and Mineral Resources.

The project started in 2001 under private ownership and has been owned by Shandong Xingsheng Mining Company Limited since 2002. Production from the deposit started in 2002 with mining from the open pit at a rate of 500 tonnes per annum. Since 2005, mining has occurred by open pit and underground methods producing up to 1.5 million tonnes of iron ore per annum. All current production is by underground methods from the Gongdanshan block in the south and the Eshan block in the north. Both ore blocks are mined independently by short-hole shrinkage stoping, drilling by hammer and breaking down of ore by short-hole. Current exploration methods are by footrill and slope ramp, and there are thirteen production and construction footrill and slope ramps in the mine. Actual capacity of the mine is 2.3 million tonnes per annum with a recovery ratio of 80% and ore dilution of 8%.

The project area is located in the uplifted Gongdanshan horst part of the Luxi anticline in the Yishui fracture belt. The project consists of three orebodies separated by fault structures. The mineralisation is weakly magnetic and consists of magnetite-amphibole-quartz rock and magnetite-quartz-amphibolites. The main component is magnetite with minor pyrrhotite, pyrite, chalcopyrite and arsenopyrite.

Mr. David Allmark (MCS geologist) was Competent Person (as defined by the JORC guidelines) for the preparation of this Report. Mr. David Allmark visited the site between the 2nd and 6th of March 2011 accompanied by Mr. Jeff Zhang of MCS, Ms. Annie Zhang and Mr. Jack Li of JLL. MCS checked the site layout and verified the provided data and visited the laboratory used for the primary analytical work. MCS used the client's GPS unit to locate the collar positions of four holes and found the coordinates in the database were within 5 metres of the coordinates located from the GPS, an acceptable result. The core for each interval of four holes was checked against the original drillhole logs (supplied by the client for the site visit) and the assays for the intervals. MCS found that the geology, mineralisation and approximate grade of each interval inspected matched the geology and mineralisation that had previously been logged.

The deposit is a metamorphic iron silica formation of sedimentary and metamorphic origin. The Yang Zhuang iron ore is weakly magnetic and consists of magnetite-amphibole-quartz rock and magnetite-quartz-amphibolites. The main component is magnetite with minor pyrrhotite, pyrite, chalcopyrite and arsenopyrite. Gangue minerals include quartz, amphibole, anorthite and biotite which form a granular blastic texture with some massive parts.

The main beneficial commodity is iron but there are trace elements of gold and silver. For the iron ore, the major deleterious elements are sulphur and phosphorous, which are both considered low in this deposit.

The deposit was originally explored along exploration lines spaced between 180 metres and up to 270 metres apart. The distance is highly variable and the average is around 230 metres. A few lines were then infilled to approximately 100 m spacing in the later phases of exploration. A total of 40 drillholes for 13,697.6 metres were drilled between 2005 and 2008. All drilling was carried out by the No. 8 Exploration Institute of Geology and Mineral Resources using Jiang Tan XY-4 drill rigs. These drill rigs used 3 metre rods and were capable of drilling to depths of 1,000 metres. The drill rigs produced NQ size core with a drilling diameter of 91 mm at the top of the hole in the weathered rock and then to 75 mm to hole completion.

Drillholes from the surface were generally vertical or inclined steeply at around 80 degrees. Downhole surveys were performed every 50 m downhole, and at orebody contacts using XJL-42 and JXY-2 electronic inclinometers.

Core recovery data was recorded for a total of 35 drillholes. Linear core recovered length was 11,787.5 metres against 12,179.8 metres where core recovery was recorded. The mean drill hole core recovery was 96.34%. Core recovery was acceptable.

A total of 30 underground adits and 8 trenches were excavated. All trenches and adits were orientated approximately 120 degrees (north-west to south-east) and ranged in length from 9.8 metres to 38.1 metres. All were sampled as continuous channel samples taken from the base of the trench or adit on the northern face.

The primary laboratory for the project was the laboratory of the Shandong No. 8 Exploration Institute of Geology and Mineral Resources, in Rizhao city, Shandong province. The laboratory was inspected by Mr. David Allmark and Mr. Jeff Zhang of MCS accompanied by Mr. Jack Li and Ms. Annie Zhang of JLL with Mr. Liu Jiazhao, the Manager of the Shandong No. 8 Exploration Institute of Geology and Mineral Resources on 5th March 2011. MCS observed that the laboratory hygiene was of a high standard and the Chinese procedures for sample preparation and analysis were being followed and observed by laboratory staff.

Samples were routinely sent to an umpire laboratory for analysis to establish if a baseline difference in reportable grades existed between the primary No. 8 Exploration Institute laboratory in Rizhao city, Shandong province and an independent laboratory. The external independent laboratory was the Laboratory of the Shandong Province Experimental Institute of Geological Sciences located in Jinan city, Shandong province. There is no significant assay bias present between the results of the two laboratories at different grade cut-offs.

Assay precision for TFe was ±0.42%. Assay precision for mFe was ±1.10%. The number of samples taken for the repeat analysis is representative of the population (4.0%). Assay precision for both TFe and mFe is strong.

The data was provided to MCS by Shandong Xingsheng Mining Company Limited (the client) on 11th and 20th January 2011. The final database contained data for drillholes, adits and trenches, 78 in total.

Resource Estimation

A geological cut-off grade of 10.5% TFe was determined from the classical statistical analysis of the data for the Yang Zhuang project. This was used as a trigger value to create grade composites for interpretation. Geological data was used to assist in interpretation of the mineralised envelopes. Interpretation and wireframing was then carried out for all mineralised envelopes over thirty cross-sections.

A balancing cut grade of 38% TFe (at the 97.7 percentile of the cumulative frequency plot) was chosen and applied to all high grade assays in the mineralised envelopes. All samples within the mineralised envelopes were composited to an equal sample interval length before geostatistical analysis and interpolation. A composite length of 2.0 metres was selected as it was the most prevalent interval length in the dataset.

Empty block models were created and TFe, mFe grades and SG data was interpolated into the blocks. Geostatistical analysis was undertaken for TFe and mFe and used as input into the ordinary kriging algorithm which was used for interpolation into the block model.

QA/QC data supplied and obtained from the site visit was moderate to high in quality and resources were classified for Measured, Indicated and Inferred categories. For Measured Resources, a minimum of two samples from two holes were within a radius of 120 m. For Indicated Resources, this radius was 220 m. All other blocks within the model were categorised as Inferred Resources.

The resources reported for the Yang Zhuang iron deposit are total remaining resources, with the previously mined areas (as indicated by the client) removed.

The MCS underground mining study determined an iron ore concentrate production cost of CN¥93.42 per tonne of concentrate. The mining dilution was determined to be 11.1% and processing recovery of mFe was determined to be 92% and the price for the iron concentrate used was CN¥1,390 per tonne. MCS calculated an economic cut-off grade for mFe to be 8.1% using the following calculation:

Economic cut-off grade = (CN¥93.42 * 1.11) / (92% * CN¥1,390).

Resources are reported above an economic cut-off grade of 15% TFe, applying a balancing cut of 38% TFe (Table 1-1).

Table 1-1: Resource statement for the Yang Zhuang iron deposit

Resource Category	**Volume** *(m^3)*	**Tonnes** *(t)*	**SG** *(t/m^3)*	**TFe** *(%)*	**mFe** *(%)*
Measured	5,599,000	18,218,000	3.25	26.23	11.72
Indicated	16,232,000	52,753,000	3.25	26.81	10.66
Total Measured and Indicated	21,831,000	70,971,000	3.25	26.66	10.93
Inferred	5,530,000	17,791,000	3.22	24.60	8.79
Total resource	27,361,000	88,762,000	3.24	26.25	10.50

Note: Numbers have been rounded to reflect that the resources are an estimate. As such the numbers may not total to an equal amount.

Additional resource potential exists at depth along the length of the orebody and in the deepest parts in the southern part of orebody 1. There is also resource potential along strike of at both ends of both orebodies, where mineralisation has not been adequately defined and in parts remains open.

Mining Study

Two underground mining methods are suitable for the deposit; the sublevel caving method and the short hole shrinkage method.

The reserves for the project were determined using the short hole shrinkage method to create ore blocks from the wireframes.

The MCS reserve statement **(current Reserve as of November 2011)** for the Yang Zhuang deposit is shown in Table 1-2.

Table 1-2: Total Reserve for the Yang Zhuang deposit, November 2011

Reserve Classification	Ore Tonnes *(Mt)*	Grade TFe *(%)*	Grade mFe *(%)*	Contained TFe *(Mt)*	Contained mFe *(Mt)*
Proved	11.00	24.17%	11.68%	2.66	1.28
Probable	32.94	24.72%	10.26%	8.14	3.38
Total	43.93	24.58%	10.61%	10.80	4.66

Note 1: Numbers have been rounded to reflect that the reserves are an estimate. As such the numbers may not total to an equal amount.

Note 2: Contained TFe and mFe does not imply that all the TFe and mFe can be recovered. Processing recovery has not been accounted for in the calculation.

The project has an estimated mine life of 13.2 years.

MCS recommends that pilot-scale mineral processing testwork be carried out to determine the true recovery rates for the particular ores, processing equipment and design parameters of this project. Based on the results of processing testwork recovery rates may need to be revised either upwards or downwards.

Respectfully submitted

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2 INTRODUCTION

China Zhongsheng Resources Holdings Limited (together with its subsidiaries, “Shandong Xingsheng Mining Company Limited” or “the Client”) commissioned Micromine Consulting Services (“MCS”, a division of Micromine Proprietary Limited) in January of 2011 to complete a JORC standard reporting guidelines compliant resource and reserve estimation report for the Yang Zhuang Iron Project (“the Project”), located in Shandong province, People’s Republic of China. MCS contracted the writing of several sections of the report that had no material bearing on the resource and reserve estimate result to Jones Lang LaSalle Corporate Appraisal and Advisory Limited (“JLL”). The JORC standard reporting guidelines compliant resource and reserve estimation report would be used for a submission to the stock exchange of Hong Kong and would conform to the Chapter 18 requirements of the exchange.

The competent person for the project, Mr. David Allmark, visited the site between the 2nd and 6th of March 2011 accompanied by Mr. Jeff Zhang of MCS, Ms. Annie Zhang and Mr. Jack Li of JLL. MCS checked the site layout and verified the provided data and visited the laboratory used for the primary analytical work.

The final technical report was compiled by the competent person, Mr. David Allmark of MCS. Mr. David Allmark completed the data validation, classical statistical analysis, sectional interpretation and wireframing, resource estimation, resource categorisation and the project management. Reserve estimation was conducted by mining engineer Mr. Tony Cameron of Micromine Pty Ltd. Compilation of report sections for Location and Transport, Regional Geology and Project History were provided by the JLL team led by Mr. Simon Chan and assisted by Annie Zhang of JLL. Technical translation and liaison with the client was conducted by Mr. Jeff Zhang of MCS. The project was supervised by MCS General Manager Mr. Dean O’Keefe.

The Client again commissioned MCS in September of 2011 to complete an update of the reserve estimation for the project due to the changes in modifying factor information. The mining production capacity was increased, the mine life was reduced, capital costs were decreased and mining and processing costs were decreased. This report contains the updated and current reserve estimate for the project.

A glossary of terms and abbreviations is listed in Appendix 3.

2.1 Scope of Work

The primary objective of this study was to produce a JORC standard reporting guidelines compliant resource and reserve estimation report for the Yang Zhuang Iron Project (“the Project”), located in Shandong province, People’s Republic of China. The specific objectives of the work were as follows:

Resource Estimation

(1) Import of topographical, analytical and geological data into MICROMINE software for data validation, error detection and error elimination, modelling and resource estimation.

(2) Georeferencing of all available graphical information in 3D.

(3) Classical statistical analysis of the sampling data to determine possible domains and natural cut-offs.

(4) Interpretation of mineralised bodies on cross sections and/or plans.

(5) Wireframe modelling of the interpreted mineralised bodies, topographic surface and, if necessary, geological formations, tectonic elements and oxidation zones.

(6) Coding and selection of samples for further geostatistical analysis and grade interpolation.

(7) Classical statistical analysis of selected samples and selection of balancing cut grades.

(8) Compositing of samples within ore bodies (sample length adjustment).

(9) Geostatistical analysis of the sampling results and determination of the spatial distribution of the mineralisation.

(10) Creation of block models restricted by wireframe models.

(11) Grade interpolation into block models.

(12) Classification of the resources in accordance with international standards (JORC) and reporting in accordance with Hong Kong stock exchange requirements guidelines.

(13) Removal of mined out areas.

(14) Statement of the grade and tonnage at a set of different cut-off grades.

Underground Mining Reserve Estimation, Mine Design and Modifying Factors Assessment

- Conduct underground mine design and scheduling, mining costs and other related parameters.

- MCS to consider all modifying factors and if possible convert resources to reserves and state the reserves. If not possible then MCS will conduct a preliminary assessment based on assumptions and produce potentially economically viable resources. It may not be possible to convert resources to reserves if the modifying factor information is inadequate or lacks detail.

Site Visit and QA/QC Audit

The above work was supplemented by a site verification visit and a QA/QC audit: This included field observations and interviews with responsible personnel to document procedures and methodologies, supported by digital, archive and report data. These data and observations were used in assessing the following QA/QC parameters:

1. Methodology and quality of drilling;

2. Methodology and quality of sampling and assaying;

3. Methodology and quality of drill collar, topographical and downhole positional information;

4. Presence and quality of any procedural or analytical checks and controls;

5. Specific gravity determination methodology.

All findings, conclusions and recommendations are summarised in the Risk Assessment section of this report.

3 LOCATION, ACCESS AND GENERAL INFORMATION

This information is sourced from, Shandong Province Metallurgical Engineering Company Limited (2008), *Preliminary Design of Yangzhuang Iron Deep Mining Project for Shandong Xingsheng Mining Company Limited.*

The Yang Zhuang iron mine is located 4 km north-west of Yangzhuang village, Yishui County, Shandong Province, People's Republic of China (Figure 3-1). The project's geographic coordinate extents are longitude 118°48'00" E to 118°51'00" E and latitude 36°00'30" N to 36°03'30" N. The project covers an area of 6.25 square kilometres.

Transportation infrastructure is satisfactory for the project area. The Yang Lin highway is located 10 km away from the mine district to the west, and there are three railway stations nearby. The Qingzhou station of the Jiaozhou-Jinan railway to the north, the Linyi station of the Yanzhou-Shijiu railway and the Xinyi station of the Longhai railway to the south. The Taixue highway passes to the north of the project area which can be used to access Xuejiadao of Jiaonan county in the east and the Tai'an station of the Beijing-Shanghai railway in the west. The Lanxin Expressway passes through the mining area, and there is a good network of secondary roads.

Figure 3-1: Location of the Yang Zhuang iron project

3.1 Climate and Topography

The project area has a warm temperate continental monsoon climate. Winters are cold and dry, and summers are hot with abundant rain. The mean annual temperature is 13.4 degrees Celsius, and the mean annual rainfall is 880 millimetres, occurring mostly in July to September. The average number of rain days in a year is 85.9. There are long frost-free periods with abundant sunshine. There is a prevailing south-east wind in the spring and summer and a north-west wind in the autumn and winter.

The topography of the area consists of a series of high hills and valleys with many small reservoirs and other water bodies. The terrain is highest in the east, and decreases in relief toward the west. The highest point in the area is Eshan Mountain with an elevation of 491.90 metres ASL and the lowest point is Gongdanshan village with an elevation of 208.80 metres ASL. The Xiuxzhen River runs from the north to the south, one kilometre west of the project area. The volume of water varies with the season and is greatest in summer and autumn.

3.2 Licence Status

The Shandong Xingsheng Mining Company Limited applied for the exploration and mining licenses for the Yangzhuang Iron Ore district in September 2002. The company applied for exploration license number 3700000210414, geological map notation J50E024020. The current licence is number T37120080802012961 valid from 4th January 2011 to 31st December 2012 issued by Shandong Provincial Bureau of Land and Mineral Resources.

The company also applied for a mining permit, licence number C3700002008082120000682, with an area of 3.9093 km^2 and valid from 20th June 2011 to 20th June 2019 issued by the Shandong Provincial Bureau of Land and Mineral Resources. The current tenement licence is presented in Appendix 1: Tenement Licence Certificate.

4 REGIONAL GEOLOGY

This information is sourced from, Shandong Province Metallurgical Engineering Company Limited (2008), Preliminary Design of Yangzhuang Iron Deep Mining Project for Shandong Xingsheng Mining Company Limited.

The project area is located in the uplifted Gongdanshan horst part of the Luxi anticline in the Yishui fracture belt. The Eastern area is comprised of a basement of Archaean metamorphic rocks from the Yanlingguan formation of the Taishan Group and Shancaoyu Group. The main rock type in the formation is a metamorphic rock of medium to upper amphibolites facies. West of the Yishui-Tangtou fracture, the Mesozoic-Cretaceous Dasheng Group is exposed comprising dark purple sandstone and glauconite sandy shale. The area is structurally complex.

There are several ore deposits in the area such as the Yangzhuang iron ore, Beiguozhang iron, Tianbao ilmenite, Mazhan and Gaoqiao iron ore, Guanzhuang bentonite and large amounts of limestone, dolomite, building stone and river sand.

5 GEOLOGY OF THE TENEMENT AREA

This information is sourced from, Shandong No.8 Exploration Institute of Geology and Mineral Resources (2008), *Yang Zhuang Iron Ore Deposit Detailed Geological Survey Report – Yang Zhuang Mine Surrounding Area and Deeper Location.*

5.1 Stratigraphy

The stratigraphy of the project area consists of the Archaean Liuhang Formation of the Taishan Group and Cainozoic Quaternary unconsolidated sediments.

5.1.1 Archaean

The Liuhang Formation is part of the Taishan Group which is in the Proterozoic Aolaishan monzogranite. It is exposed in the western part of the area, has a defined contact with the monzogranite, and is parallel to the regional schistosity ranging from 100 to 130 degrees azimuth and 50 to 70 degrees dip. It consists of biotite anorthosite, biotite amphibolites and magnetite quartz amphibolites.

5.1.2 Quaternary

Quaternary unconsolidated sediments are found in low-lying areas and consist of alluvium and colluvium of the Shanqian and Linyi formations.

The Shanqian formation is distributed through low hills and consists of gravelly sandy soil, clayey silt and sandy gravel beds. The Linyi formation is found on the floodplain on both banks of the river system and consists of fine sand, silty clay and gravel.

5.2 Structure

The structure of the area consists of a ductile shear belt and a brittle fracture belt. The ductile shear belt extends from Gongshancun in the south to Eshan in the north for a length of about five kilometres. The belt consists of weak gneissic, medium to fine grained monzonitic granite of the Songshan unit of the Proterozoic Aolaishan unit. The gneissic foliation of the rocks is generally subparallel to the mylonite foliation in the belt. The belt ranges in width from 800 to 1,000 metres. Along the mylonite zones the rocks consist of mica-quartz schist with amphibolite and biotite granulite inclusions and fuchsite-quartz schist. Structures are well developed inside the belt, including abundant s-c fabrics, stretching lineations and asymmetric folds. The foliation penetrates the middle of the shear zone and develops into lamellar-slip cleavages, producing a stratiform appearance similar to sedimentary rock.

Brittle fracture structures within the project area are also well developed with two main fracture sets; the lower Yanglin fracture (F4) of the Qinjiazhuang orebody and the south end of Eshan fracture (F7).

The F4 fracture extends from south of Qinjiazhuang to Xiayanglin for a length of three kilometres. This fracture produces a right, lateral translation in Liuhang Group rocks with a maximum horizontal displacement of around 700 metres.

The F7 fracture occurs at the south end of Eshan. It passes through the orebody and produces a maximum displacement of 70 metres.

5.2.1 Mineralisation

The iron orebody occurs at the top of the Liuhang Formation close to the contact with the Songshan unit. It extends from east of Gongdanshan village in the south, to north of Eshan in the north, for a length of five kilometres. The orebody is exposed along most of its length at the surface and forms ranges of hills, higher in relief in the northern part. The orebody is divided into three parts by the F4 and F7 fractures known as Orebody 1 (Gongdanshan) and Orebody 2 and Orebody 3 (Eshan) from south to north.

Orebody 1 occurs in the south of the project area and consists of laminate and partly laminated ore. It is the biggest orebody in the area with a length of around 2,300 metres, its northern extent terminated against an F4 fracture. It has a width of 30 to 40 metres on average, and maximum depth of 1,050 metres. The orebody is thickest in the middle and becomes thinner toward both ends. It has a strike of around 30 degrees and dips to the south-east around 50 degrees.

The grade of the orebody ranges from 39.31% TFe (total iron) to 25.10% with an average grade of 31.91%. The iron content of the magnetite (mFe) ranges from 23.30% to 10.50% with an average of 17.24% (Survey Report of Iron Ore in Depth or Periphery in Yangzhuang Mining Area of Yishui County, Shandong Province).

Orebody 2 occurs in the middle of the project and outcrops for around 850 metres. It ranges in width from 7 to 15 metres. The orebody is thicker at both ends compared to the central section. It strikes north-east about 20 degrees and dips to the south-east around 40 degrees.

The grade of the orebody varies from 36.20% TFe to 19.85% with an average of 30.20% TFe. The mFe grade ranges from 22.79% to 12.69% with an average of 17.74%.

Orebody 3 is separated from Orebody 2 by an F7 fracture. It occurs in the north of the project area and is approximately 1,600 metres long, with a thickness of 10 to 15 metres. It trends to the north-east around 20 to 30 degrees and dips to the south-east around 40 degrees.

The TFe grade varies from 37.06% to 23.23% with an average of 30.51%. The mFe grade ranges from 22.75% to 13.51% with an average of 17.41%. The grade is higher closer to the surface than deeper in the deposit.

5.2.2 Mineralisation Type

The Yang Zhuang iron ore is weakly magnetic and consists of magnetite-amphibole-quartz rock and magnetite-quartz-amphibolites. The main component is magnetite with minor pyrrhotite, pyrite, chalcopyrite and arsenopyrite. Gangue minerals include quartz, amphibole, anorthite and biotite which form a granular blastic texture with some massive parts.

The main beneficial commodity is iron but there are trace elements of gold and silver. For the iron ore, the major deleterious elements are sulphur and phosphorous, which are both considered low in this deposit.

5.2.3 Deposit Type

The deposit is a metamorphic iron silica formation of sedimentary and metamorphic origin.

5.3 Hydrogeology

Annual rainfall in the mining district is 851.8 millimetres/year, and ranges between 180 to 1,090 millimetres/year. Rainfall occurs mainly between July to September, accounting for 65% of total annual rainfall. The largest local river is the Yi River. The lowest erosion plane is to the west of Gongdanshan village, with a minimum elevation of +145.0 metres ASL, with the first ore mining elevation at +270 metres ASL.

There are two types of groundwater in the area; water from the pores of rocks in the Quaternary system and water hosted by fractures in basement rocks.

The porous water is distributed along both sides of the Yi River, which is 200 to 400 metres in width. The depth of the aquifer is 2 to 3 metres. The rock types are clay and sandy-breccia. The ground water level fluctuates by approximately 1 metre/year with seasonal rainfall. Groundwater depth is around 1.5 to 2.5 metres.

The depth of fracture-hosted water in basement rocks is between 7 to 15 metres, although some parts are more than 20 metres deep. Groundwater depth is 3 to 7 metres from the surface. Groundwater tests from drillholes reveal that the inflow amount of water is 0.061L/s with unit water inflow of 0.001L/s.

Due to the structure of the area, the project is located within a favourable hydrological setting; the only exception being the area between orebody 1 and orebody 2 which contains a fracture caused by the F4 fault. Some of the units consist of schists resulting in groundwater out-flow which may be an issue and should be attended to during mining.

6 PROJECT HISTORY

6.1 Ownership History

The project started in 2001 under private ownership and has been owned by Shandong Xingsheng Mining Company Limited since 2002.

6.2 Exploration History

This information is sourced from, Shandong Province Metallurgical Engineering Company Limited (2008), *Preliminary Design of Yangzhuang Iron Deep Mining Project for Shandong Xingsheng Mining Company Limited.*

6.2.1 Regional Exploration

1950-2005: Geological exploration of the area began in the 1950s and more regional geological survey and comprehensive research work was conducted in 1996.

2005: Shandong Xingsheng Mining Company Limited requested the No. 8 Exploration Institute of Geology and Mineral Resources of Shandong Province (N8GEP) to make a general survey of the iron ore in the mining district in October 2005. They determined a resource of 21.354 million tonnes of iron ore (According to the Chinese standards for Resource reporting) consisting of both controlled intrinsic economic resources (category 332) and predicted intrinsic economic resources (category 333). The report was filed as "LZJBZ [2005] No. 79" Document by Department of Land and Resources of Shandong Province on December 28, 2005".

2007: In June 2007, N8GEP undertook further exploration work for the client. This consisted of 1:2,000 scale geological mapping, a 1:100,000 scale high-resolution magnetic survey, field measurements and sampling in mining pits, adits and from drillholes and chemical analysis of composite samples.

6.2.2 Detailed Exploration

2008: In August 2008, the client requested N8GEP to make a detailed survey of the iron ore mineralisation extents in the area and at depth. They determined a resource of 31.278 million tonnes of iron ore (According to the Chinese standards for Resource reporting) consisting of both controlled intrinsic economic resources (category 332) and predicted intrinsic economic resources (category 333). The report was filed as "LZJBZ [2008] No. 51" Document by Department of Land and Resources of Shandong Province".

6.3 Production History

Production from the deposit started in 2002 with mining from the open pit at a rate of 500 tonnes per annum. Since 2005, mining has occurred by open pit and underground methods producing up to 1.5 million tonnes per annum. All current production is by underground methods from the Gongdanshan block in the south and the Eshan block in the north. Both ore blocks are mined independently by short-hole shrinkage stoping, drilling by hammer and breaking down of ore by short-hole. Current exploration methods are by footrill and slope ramp, and there are thirteen production and construction footrill and slope ramps in the mine. Historic reserves are 41.46 million tonnes (according to the Chinese standards for Resource reporting, these are not the current estimate and are not JORC compliant figures). Actual capacity of the mine is 2.3 million tonnes per annum with a recovery ratio of 80% and ore dilution of 8%.

During the last 4 years the total mined out material was approximately 7.8 million tonnes (Table 6-1).

Table 6-1: Mined tonnages for the years 2008 to 2011

Month	2008	2009	2010	2011
Jan	117,505	123,680	99,373	76,952
Feb	109,582	59,825	13,205	120,573
Mar	266,277	208,638	190,348	213,816
Apr	251,919	234,236	213,183	219,631
May	201,223	145,502	205,514	189,843
Jun	196,244	171,520	199,201	182,456
Jul	118,292	194,834	203,026	72,597
Aug	148,375	189,072	169,904	139,691
Sep	104,412	190,578	189,577	191,962
Oct	130,986	197,788	200,726	225,096
Nov	80,899	184,137	89,509	230,115
Dec	–	133,332	198,504	211,111
Total	1,725,714	2,033,142	1,972,070	2,073,843

7 QA/QC ANALYSIS

The quality assurance/quality control (QA/QC) analysis comes from information from the geological exploration reports for the project, the assay QA/QC data that was supplied by the client, and information and observations gathered by MCS during the site visit.

7.1 Drill hole sampling

All drill hole core sample boundaries were determined by lithology and mineralisation. 905 samples were taken with an average sample length of around 2 metres. Drill core was broken into 2 halves using a manual core splitter and half of the core was sampled, the other half was stored.

7.2 Assay Precision

Precision is a measure of the reproducibility of a result when using the same process. Assay precision was calculated for total iron (TFe) and magnetite content (mFe) from the repeat analysis results. The repeat data population was 37 results from a total of 905 analyses (4.0% of total analyses). The scatterplot for TFe results versus TFe repeat results is shown in Figure 7-1. Assay precision for TFe was ±0.42%. The scatterplot for mFe results versus mFe repeat results is shown in Figure 7-2. Assay precision for mFe was ±1.10%.

The number of samples taken for the repeat analysis is representative of the population (4.0%). Assay precision for both TFe and mFe is strong.

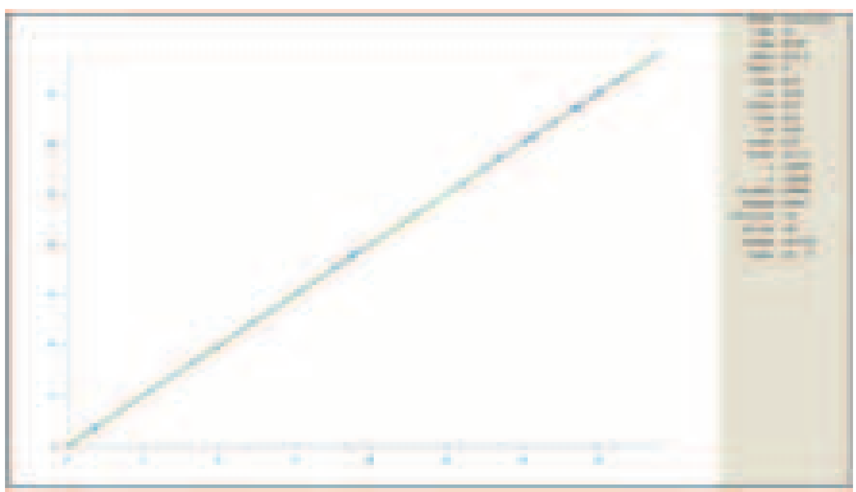


Figure 7-1: Scatterplot of TFe results versus TFe repeat results

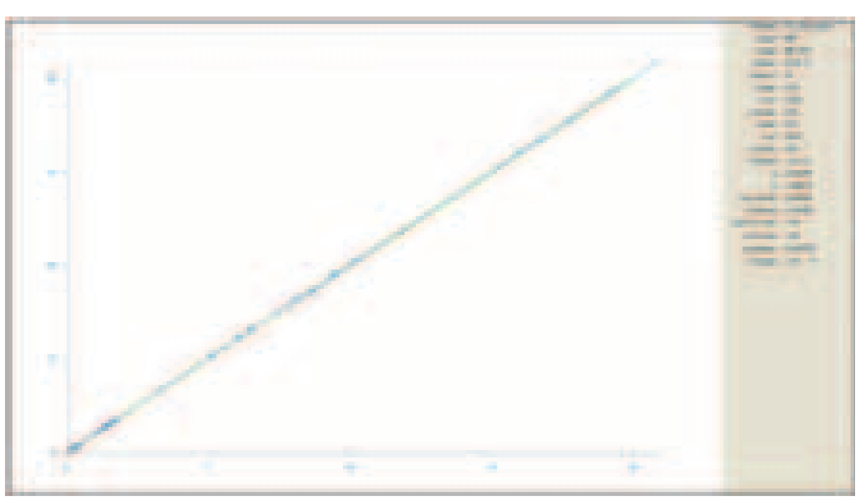


Figure 7-2: Scatterplot of mFe results versus mFe repeat results

7.3 Assay Bias

Samples were routinely sent to an umpire laboratory for analysis to establish if a baseline difference in reportable grades existed between the primary No. 8 Exploration Institute laboratory in Rizhao city, Shandong province and an independent laboratory. The external independent laboratory was the Laboratory of the Shandong Province Experimental Institute of Geological Sciences located in Jinan city, Shandong province. A quantile-quantile plot of TFe results from the No. 8 Exploration Institute laboratory versus TFe results from the Laboratory of the Shandong Province Experimental Institute of Geological Sciences is shown in Figure 7-3. The data points all lie very close to the straight line which indicates there is no significant assay bias present between the results of the two laboratories at different grade cut-offs.

A quantile-quantile plot of mFe results from the primary laboratory versus mFe results from the external umpire laboratory is shown in Figure 7-4. As with the TFe results, the data points all lie very close to the straight line which also indicates there is no significant assay bias present between the two sets of results.

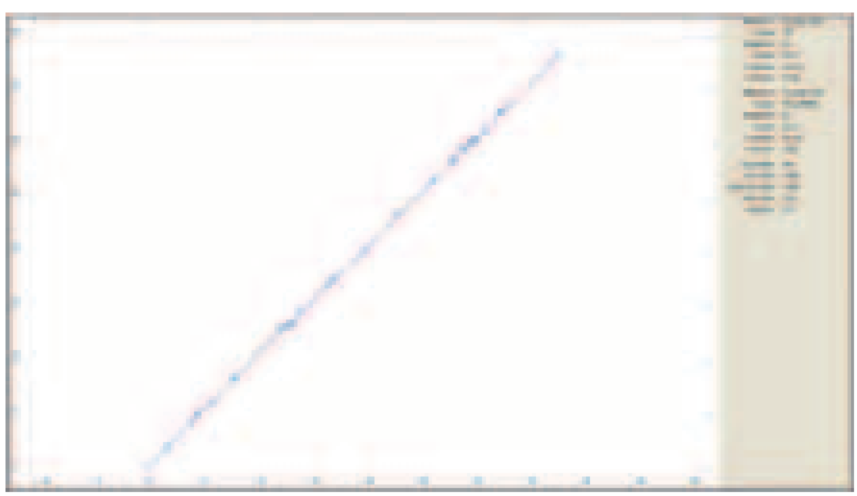


Figure 7-3: Quantile-quantile plot of TFe results from the primary laboratory versus those for the umpire laboratory

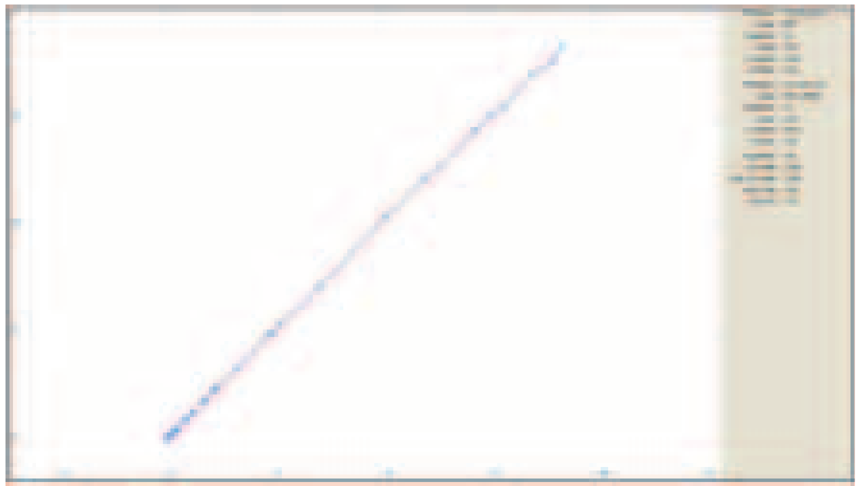


Figure 7-4: Quantile-quantile plot of mFe results from the primary laboratory versus those for the umpire laboratory

7.4 Drilling Method

A total of 40 drillholes for 13,697.6 metres were drilled between 2005 and 2008. All drilling was carried out by the No. 8 Exploration Institute of Geology and Mineral Resources using Jiang Tan XY-4 drill rigs. These drill rigs used 3 metre rods and were capable of drilling to depths of 1,000 metres.

The drill rigs produced NQ size core with a drilling diameter of 91 mm at the top of the hole in the weathered rock and then to 75 mm to hole completion.

7.5 Drill hole survey

Drillholes from the surface were generally vertical or inclined steeply at around 80 degrees. Downhole surveys were performed every 50 m downhole, and at orebody contacts using XJL-42 and JXY-2 electronic inclinometers.

7.6 Core Recovery

Core recovery data was recorded for a total of 35 drillholes. Linear core recovered length was 11,787.5 metres against 12,179.8 metres where core recovery was recorded. Recovery was weight averaged for each hole and where no data was provided for an interval, the interval was ignored.

The mean drill hole core recovery was 96.34%. This is relatively high and indicates that the drill core samples were representative of the drill interval.

7.7 Trenching and Underground Adit Sampling

A total of 30 underground adits and 8 trenches were excavated. All trenches and adits were orientated approximately 120 degrees (north-west to south-east) and ranged in length from 9.8 metres to 38.1 metres.

All were sampled as continuous channel samples taken from the base of the trench or adit on the northern face.

7.8 Standards and Blanks

The client did not provide any results of external standard analysis or details of the standards. Internal standards were used by No. 8 Geological Exploration Brigade laboratory. Some of these standards were observed during the site visit, but no results for QA/QC purposes were provided by the client.

7.9 Laboratory inspection

The primary laboratory for the project was the laboratory of the Shandong No. 8 Exploration Institute of Geology and Mineral Resources, in Rizhao city, Shandong province. The laboratory was inspected by Mr. David Allmark and Mr. Jeff Zhang of MCS accompanied by Mr. Jack Li and Ms. Annie Zhang of JLL with Mr. Liu Jiazhao, the Manager of the Shandong No. 8 Exploration Institute of Geology and Mineral Resources on 5th March 2011. Sample receival, sample preparation and sample analysis facilities were viewed and procedures were documented. The laboratory is certified by the Shandong Provincial Quality and Technology Supervision Bureau and the State Recognising Supervision Administration Committee. Certificates for both authorities are shown in Figure 7-5.

Upon sample receival, all details of the samples were logged and entered into a spreadsheet. Sample batch numbers and internal QA/QC sample numbers were then allocated. Details of all required element analyses were then recorded and staff members were allocated their own particular responsibility for the sample batch.

Sample preparation involved two stages of crushing and one of pulverisation. For the first stage, the sample was crushed in the primary jaw crusher to a size of 10 millimetres. In the second stage, the sample is crushed further by 'cold crushers' to a size of 1 millimetre. For the pulverisation the sample was crushed by roll crushers to a size of 0.074 millimetres. The machines for the first and second stages of crushing are shown in Figure 7-6 while the roll crusher machine for pulverisation is shown in Figure 7-7. The storage area for the pulverised sample is shown in Figure 7-8.

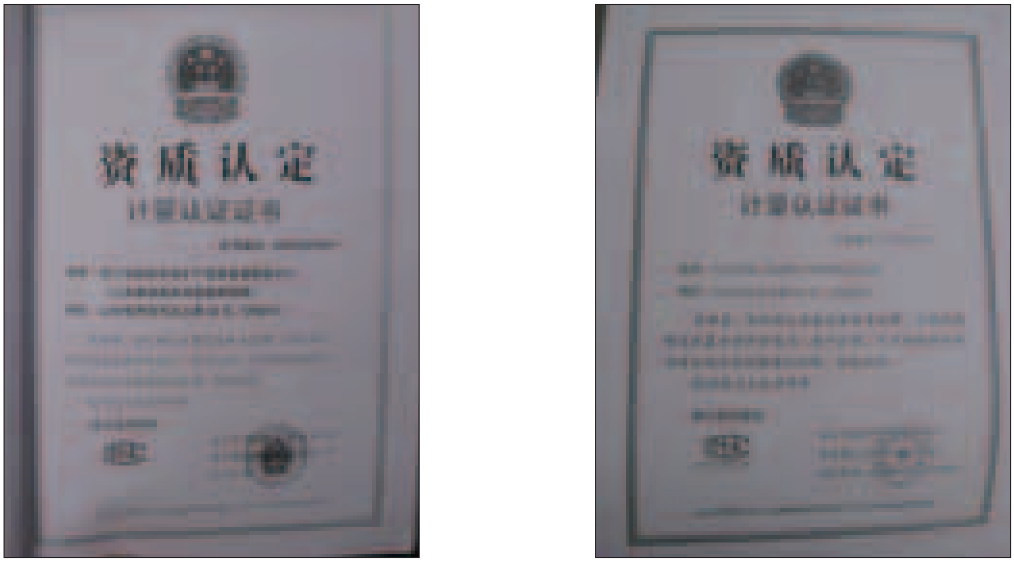


Figure 7-5: Laboratory accreditation certificates

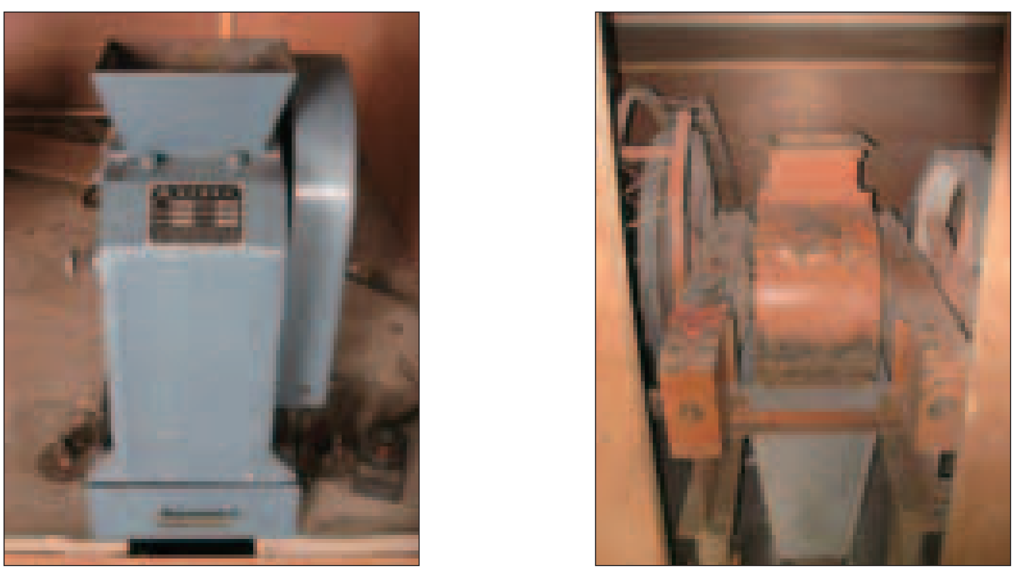


Figure 7-6: First stage jaw crusher (left) and second stage cold crusher (right)

Figure 7-7: Roll crushers for pulverisation stage

Figure 7-8: Storage of pulverised samples

7.9.1 Analytical Method

After sample preparation, the weight of each sample was checked by weighing on a set of scales and the weight was recorded. A mixture of sulphuric and phosphoric acid was added to the dry sample. The mixture was then heated on a hot plate if the sample did not dissolve. The final solution was analysed for total Fe using a Thermo Scientific iCAP 6000 series inductively coupled plasma optical emission spectrometer (ICP-OES) machine housed in a temperature and humidity controlled room Figure 7-9.

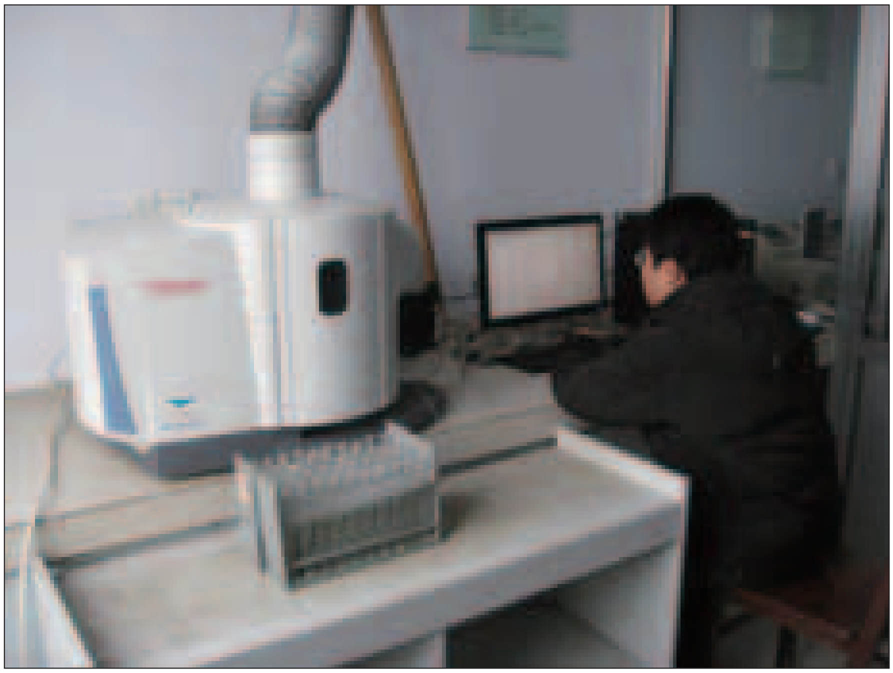


Figure 7-9: Technician operating ICP-OES machine at the primary Rizhao laboratory

A second split of the pulverised sample was taken and analysed for the Fe content of the magnetite (mFe). This was done simply by magnetic separation and weighing of the resultant sample to determine the proportional magnetite content.

7.9.2 Inspection Summary

MCS observed during the visits that laboratory hygiene was of a high standard and the Chinese procedures for sample preparation and analysis were being followed and observed by laboratory staff.

7.10 Site visit

The Yang Zhuang project site was visited on the 3rd and 4th of March 2011 by Mr. David Allmark and Mr. Jeff Zhang of MCS, accompanied by Ms. Annie Zhang and Mr. Jack Li of JLL. MCS checked the site layout and verified the provided data and later visited the laboratory used for the primary analytical work in Rizhao. The Shandong No. 8 Exploration Institute of Geology and Mineral Resources that conducted the exploration were also visited at their base in Rizhao city.

7.10.1 Drillhole collar location verification

The purpose of the site visit was to independently verify a selection of drillhole collar positions and inspect and verify core intersections to confirm the geology and mineralisation. A tour of the mine site was also carried out to verify the scale of the operation and processing infrastructure.

Within the allowable time, the collar locations of four drillholes (two at orebody 1 and one each in orebodies 2 and 3) were checked. With the assistance of the Yang Zhuang Deputy Mine Manager, Mr. Li, MCS was able to locate and identify the collars on the geological plan and on the ground. MCS used the client's GPS unit to locate the collar positions and found the coordinates in the database were within 5 metres of the coordinates located from the GPS.

MCS could not match the coordinates on its own GPS with the database coordinates due to the parameters applied to the local grid system in the area. This is a common phenomenon in China where a number of parameters are applied to a local coordinate system to make it unique for the area. The information about these parameters is guarded by secrecy laws in China so they should not be easily available. MCS recorded the site locations in Beijing 1954 grid system and in WGS84 latitude and longitude. MCS was unable to back calculate the coordinates later.

As MCS was able to verify the coordinates of four drillhole collars with the client's GPS and plans, MCS is confident the supplied data is correct for the local coordinate system it was presented in and that the positions of all drillhole, trench and adit samples is consistent with the database.

7.10.2 Drill core verification

MCS viewed the drill core for the project at the Yang Zhuang mine site. Most of the core was in good condition, but recent moving of the core and poor storage procedures and facilities for the core have caused deterioration of core from many holes (Figure 7-10).

Figure 7-10: Current storage facilities and condition of drill core for the project

As a result of the current poor storage of the drill core, it was difficult to check large intervals from many holes as the location of adjoining core boxes within intervals was not known. MCS was able to check a random selection of core from four drillholes: ZK37-1, ZK44-2, ZK33-1 and ZK20.

The core for each interval of four holes was checked against the original drillhole logs (supplied by the client for the site visit) and the assays for the intervals. MCS found that the geology, mineralisation and approximate grade of each interval inspected matched the geology and mineralisation that had previously been logged. All core appeared to have been correctly split and sampled. Marker tags for the depths of each interval in the boxes were available and also inspected. All were found to be correct, and mostly in the correct position. The details of the intervals from each drillhole that was inspected are shown in Table 7-1. Photographs of the core that was inspected are shown in Figure 7-11 to Figure 7-14.

Table 7-1: Details of drillcore intervals inspected

HoleID	**Depth from** *(m)*	**Depth to** *(m)*	**Comments**
ZK37-1	370.50	373.50	Mt ore (approx. 30% TFe), verified in assays and core
ZK44-2	488.80	491.20	Mt ore (33% TFe), verified in assays and core
ZK33-1	339.84	341.84	Mt ore (approx. 28% TFe), verified in assays and core
ZK20	121.50	126.30	Mt ore (28% TFe), verified in assays and core

Figure 7-11: Drillcore from hole ZK37-1 (370.50-373.50 m)

Figure 7-12: Drillcore from hole ZK44-2 (488.80-491.20 m)

Figure 7-13: Drillcore from hole ZK33-1 (339.84-341.84 m)

Figure 7-14: Drillcore from hole ZK20 (121.50-126.30 m)

7.11 Specific Gravity and moisture

Specific gravity was determined by the quick immersion method according to the Chinese geological exploration code. The sample was first coated in wax to prevent absorption of water. The weight of the sample in air was obtained then the sample was immersed in water and a second weight in water was obtained. The amount of water displaced by the immersion of the sample was recorded. The specific gravity was then determined according to the following formula:

W2 = wax plus sample weight

W1 = dry weight

Wax density 0.9 t/m^3

Wax volume, VP = (W2 – W1)/0.9

VC = displaced water volume

Sample volume, V = VC – VP

Density = W1/V

8 EXPLORATION GRID DENSITY

The deposit was originally explored along exploration lines spaced between 180 metres and up to 270 metres apart. The distance is highly variable and the average is around 230 metres.

A few lines were then infilled to approximately 100 m spacing in the later phases of exploration.

9 PREVIOUS RESOURCE AND RESERVE ESTIMATES

This information is sourced from, Shandong No. 8 Exploration Institute of Geology and Mineral Resources (2008), *Yang Zhuang Iron Ore Deposit Detailed Geological Survey Report – Yang Zhuang Mine Surrounding Area and Deeper Location.*

The deposit resource was previously estimated in accordance with the Chinese MLR (Ministry of Lands and Resources, Government) standards. Estimation was carried out in July 2008 and is summarised in Table 9-1 below.

Table 9-1: Historic Chinese resource estimate

Areas	Ore Bodies	Resource Category	Ore Qty *($x10^4$ t)*	Average Grade *(%)* TFe	mFe	Proportion of 332 *(%)*	Remarks
		332	1201.7	31.71	18.18		
	I	333	2026.9	31.35	18	37.22%	
		332+333	3228.6	31.82	18.16		
		332	74.8	31.16	19.42		
	II	333	324.1	30.11	17.92	18.75%	
		332+333	398.9	30.42	18.15		
Tenement							
		332	541.50	30.7	18.65		
	III	333	1174	30.9	16.72	31.57%	
		332+333	1715.5	30.51	17.41		
		332	1818.00	31.19	18.75		
	I+II+III	333	3525	30.79	17.55	34.03%	
		332+333	**5343.0**	**30.92**	**17.91**		

10 RESOURCE ESTIMATION METHODOLOGY

10.1 Methodology

The modelling methodology involved the following steps:

- Database compilation;
- Data validation;
- Exploratory data analysis;
- Interpretation of mineralisation based on the geological cut-off grade;
- Wireframing of interpreted mineralised polygons;
- Modelling of experimental semivariograms;
- Determination of modelling search neighbourhood parameters;
- Block modelling and grade interpolation;
- Removal of mined out areas;
- Resource classification;
- Resource reporting at various cut-off grades.

10.2 Software

The Yang Zhuang deposit resources were estimated using MICROMINE (Version 12.0.4) software.

10.3 Database Compilation

Data was provided by Shandong Xingsheng Mining Company Limited (the client) on 11th and 20th of January 2011. The provided data consisted of two Excel spreadsheets, each containing collar, survey, assay, core recovery, specific gravity data and lithological descriptions and other information in 8 worksheets.

The Excel spreadsheets provided were as follows:

1. Xingsheng 2005 Drilling data – Yangzhuang part 1 – 60 million ton.xls

2. Xingsheng 2008 Drilling Data – Yangzhuang part 1 – 60 million ton.xls

The contents of each worksheet in the Xingsheng 2005 Drilling data – Yangzhuang part 1 – 60 million ton.xls spreadsheet is shown in Table 10-1, the contents of each worksheet in the Xinsheng 2008 Drilling Data – Yangzhuang part 1 – 60 million ton.xls spreadsheet is shown in Table 10-2.

Table 10-1: Contents of spreadsheet Xingsheng 2005 Drilling data – Yangzhuang part 1 – 60 million ton.xls as supplied

Worksheet	No. of Holes, Trenches and Adits	No. of Records
Survey	41	41
Collar	41	41
Assay	40	484
Geology	26	96
Recovery	10	1197
SG	32	32
Lookup Codes	NA	NA
Notes	NA	NA

Table 10-2: Contents of spreadsheet Xinsheng 2008 Drilling Data – Yangzhuang part 1 – 60 million ton.xls as supplied

Worksheet	No. of Holes, Trenches and Adits	No. of Records
Survey	79	79
Collar	79	78
Assay	70	882
Geology	61	296
Recovery	27	4228
SG	47	57
Lookup Codes	NA	NA
Notes	NA	NA

10.4 Data Validation

The files of both spreadsheets were imported into MICROMINE. The spreadsheet Xinsheng 2008 Drilling Data – Yangzhuang part 1 – 60 million ton.xls contained duplicates of the 2005 data in all worksheets. The duplicates records were removed from each file and the respective files for 2005 data and 2008 data were combined to produce a single file for each parameter. In addition, minor changes were made to the files after import into MICROMINE to enable creation of a drillhole database in MICROMINE: The contents of the MICROMINE files are shown in Table 10-3.

Table 10-3: Contents of MICROMINE files

Micromine files	No of Holes, Adits or Trenches	Number of Records
all_collars.DAT	78	78
all_surveys.DAT	79	79
all_assays.DAT	73	915
all_recovery.DAT	32	4841
all_SG.DAT	47	57
all_geology.DAT	61	296

The original drawings from the exploration report were then supplied by the client on 20th of January 2011 and MCS performed the following:

- Displayed geology plans and cross-sections in MapGIS then imported into MICROMINE. The plans and sections were then geo-referenced in MICROMINE and the collar positions and traces were checked;

- Checked collar coordinates, survey and assay data with the original data on the drawings;

- Entered additional downhole survey data for each drillhole that had not been included in the supplied data previously.

Obvious errors in the supplied database were then corrected. The database was then checked using special processes designed to trap the following errors:

- Duplicate drillhole or trench names;
- One or more collar coordinates missing in the collar file;
- FROM or TO missing or absent in the assay file;
- FROM ⩾ TO in the assay file;
- Sample intervals are not contiguous in the assay file (gaps exist between the assays);
- Sample intervals overlap in the assay file;
- First sample is not equal to 0 m in the assay file;
- First depth is not equal to 0 m in the survey file;
- Several downhole survey records exist for the same depth;
- Azimuth is not between 0 and 360 degrees in the survey file;
- Dip is not between 0 and 90 degrees in the survey file;
- Azimuth or dip is missing in survey file;
- Total depth of the holes is less than the depth of the last sample; and
- Total downhole survey depth is greater than the total drillhole depth.

Numerous errors were identified and corrected in the database. Details of all errors identified are in the Yang Zhuang Iron Project Database Validation and Acceptance Report (Appendix 2).

Additional recovery data for the 2008 drilling was later supplied by the client and incorporated into the database. The details of the records in the final database are shown in Table 10-4.

Table 10-4: Number of records for each hole ID in final database

HoleID	Northing *(mN)*	Easting *(mE)*	RL *(m)*	Depth *(m)*	Survey Records	Assay Records	Geology Records	SG Records	Recovery Records
CD1-54	3991486.120	40394245.670	360.72	10.70	1	8	3	0	0
CD2-52	3991401.840	40394188.670	356.25	16.60	1	10	3	0	0
CD3-48	3991236.220	40394098.760	347.16	16.90	1	10	3	1	0
CD4-44	3991076.280	40393982.670	343.11	14.90	1	9	3	0	0
CD6-40	3990936.070	40393871.680	360.17	21.50	1	13	3	1	0
CD7-36	3990792.140	40393788.070	346.74	11.20	1	7	0	0	0
CD08-1	3989307.814	40393354.988	170.00	24.10	1	13	3	1	0
CD8-28	3990346.960	40393686.250	274.84	16.90	1	10	3	1	0
CD8-30	3990447.520	40393710.480	274.84	17.50	1	11	0	0	0
CD09-1	3988946.674	40392414.288	202.00	21.60	1	11	3	1	0
CD9-7	3989050.830	40392418.270	257.05	20.10	1	12	3	1	0
CD10-7	3989064.480	40392398.350	295.64	17.20	1	10	3	0	0
CD10-9	3988984.230	40392339.170	295.64	21.20	1	12	3	0	0
CD10-11	3988908.370	40392265.220	295.64	18.10	1	11	3	0	0
CD10-13	3988820.130	40392219.410	295.64	22.90	1	13	3	1	0
CD11-15	3988746.430	40392162.370	287.73	31.40	1	18	3	0	0
CD11-17	3988649.280	40392129.420	287.73	26.70	1	15	3	0	0
CD12-17	3988634.170	40392154.690	251.27	36.30	1	20	3	1	0
CD15-25	3988251.310	40391984.470	272.19	20.80	1	12	0	1	0
CD21-1	3988449.731	40392071.389	202.00	34.40	1	17	3	0	0
CD24-1	3990178.454	40393609.053	278.76	22.20	1	11	3	1	0
CD25-1	3988239.834	40391984.995	225.00	38.10	1	19	3	2	0
CD29-1	3988157.131	40391923.424	225.96	24.00	1	11	3	0	0
CD36-1	3990778.546	40393813.035	315.08	22.00	1	11	3	0	0
CD44-1	3991061.045	40394035.347	291.56	10.20	1	5	3	1	0
CD52-1	3991388.235	40394235.798	314.00	19.10	1	10	3	2	0
TC1	3989349.420	40392542.170	268.47	14.10	1	8	3	0	0
TC5	3989162.340	40392430.190	303.50	18.20	1	10	3	0	0
TC8	3989353.340	40393297.670	249.07	17.00	1	10	0	1	0
TC12	3989542.120	40393368.370	256.78	19.40	1	11	0	0	0
TC16	3989742.270	40393423.420	288.38	9.80	1	6	0	1	0
TC20	3989946.470	40393469.320	300.41	18.00	1	10	0	1	0
TC24	3990161.360	40393600.410	315.43	19.50	1	11	3	0	0
TC29	3988086.120	40391872.790	249.04	13.10	1	8	0	0	0
YD1-28	3990360.830	40393662.120	322.03	17.70	1	11	0	1	0
YD1-30	3990460.360	40393686.970	322.03	18.50	1	11	0	1	0
YD1-32	3990562.030	40393712.140	322.03	17.70	1	11	0	0	0
YD2-21	3988456.340	40392052.190	278.82	24.70	1	14	3	1	0

HoleID	Northing *(mN)*	Easting *(mE)*	RL *(m)*	Depth *(m)*	Survey Records	Assay Records	Geology Records	SG Records	Recovery Records
ZK1	3989136.590	40392479.230	300.47	105.20	1	12	6	2	53
ZK01-1	3989289.104	40392652.519	290.69	264.90	3	7	11	0	101
ZK2	3988789.540	40392271.380	394.12	199.40	2	10	5	2	105
ZK3	3988595.340	40392222.170	379.86	249.80	2	24	4	2	132
ZK4	3988218.640	40392043.380	308.94	180.30	1	13	4	0	128
ZK5	3988724.330	40392388.270	338.67	289.20	3	14	5	2	166
ZK05-1	3989015.280	40392609.201	280.44	366.80	8	0	4	0	129
ZK6	3990320.180	40393733.270	360.71	179.60	2	14	4	2	92
ZK7	3990538.140	40393757.230	387.74	174.80	2	24	5	2	117
ZK8	3990899.540	40393937.240	461.07	197.40	2	13	0	2	0
ZK08-1	3989183.536	40393587.420	247.33	386.70	4	0	11	0	170
ZK9	3991205.120	40394151.950	403.87	139.00	2	16	4	1	91
ZK09-1	3988859.625	40392501.053	309.71	265.50	6	7	10	1	99
ZK10	3990488.500	40393842.420	353.89	293.80	3	13	0	2	0
ZK10-1	3989379.654	40393493.230	257.80	200.60	4	3	3	1	147
ZK11	3987874.500	40391857.140	299.86	203.30	2	8	7	2	129
ZK12	3987313.410	40391876.270	249.01	260.10	1	11	4	0	184
ZK13-1	3988666.789	40392515.245	309.79	481.50	8	0	5	0	170
ZK16-1	3989675.976	40393589.364	269.73	384.90	8	6	22	1	168
ZK20-1	3989864.328	40393611.434	299.96	251.30	5	11	6	0	88
ZK21-1	3988336.592	40392264.278	331.71	371.00	8	20	0	2	127
ZK24-1	3990089.354	40393726.115	308.10	220.00	5	7	5	1	115
ZK24-2	3990033.701	40393830.015	287.25	381.20	7	4	5	0	153
ZK25-1	3988188.699	40392093.185	335.54	364.00	7	26	0	1	192
ZK28-1	3990255.934	40393841.092	322.02	271.70	3	8	0	1	169
ZK28-2	3990185.191	40393966.655	295.68	396.30	4	12	10	1	218
ZK28-3	3990057.054	40394199.208	301.90	716.10	7	0	6	0	361
ZK29-1	3988032.948	40391964.431	288.63	268.40	3	35	5	1	0
ZK29-2	3987996.943	40392053.839	314.48	415.60	5	16	12	1	154
ZK29-3	3987890.473	40392216.920	349.81	532.50	6	0	7	0	191
ZK32-1	3990381.934	40394027.868	300.10	390.50	8	11	8	1	157
ZK33-1	3987795.229	40391974.279	302.47	375.80	8	32	5	0	131
ZK33-2	3987680.766	40392197.465	306.04	533.80	10	16	5	0	184
ZK36-1	3990662.200	40394014.000	342.28	285.20	6	14	7	1	96
ZK36-3	3990466.500	40394353.800	304.50	564.20	10	17	4	0	196
ZK37-1	3987571.239	40391989.957	284.05	436.50	8	25	4	1	0
ZK37-2	3987478.969	40392161.372	270.35	675.00	7	17	4	1	233
ZK44-1	3990984.792	40394140.331	443.97	324.30	4	5	0	1	0
ZK44-2	3990883.391	40394303.843	425.60	642.50	7	4	5	1	255
ZK52-1	3991202.486	40394548.059	338.84	458.90	10	0	3	0	155

The client provided to MCS a surface to which the deposit has been currently mined and outlines of underground mined-out areas and other underground development as plans and cross-sections in AutoCAD file format and as surveyed coordinate point data in ASCII file format on 12th February 2011. MCS constructed three dimensional surfaces and solids from the data which was used for the resource estimation.

10.5 Exploratory Data Analysis

Classical statistical analysis was conducted twice for the Yang Zhuang iron deposit. The first study was undertaken with the entire data set to meet the following objectives:

- To estimate the geological cutoff grade for total iron (TFe) mineralisation; and

- To determine the distribution parameters of iron grades.

The descriptive statistics for total iron (TFe) for the exhaustive population are shown in Figure 10-1. The exhaustive total iron grade population shows a mixture of five approximately normally-distributed populations. The histograms of the exhaustive population with a five-population model are shown in Figure 10-2 and Figure 10-3. The probability plot for the exhaustive total iron grade population is shown in Figure 10-4. The cumulative frequency plot for the same data is shown in Figure 10-5. The line on the probability plot changes curvature in the middle section at around 10.5% TFe (inflection point) representing a boundary between unmineralised and mineralised total iron grade populations. The value of 10.5% TFe was chosen as the natural cut-off grade. A lower cut-off was chosen to ensure all possible economic parts of the orebody were included in the model.

Figure 10-1: Descriptive statistics for total iron for the exhaustive population

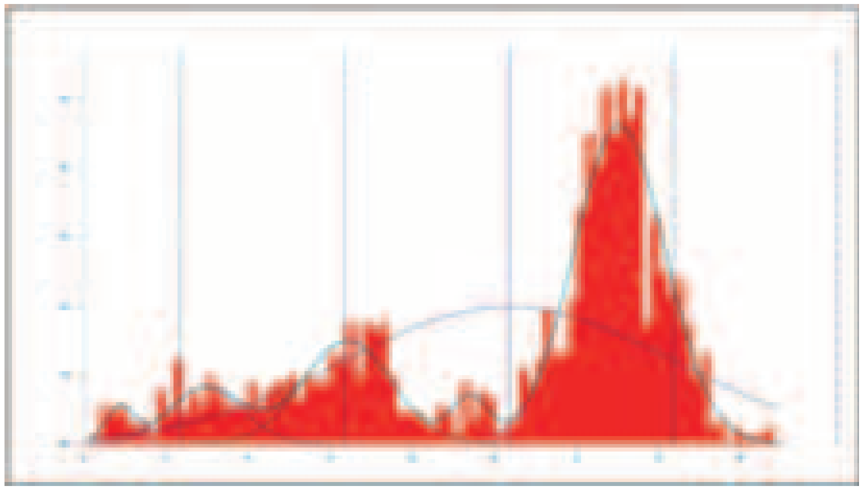


Figure 10-2: Histogram for total iron for the exhaustive population showing a five population model

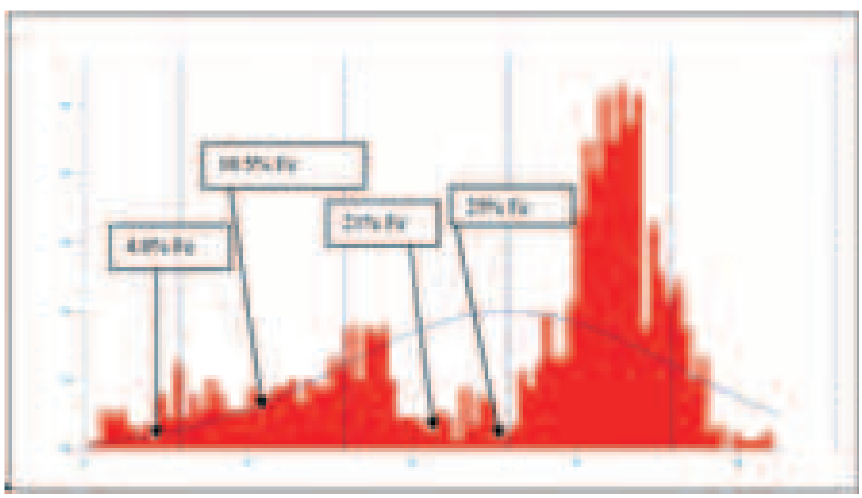


Figure 10-3: Histogram for total iron for the exhaustive population showing possible natural cutoff grades at 25% Fe, 21% Fe, 10.5% Fe and 4.0% Fe

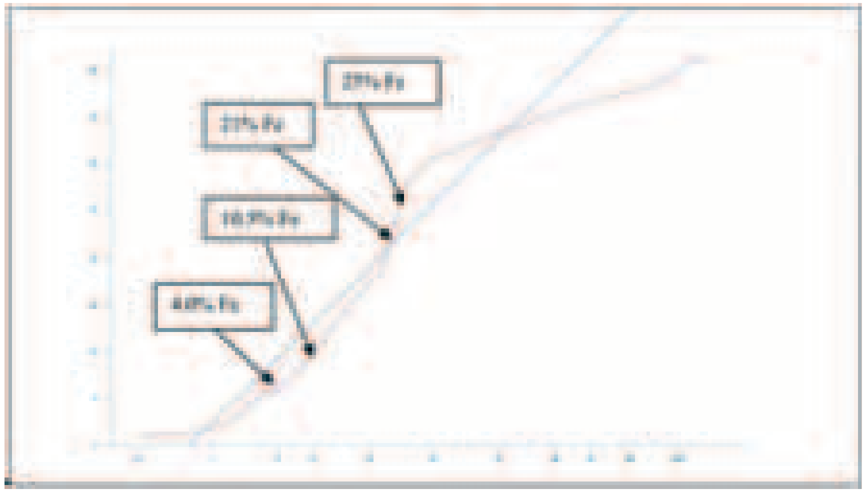


Figure 10-4: Probability plot of total iron for the exhaustive population showing possible natural cutoff grades

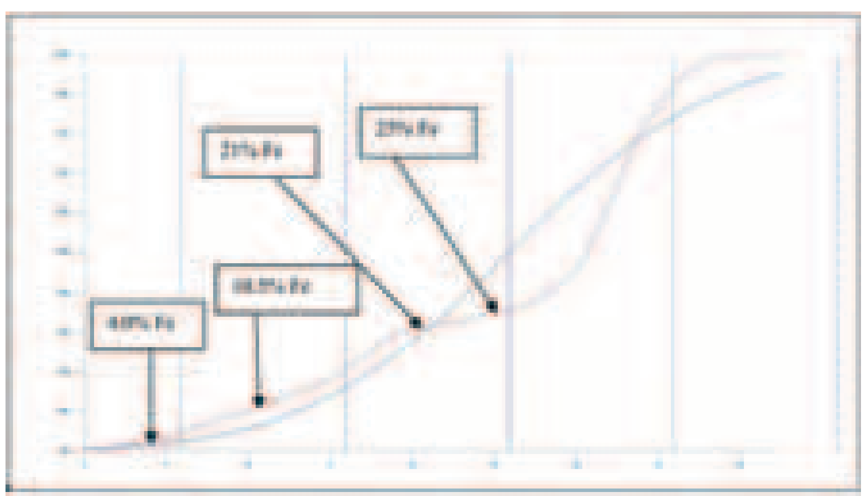


Figure 10-5: Cumulative frequency plot of total iron for the exhaustive population showing possible natural cutoff grades

Classical statistical analysis was performed using only the grades from samples within the interpreted mineralised envelopes to meet the following objectives:

- To estimate the mixing effect of grade populations for total iron;
- To estimate the necessity of the separation of grade populations if more than one population exists inside the wireframes;
- To determine the balancing cut grade for total iron to be used for grade interpolation.

From the histogram of the total iron grade population within the mineralised envelopes (Figure 10-6), a large, higher grade population and a smaller lower grade population can be seen. It was decided that these two populations could be treated as one and ordinary kriging could be used for the interpolation. The probability plot for total iron assays inside the mineralised envelope is shown in Figure 10-7. The cumulative frequency plot for the total iron assays inside the mineralised envelope is shown in Figure 10-8. A balancing cut grade of 38% TFe (at the 97.7 percentile of the cumulative frequency plot) was chosen and applied to all high grade assays in the mineralised envelopes.

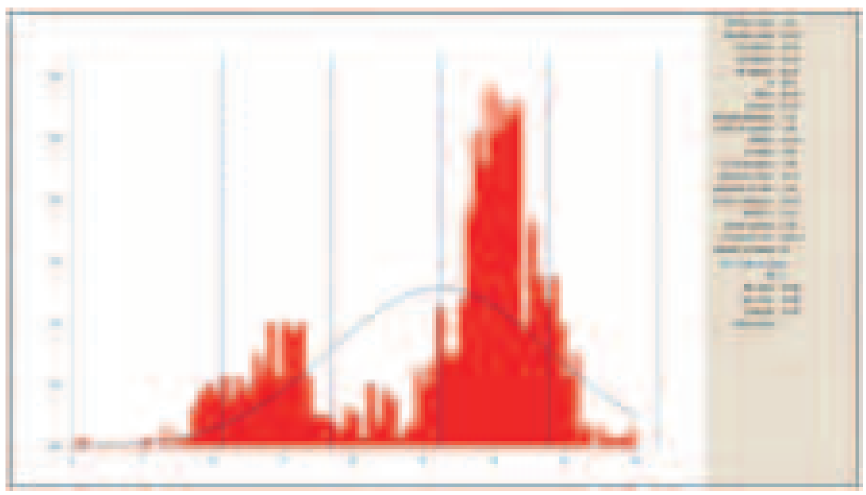


Figure 10-6: Histogram of total iron assays inside the mineralised wireframes

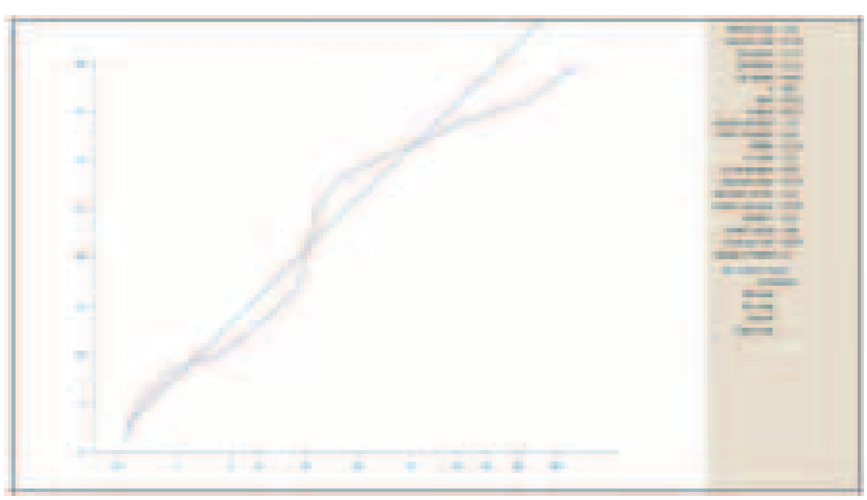


Figure 10-7: Probability plot of total iron assays inside the mineralised wireframes

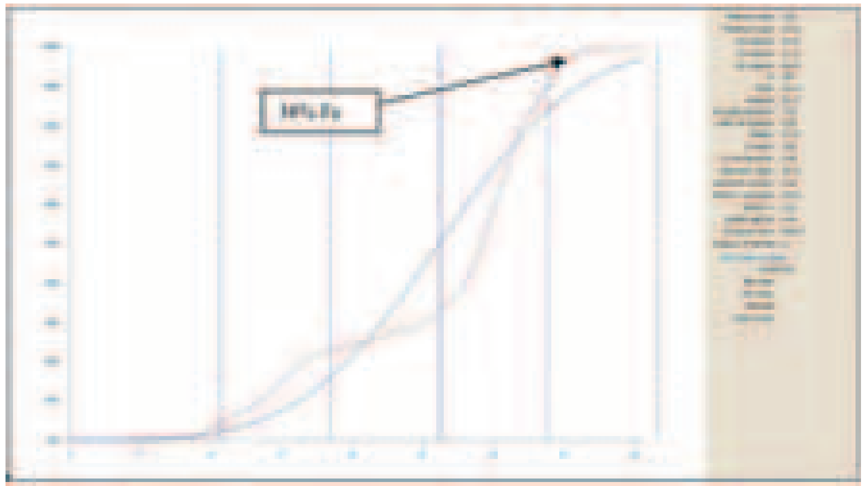


Figure 10-8: Cumulative frequency plot of total iron assays inside the mineralised wireframes

10.6 Interpretation

All available original cross-sections and geological maps at 1:2,000 scale were imported from MapGIS and georeferenced in MICROMINE. The geological interpretation on the cross-sections and the geological maps were used as a reference to honour the original geological interpretation where practical. This included modelling the interpreted faults that separated the three orebodies.

Interpretation was carried out interactively for thirty approximately north-west to south-east (130 degrees azimuth) oblique cross-sections for the three orebodies (orebody 1, orebody 2 and orebody 3). Each section showing the drilling data, trench data and adit data was displayed in MICROMINE's Vizex environment. Total iron assays were composited to grades greater than 10.5% TFe to define the boundary between mineralised and non-mineralised grades. The raw sample grades and the composite grades were displayed on the drillhole in order to allow the snapping of interpretation strings to separate mineralised and unmineralised zones. All thirty cross-sections, with additional sections for closing off wireframes, were interpreted.

A geological cut-off grade defining the boundary between mineralisation and country rock was selected at 10.5% TFe (see probability plot Figure 10-4). A string file was generated to interpret iron mineralisation at greater than or equal to 10.5% TFe.

The following techniques were employed while interpreting the mineralisation:

- Each section and plan view was displayed on screen and the interpretation checked.

- All interpreted strings were snapped to the sample intervals on the drillhole, trench or adit, i.e. the interpretation was constrained in 3 dimensions.

- If a mineralised envelope (lode) terminated on a drill section, it was projected half way to the next section and terminated (this distance varied depending on the cross-section lines). The last string forming the envelope was reduced to 80% of that on the last section. The general dip and strike of the lode was maintained.

- The mineralisation was extended in a down-dip direction mostly to a distance half that between adjacent drillholes on the cross-section (around 100 m). Where only one drillhole was present on a cross-section, mineralisation was extended down-dip to a distance of 100 m. However, where continuity of mineralisation was inferred from information on adjacent cross-sections, this was taken into account and the extension was increased slightly to adjust for the mineralisation on the adjacent cross-sections.

- Some areas of internal waste within the mineralised envelopes were also interpreted. A minimum length of 2 metres was used to determine internal waste zones, and these were interpreted separately.

An example interpretation section is shown in Figure 10-9.

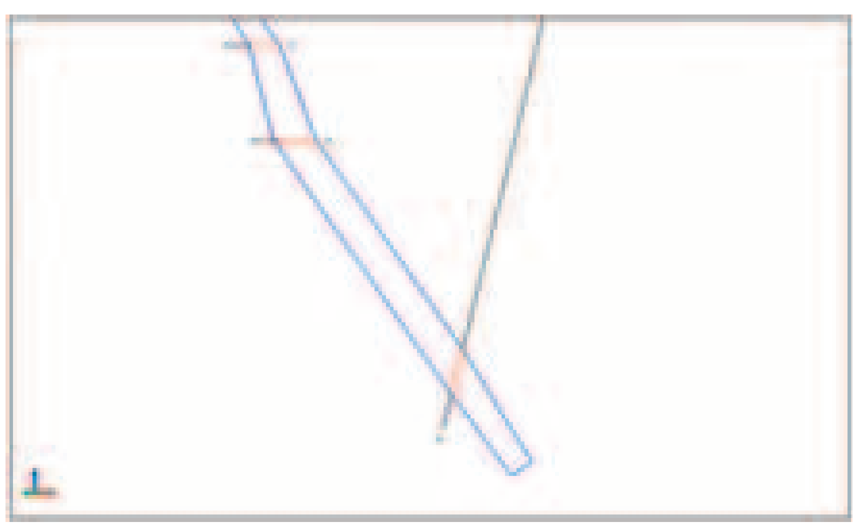


Figure 10-9: Example interpretation cross-section showing strings and composite total iron assays

10.7 Wireframing

The interpreted closed strings were used to generate three-dimensional solid wireframe models for the mineralised envelopes of total iron. Each mineralized envelope was wireframed individually and saved separately. A total of five mineralised ore wireframes were created. The wireframes were created separately to allow independent data flagging and interpolation.

Four wireframes were created for internal waste. These were booleaned with the mineralised wireframes they were contained in, to produce ore wireframes with internal waste removed. Fault surfaces were also created and wireframed. These were the faults that separated orebody 1 from orebody 2 and orebody 2 from orebody 3. The mineralised wireframes were extended beyond the fault surfaces then later booleaned with the faults to produce mineralised wireframes with faulted contacts.

A 3D view of the wireframes of iron mineralisation is shown in Figure 10-10.

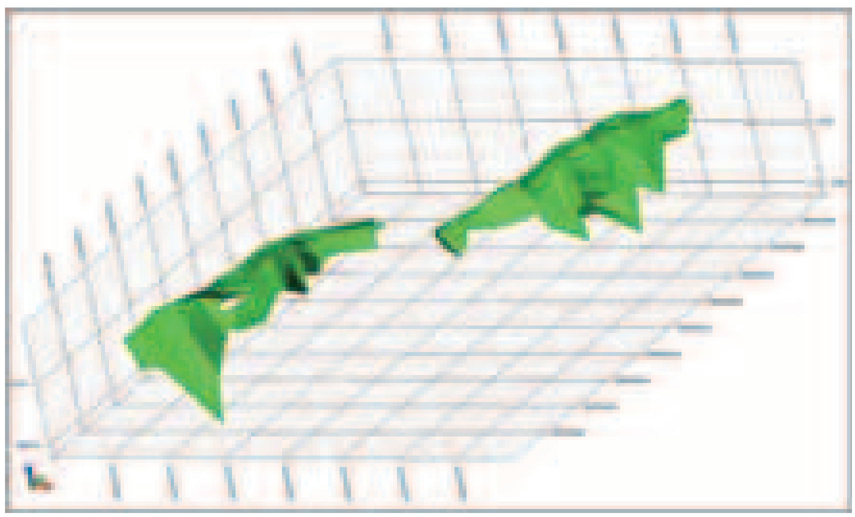


Figure 10-10: 3D view of wireframes of iron mineralisation

10.8 Drillhole Data Selection and Compositing

Drillhole data selection is a standard procedure which ensures that the correct samples are used in the classical statistical and geostatistical analyses and grade interpolation processes. For this purpose, the solid wireframes for each mineralised envelope were subsequently used to select the drillhole samples. Samples within each individual mineralised envelope were flagged and coded according to the name of the mineralised body.

Visual validation of the flagged samples was carried out in Vizex to make sure the correct samples were selected by the wireframes.

Classical statistical analysis was then repeated for the iron grades within the mineralised envelopes only. The analysis determined there were two mixed populations but that they could be treated as one for geostatistical purposes.

An additional field was inserted into the assay file and a balancing cut grade of 38% TFe was applied to the original assay data for those samples inside the iron mineralised envelopes.

All samples within the mineralised envelopes were composited to an equal sample interval length before geostatistical analysis and interpolation. A composite length of 2.0 metres was selected as it was the most prevalent interval length in the dataset. This can be seen in the histogram of the interval lengths of all samples (Figure 10-11). The selected samples within each mineralised envelope were separately composite over 2.0 metre intervals, starting at the drillhole collar and progressing downhole. Trench and adit samples within the mineralized envelopes were also composite separately. Compositing was stopped and restarted at all boundaries between mineralised envelopes and waste material.

Basic statistical parameters were obtained for the composite data to ensure that the statistical parameters were not distorted by the compositing process (Figure 10-12). There was no significant change to the minimum, maximum, mean, standard deviation and coefficient of variation of the data after the sample length compositing process.

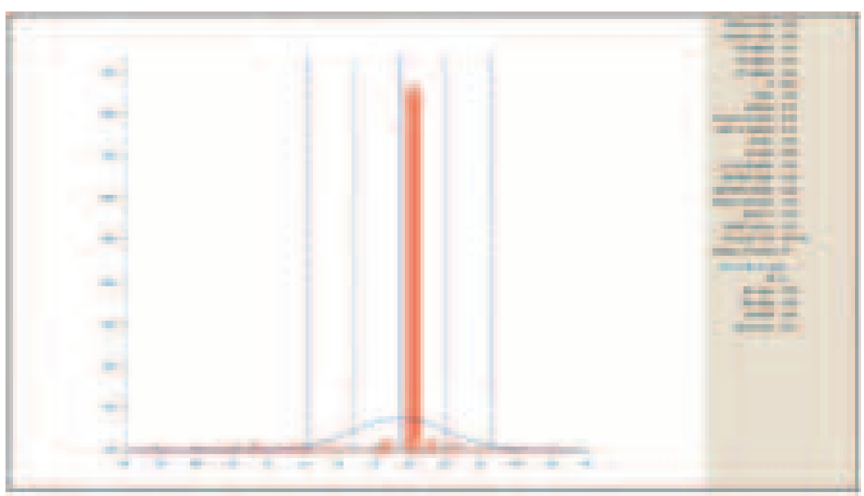


Figure 10-11: Histogram of all sample interval lengths

Figure 10-12: Descriptive statistics for iron assays composited to 2 m interval lengths within the iron mineralised envelopes

10.9 Geostatistical Analysis

The purpose of geostatistical analysis is to generate a series of semivariograms for the Kriging algorithm to use as a means of weighting the sample grades when estimating an unknown block value in the block model using available sample data. The semivariogram ranges determined from this analysis can also be used to determine the search neighbourhood dimensions. Therefore, geostatistical analysis was conducted in order to meet the following objectives:

- To estimate the presence of directional anisotropy of mineralisation for iron. This can be estimated by studying the directional semivariograms. There is a directional anisotropy if semivariograms reach the total sill at different distances in different directions;

- To obtain the semivariogram parameters (nugget effect, total sill and ranges) to be input into the interpolation process.

All semivariograms were modelled using the composite sample files with applied top cut grades and constrained by the corresponding mineralised envelopes. Semivariograms were modelled for two separate domains; for orebody 1 then orebody 2 and 3 combined. The elements TFe and mFe were modelled separately for each domain.

For each domain, a fan of horizontal semivariograms was generated to determine the direction of maximum continuity in plan. A vertical fan of semivariograms was then generated along the determined azimuth of maximum continuity in order to estimate the plunging component of the main axis. From the azimuth and plunge of the first axis, the azimuth of the second axis was calculated. A vertical fan of semivariograms was then generated to determine the plunge of the second axis. From the orientation of the first and second axes, the azimuth and plunge of the third axis was determined.

Geostatistical analysis of orebody 1 was carried out, with TFe examined first. The maximum continuity of mineralisation occurs along an axis of 37 degrees, roughly parallel to the strike of the ore zone; there was no plunge. The second and third directions were then determined but no sample pairs could be found for the third direction. This was due to the sparse drill spacing which resulted in insufficient samples in some directions. To correct for this, and still use the parameters of the main direction of continuity for interpolation, the second and third directions were re-modelled. The second direction was re-modelled to an azimuth of 127 degrees with no plunge, while the third direction was re-modelled to an azimuth of 0 degrees with a plunge of 90 degrees. The spherical experimental semivariograms and models for each direction are shown in Figure 10-13 to Figure 10-15.

The element mFe for orebody 1 was modelled next. The direction of maximum continuity occurs along an axis of 34 degrees with no plunge. The second direction occurs along an axis of 124 degrees with a plunge of 33 degrees. The third direction occurs along an axis of 304 degrees with a plunge of 57 degrees. The spherical experimental semivariograms and models for each direction are shown in Figure 10-16 to Figure 10-18.

Figure 10-13: Experimental semivariogram and model for direction of maximum continuity for TFe, orebody 1

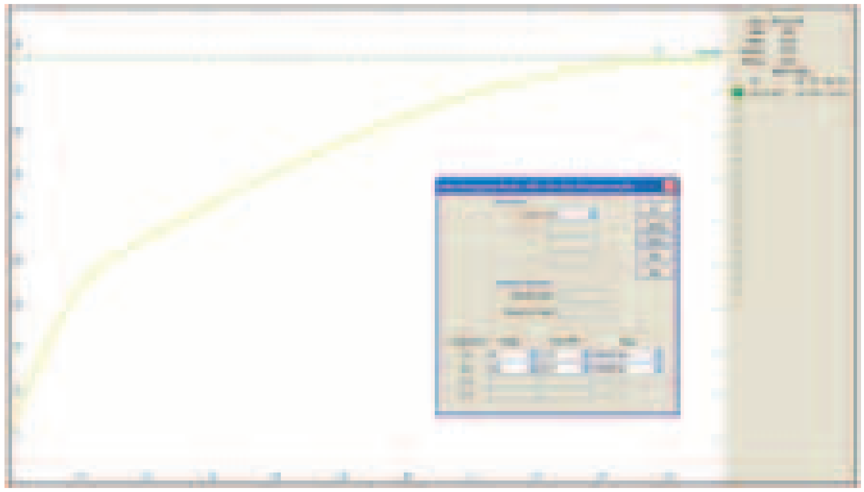


Figure 10-14: Experimental semivariogram and model for second direction for TFe, orebody 1

Figure 10-15: Experimental semivariogram and model for third direction for TFe, orebody 1

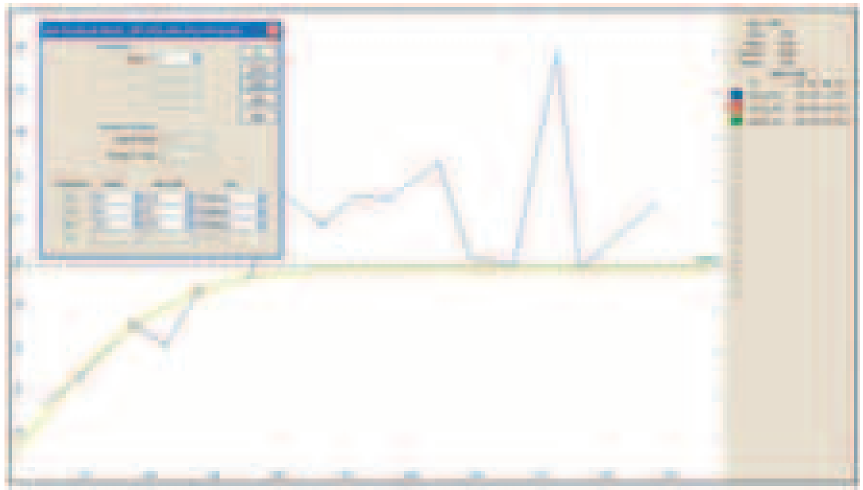


Figure 10-16: Experimental semivariogram and model for direction of maximum continuity for mFe, orebody 1

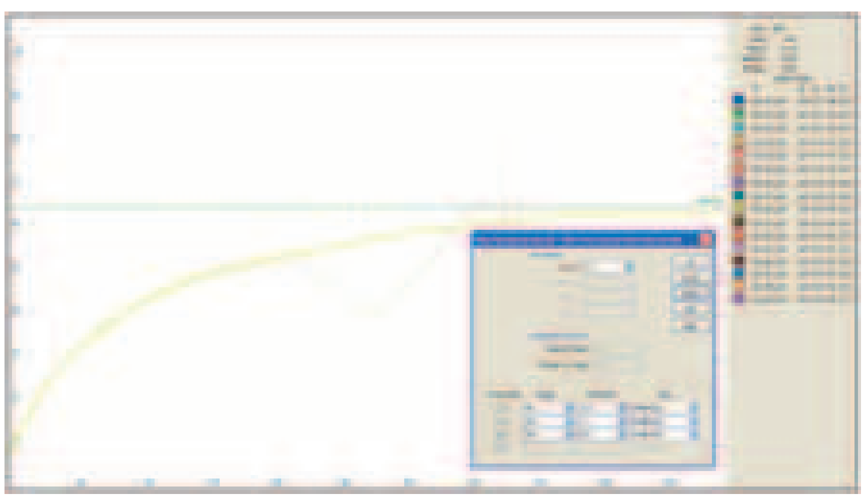


Figure 10-17: Experimental semivariogram and model for second direction for mFe, orebody 1

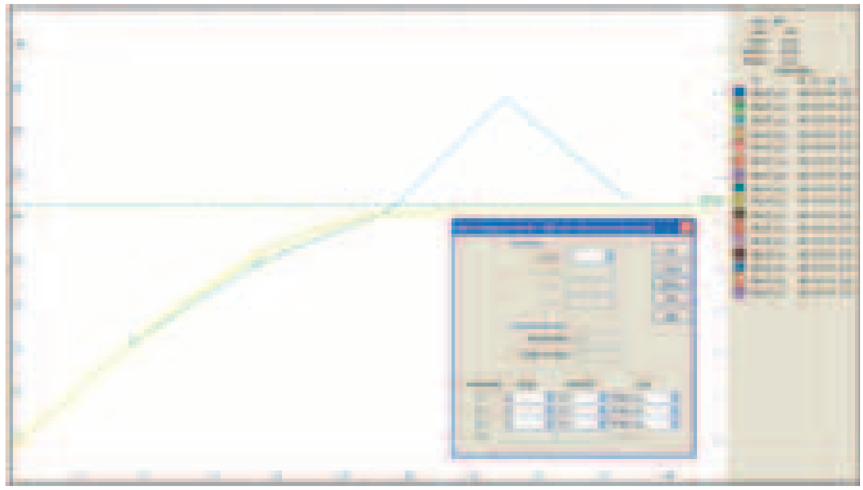


Figure 10-18: Experimental semivariogram and model for third direction for mFe, orebody 1

Geostatistical analysis of orebody 2 and orebody 3 was then undertaken, with TFe examined first. The maximum continuity of mineralisation occurs along an axis of 24 degrees, roughly parallel to the strike of the ore zone, while there was no plunge. The second direction occurs along an axis of 114 degrees with a plunge of 27 degrees. The third direction occurs along an axis of 294 degrees with a plunge of 63 degrees. The spherical experimental semivariograms and models for each direction are shown in Figure 10-19 to Figure 10-21.

Figure 10-19: Experimental semivariogram and model for direction of maximum continuity for TFe, orebody 2 and orebody 3

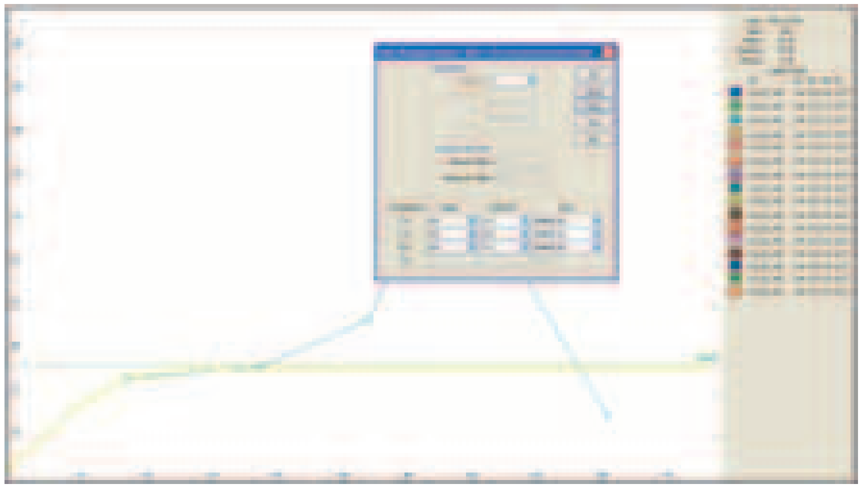


Figure 10-20: Experimental semivariogram and model for second direction for TFe, orebody 2 and orebody 3

Figure 10-21: Experimental semivariogram and model for third direction for TFe, orebody 2 and orebody 3

The element mFe for orebody 2 and orebody 3 was modelled next. The maximum continuity of mineralisation occurs along an axis of 38 degrees, roughly parallel to the strike of the ore zone, there was no plunge. The second and third directions were then determined but no sample pairs could be found for the third direction. This was due to the sparse drill spacing which resulted in insufficient samples in some directions. To correct for this, and still use the parameters of the main direction of continuity for interpolation, the second and third directions were re-modelled. The second direction was re-modelled to an azimuth of 128 degrees with no plunge, while the third direction was re-modelled to an azimuth of 0 degrees with a plunge of 90 degrees. The spherical experimental semivariograms and models for each direction are shown in Figure 10-22 to Figure 10-24.

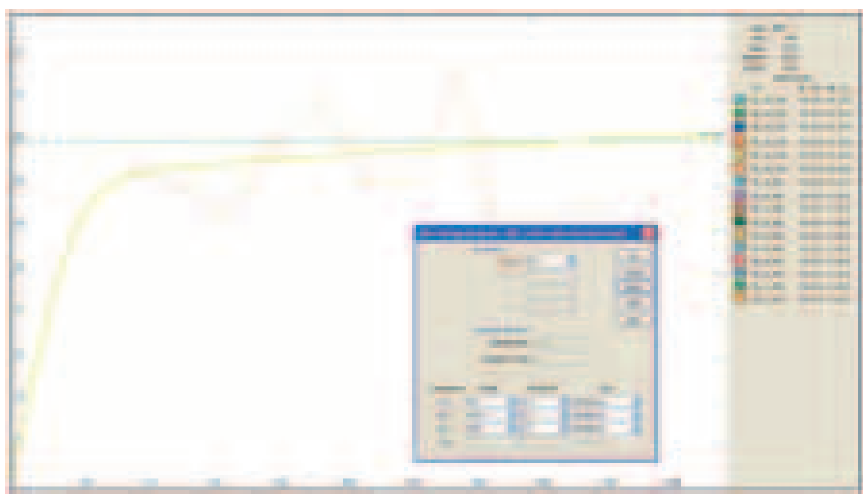


Figure 10-22: Experimental semivariogram and model for direction of maximum continuity for mFe, orebody 2 and orebody 3

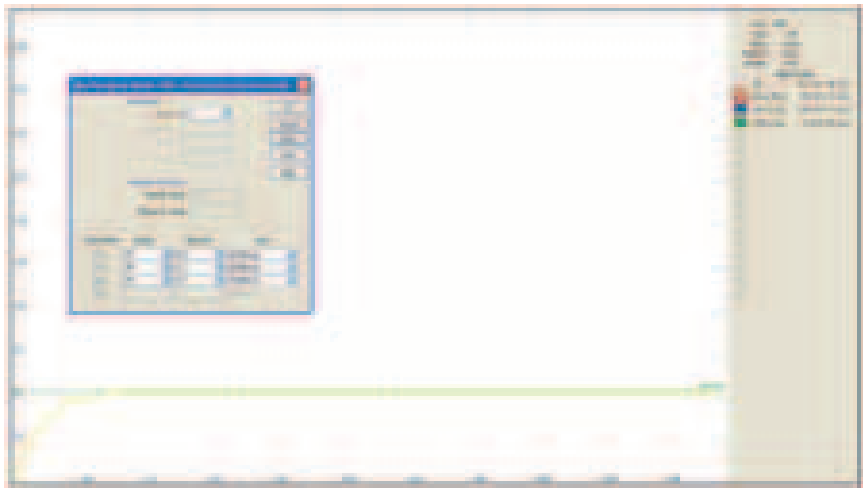


Figure 10-23: Experimental semivariogram and model for second direction for mFe, orebody 2 and orebody 3

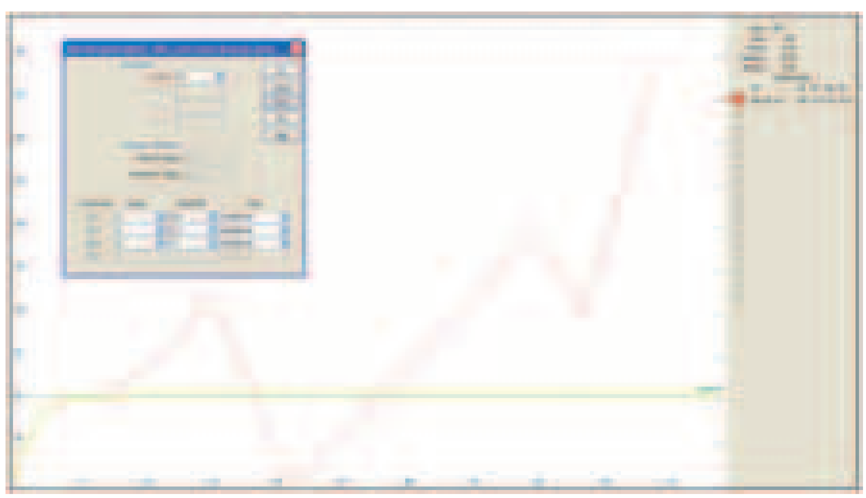


Figure 10-24: Experimental semivariogram and model for third direction for mFe, orebody 2 and orebody 3

Table 10-5: Summary of semivariogram parameters

Domain	Element	Direction	Azimuth	Dip	Nugget Effect	Partial Sills Comp. 1	Partial Sills Comp. 2	Partial Sills Comp. 3	Range (m) Comp. 1	Range (m) Comp. 2	Range (m) Comp. 3	Lag (m)
OB1	TFe	First	37	0	5.8	13.5	29.4		400	545		128
OB1	TFe	Second	127	0	5.8	13.5	29.4		15	105		128
OB1	TFe	Third	0	90	5.8	13.5	29.4		5	10		55
OB1	mFe	First	34	0	7.7	12	21	25.9	458	761	1071	128
OB1	mFe	Second	124	33	7.7	12	21	25.9	98	300	915	128
OB1	mFe	Third	304	57	7.7	12	21	25.9	29	32	25	9
OB2 OB3	TFe	First	24	0	4.3	12.5	16.5	14.7	594	285	1010	140
OB2 OB3	TFe	Second	114	27	4.3	12.5	16.5	14.7	184	151	242	140
OB2 OB3	TFe	Third	294	63	4.3	12.5	16.5	14.7	5	22	19	10
OB2 OB3	mFe	First	38	0	0.8	24.9	31.7	8.8	431	244.9	2622	140
OB2 OB3	mFe	Second	128	0	0.8	24.9	31.7	8.8	397	186	100	120
OB2 OB3	mFe	Third	0	90	0.8	24.9	31.7	8.8	9	8	27	9

10.10 Block Modelling

Empty block models were created within the closed wireframe models for the bodies of iron mineralisation for orebody 1 and orebodies 2 and 3, and coded accordingly. Block extents and sizes for orebody 1 are shown in Figure 10-25, while block extents and sizes for orebodies 2 and 3 are shown in Figure 10-26. Parent cells were sub blocked to 1 metre east, 2.5 metres north and 1 metre in elevation. Interpolation of grade was then undertaken into the empty cells.

Figure 10-25: Block extents and sizes for orebody 1

Figure 10-26: Block extents and sizes for orebodies 2 and 3

10.11 Grade Interpolation

Interpolation was block kriging into parent cells only, with discretisation to 5 points east, 5 points north and 5 points in elevation. The grades from the estimated points were then averaged to produce the kriged block grade.

The search ellipsoid was oriented parallel to the mineralisation to include relevant samples and was sized to exclude redundant samples. The same search ellipsoid was used for orebody 1 and orebodies 2 and 3. Three runs were required at different radii and parameters to populate all cells.

A "parent block estimation" technique was used, i.e. all subcells within a parent cell were given the same estimated grade value. The Ordinary Kriging estimation was performed at different search radii until all cells were populated. Grades were interpolated separately within each of the modelled mineralised zones using only assay composites restricted by the corresponding wireframe models. The search radii were determined by using the semivariogram ranges. Model cells that did not receive a grade estimate from the first interpolation run were used in the next interpolation with greater search radii. Model cells that did not receive a grade estimate from the first two interpolation runs were used in the next interpolation with greater search radii.

Declustering was performed during the interpolation process by using eight sectors within the search neighbourhood. Each sector was restricted to a maximum of three samples, and the search neighbourhood was restricted to an overall minimum of two sample grades for the first two interpolation runs. The maximum combined number of samples allowable for the interpolation was therefore 24.

A top or balancing cut of 38% total iron was used for the interpolation. The assay file composited to 2.0 metre intervals was also used for the interpolation.

Table 10-6: Search ellipsoid parameters for each run

Parameter	Run 1			Run 2			Run 3		
	1st axis	2nd axis	3rd axis	1st axis	2nd axis	3rd axis	1st axis	2nd axis	3rd axis
Radius length (m)	300	20	200	600	100	400	1000	1000	1000
Azimuth	30	120	120	30	120	120	30	120	120
Plunge	0	-50	40	0	-50	40	0	-50	40
No. sectors	8	8	8	8	8	8	8	8	8
Max. samples per sector	3	3	3	3	3	3	3	3	3
Min. total samples	2	2	2	2	2	2	1	1	1

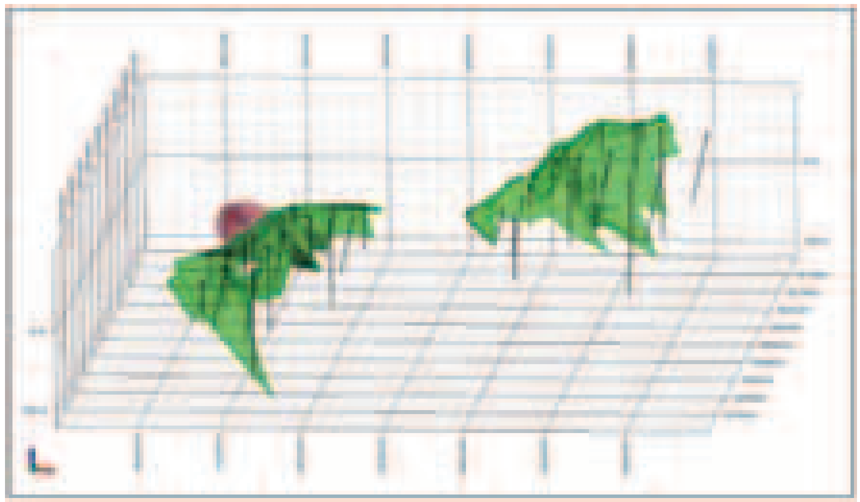


Figure 10-27: Search ellipsoid, run 1

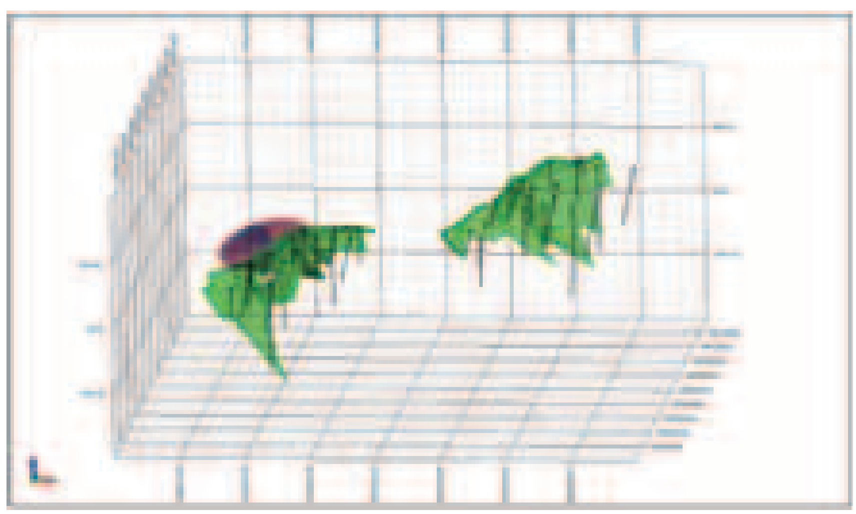


Figure 10-28: Search ellipsoid, run 2

Two views of the ordinary kriged block model are shown in Figure 10-29 and Figure 10-30. Figure 10-31 shows the ordinary kriged block model with the mined out areas to be removed and Figure 10-32 shows the ordinary kriged block model with the mined out areas removed.

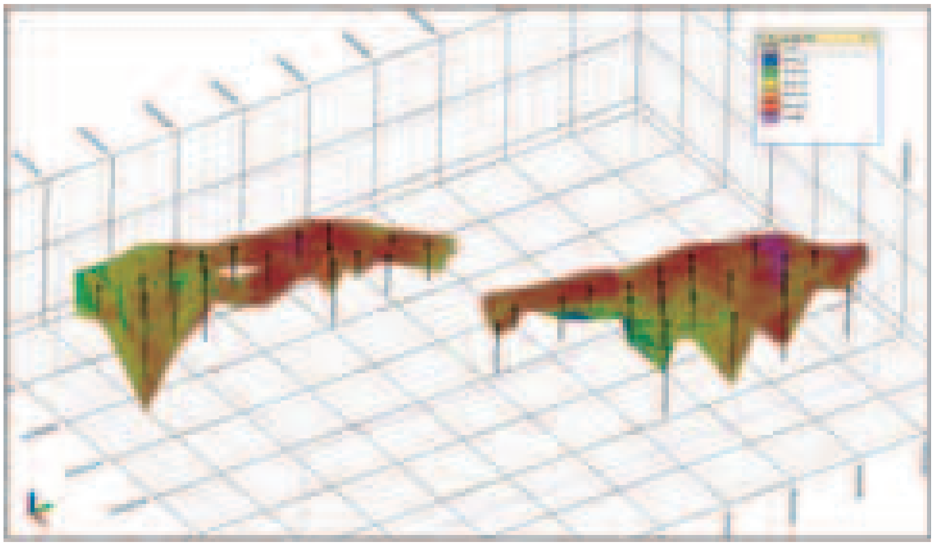


Figure 10-29: Ordinary kriged block model showing kriged TFe grades

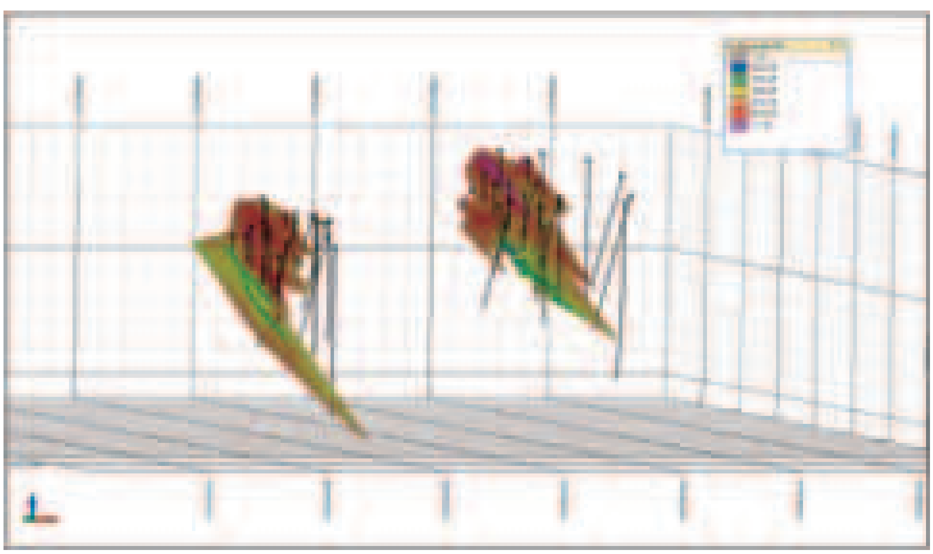


Figure 10-30: Ordinary kriged block model showing kriged TFe grades, side view

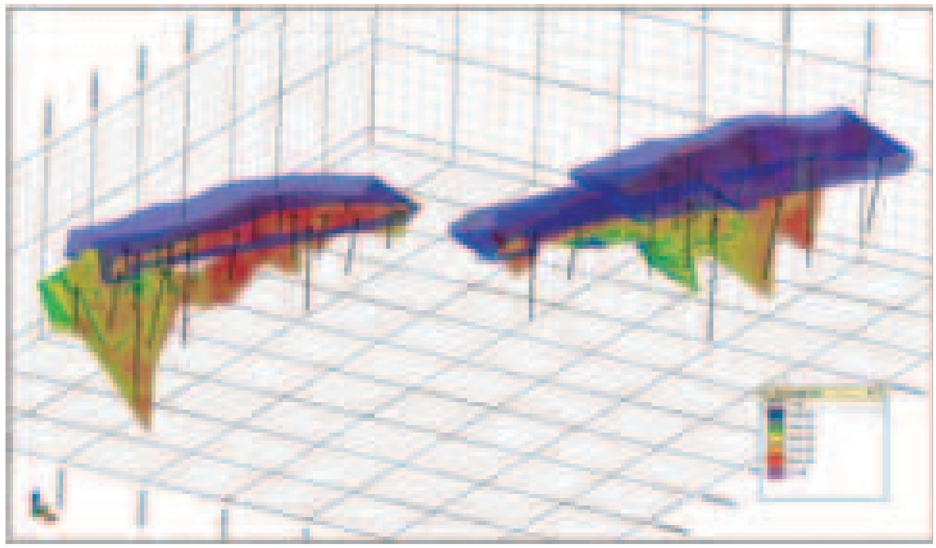


Figure 10-31: Ordinary kriged block model with areas near the surface that have been mined out (dark blue polygons) and underground workings (cyan coloured wireframes)

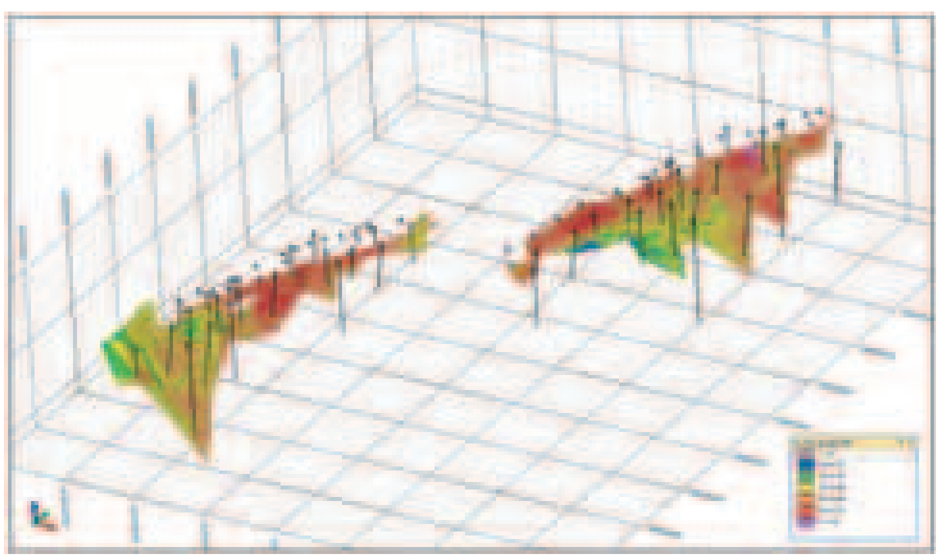


Figure 10-32: Ordinary kriged block model with areas near the surface that have been mined out and underground workings removed

10.12 Resource Classification Strategy

The purpose of resource estimation is to create a three-dimensional model of mineralisation that can be utilised for mining studies and economic calculations. While the aim is to estimate as accurately as possible, there will be more confidence in some portions of the model than others.

The classification strategy was designed to reflect the level of confidence in different areas of the model based on the inherent variability of measurements, the level of support provided by the data, and the expected continuity of mineralisation.

The data that was supplied to MCS and checked during the site visit, indicates that confidence in the data is moderate to high. The QA/QC data such as mean weighted core recovery, assay precision and assay bias and verification of the data on site supports this conclusion. The resource classification strategy was based primarily on sample spacing and numbers of samples and holes used to estimate a block value. For Measured Resources, a minimum of two samples from two holes had to be within a radius of 120 m. For Indicated Resources, this radius was 220 m. All other blocks were Inferred Resources.

After running an inverse distance weighted interpolation to determine the classification of the blocks, the classification was edited manually to reflect the confidence in different parts of the block model.

A view of the final, classified block model is shown in Figure 10-33.

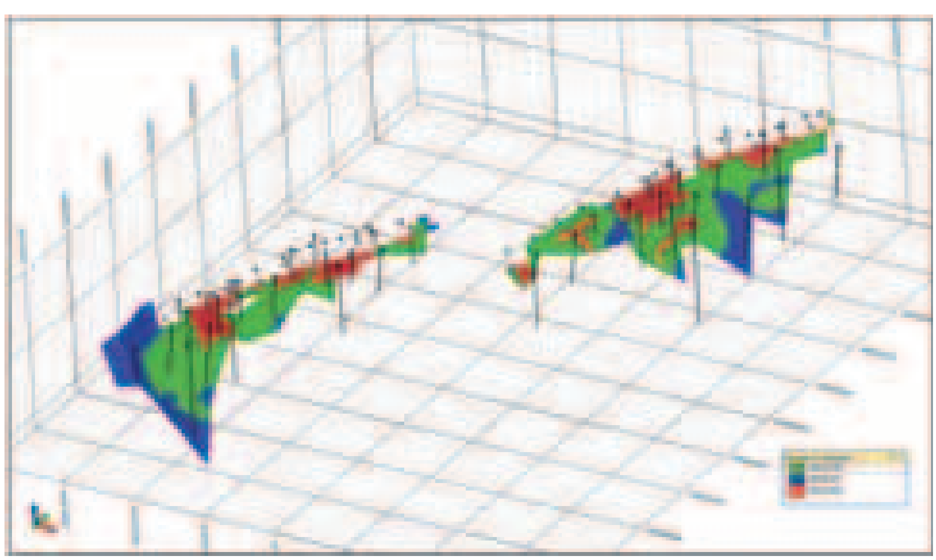


Figure 10-33: Final, classified block model

10.13 Specific Gravity Interpolation

A specific gravity database was supplied by the client that could be used for the interpolation into the block model. A total of 57 specific gravity measurements spread throughout all three orebodies of the deposit were included in the database. These measurements were interpolated into the block model using the IDW cubed interpolation method, resulting in every block in the block model containing a value for specific gravity.

The provision of the specific gravity database has resulted in higher confidence in the tonnage of the resource estimate of the deposit.

10.14 Model Validation

Three methods were utilised to validate the ordinary kriged block model:

1. The ordinary kriged global grade was compared to the raw sample grades;

2. The ordinary kriged global grade was compared to an inverse distance cubed model global grade;

3. The ordinary kriged model was checked locally in section to determine if the original sample grades were reflected in the block model grades.

The result from the ordinary kriged block model compared to the wireframe model is shown in Table 10-7. There is a small difference in volume and tonnage between the ordinary kriged model and the wireframes. This can be explained by the fact that the wireframes extended slightly above the topographic surface while the block model was clipped to the extents of the topographic surface, resulting in a slightly larger volume and tonnage for the wireframes. The wireframe TFe grade and the ordinary kriging TFe grade are both very similar, the difference being around 5%. The comparison with the mFe grade shows a slightly larger difference of around 15% as the mFe grade was not used for the interpretation and the ordinary kriging process tends to smooth the grades.

Table 10-7: Comparison of the ordinary kriging model with the wireframe model

Category	Volume	Tonnes	SG	TFe cut 38%	mFe
	(m^3)	*(t)*	*(t/m^3)*		
OK Model	36,732,165	119,358,696	3.25	27.24	12.13
Wireframe	36,732,183	119,379,596	3.25	28.72	14.31

Table 10-8 shows the result from the ordinary kriged block model compared to the result from the inverse distance weighted (IDW) cubed block model. There is very little difference between the two models with the difference in TFe grade being less than 0.5%. The difference in the mFe grade between the two models is less than 3%.

Table 10-8: Comparison of the result from the ordinary kriged model with IDW cubed model

Category	Volume	Tonnes	SG	TFe cut 38%	mFe
	(m^3)	*(t)*	*(t/m^3)*		
OK Model	36,732,165	119,358,696	3.25	27.24	12.13
IDW3 Model	36,732,165	119,358,696	3.25	27.37	12.48

Local validation of the ordinary kriging block model with the original drillhole sample values for TFe is shown in Figure 10-34. It can be seen there is a high correlation between the original sample grades and the ordinary kriging interpolated block model grades. This fact, together with the comparison of the ordinary kriging global grade with the raw sample grades and an IDW cubed power model global grade validates the use of the ordinary kriging interpolation method and the final result.

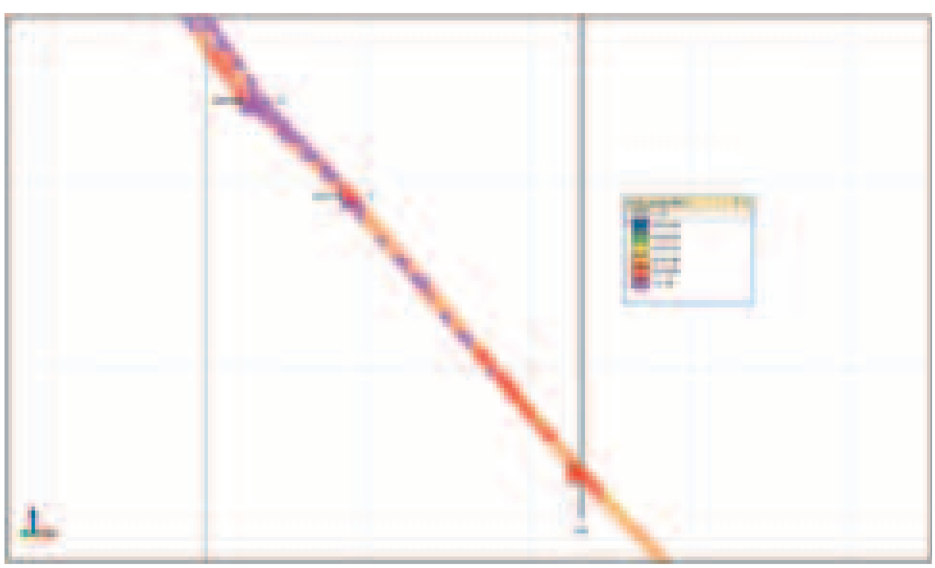


Figure 10-34: Cross-section showing local validation of block model and raw TFe grades

11 RESOURCE STATEMENT

The resources reported for the Yang Zhuang iron deposit are total resources, with the previously mined areas (as indicated by the client) removed. Resources are stated by category with the total of Measured, Indicated and Inferred resources and total of Measured and Indicated resources for Hong Kong Chapter 18 requirements. The resource statement is shown in Table 11-1.

The total resource at various TFe cut-off grades is shown in Table 11-2. The Measured, Indicated and Inferred Resources at various cut-off grades are shown in Table 11-3, Table 11-4 and Table 11-5 respectively.

Table 11-1: Resource statement for the Yang Zhuang iron deposit

Resource Category	Volume (m^3)	Tonnes (t)	SG (t/m^3)	TFe (%)	mFe (%)
Measured	5,599,000	18,218,000	3.25	26.23	11.72
Indicated	16,232,000	52,753,000	3.25	26.81	10.66
Total Measured and Indicated	21,831,000	70,971,000	3.25	26.66	10.93
Inferred	5,530,000	17,791,000	3.22	24.60	8.79
Total resource	27,361,000	88,762,000	3.24	26.25	10.50

Note: Numbers have been rounded to reflect that the resources are an estimate.

Note: Resources may not ultimately be extracted at a profit.

Table 11-2: Total resources at various cut-off grades

TFe COG (%)	Density (t/m^3)	Volume ($1000*m^3$)	Tonnage (1000*t)	TFe grade (%)	mFe grade (%)
0.0	3.24	27,501	89,214	26.25	10.50
10.0	3.24	27,501	89,214	26.25	10.50
15.0	3.24	27,361	88,762	26.31	10.53
20.0	3.25	25,176	81,713	26.97	10.85
25.0	3.25	16,501	53,650	29.06	12.04
30.0	3.26	5,957	19,432	31.83	13.94
35.0	3.27	145	472	35.55	11.88

Note: Numbers have been rounded to reflect that the resources are an estimate.

Note: Resources may not ultimately be extracted at a profit.

Table 11-3: Measured resources at various cut-off grades

TFe COG (%)	Density (t/m^3)	Volume ($1000*m^3$)	Tonnage (1000*t)	TFe grade (%)	mFe grade (%)
0.0	3.25	5,637	18,343	26.23	11.72
10.0	3.25	5,637	18,343	26.23	11.72
15.0	3.25	5,599	18,218	26.31	11.76
20.0	3.26	5,187	16,887	26.94	12.20
25.0	3.26	3,495	11,384	28.93	13.72
30.0	3.27	1,185	3,876	31.63	16.52
35.0	3.30	44	145	36.14	18.58

Note: Numbers have been rounded to reflect that the resources are an estimate.

Note: Resources may not ultimately be extracted at a profit.

Table 11-4: Indicated resources at various cut-off grades

TFe COG (%)	Density (t/m^3)	Volume ($1000*m^3$)	Tonnage (1000*t)	TFe grade (%)	mFe grade (%)
0.0	3.25	16,331	53,071	26.81	10.66
10.0	3.25	16,331	53,071	26.81	10.66
15.0	3.25	16,232	52,753	26.89	10.69
20.0	3.25	14,940	48,578	27.61	11.02
25.0	3.25	10,776	35,074	29.42	11.97
30.0	3.26	4,498	14,673	31.88	13.46
35.0	3.26	85	276	35.30	8.94

Note: Numbers have been rounded to reflect that the resources are an estimate.

Note: Resources may not ultimately be extracted at a profit.

Table 11-5: Inferred resources at various cut-off grades

TFe COG *(%)*	Density *(t/m^3)*	Volume *($1000*m^3$)*	Tonnage *(1000*t)*	TFe grade *(%)*	mFe grade *(%)*
0.0	3.22	5,533	17,801	24.60	8.79
10.0	3.22	5,533	17,801	24.60	8.79
15.0	3.22	5,530	17,791	24.61	8.79
20.0	3.22	5,049	16,249	25.12	8.94
25.0	3.23	2,229	7,193	27.58	9.73
30.0	3.22	274	883	31.81	10.65
35.0	3.23	16	52	35.27	9.04

Note: Numbers have been rounded to reflect that the resources are an estimate.

Note: Resources may not ultimately be extracted at a profit.

12 COMPARISON WITH HISTORIC RESOURCE

In order to be able to make an approximate comparison with the historic resource, MCS has reported the model without the mined areas removed and an mFe cut-off of 10% applied, as per the Chinese industrial index for magnetite iron ore. The comparison is very general, however, due to the differences in the parameters and methods used. The Chinese resource category 332 is similar to the JORC resource category of "Indicated", while the Chinese resource category 333 is similar to the JORC resource category of "inferred" however direct comparisons are not valid. The Chinese resource is not JORC compliant and has therefore been classified as a historic resource.

The resource estimate for the model without the mined areas removed and an mFe cut-off of 10% applied is shown in Table 12-1.

Table 12-1: Current resource estimate of unmined orebody, cut-off 10% mFe

Resource Category	Density	Volume	Tonnes	Grade TFe	Grade mFe
	(t/m^3)	*($1000*m^3$)*	*(1000*t)*	*(%)*	*(%)*
Measured	3.27	10,282	33,584	29.64	16.70
Indicated	3.26	10,719	34,904	28.78	14.34
Total	3.25	21,001	68,489	29.23	15.50
Inferred	3.22	1,935	6,232	26.08	11.86
Total	3.25	22,936	74,720	28.94	15.19

Note: Numbers have been rounded to reflect that the resources are an estimate.

Note: Resources may not ultimately be extracted at a profit.

The total Measured and Indicated resource for the current resource with an mFe cut-off of 10% applied is 68.5 million tonnes versus 53.4 million tonnes from the historic Chinese resource. This is an increase of 28% on the historic resource tonnage. The TFe grade for the current resource is 5.5% lower than the historic resource and the mFe grade for the current resource is 15.2% lower than the historic resource. The difference in the size of the resources is due to the use of a lower TFe cut-off grade (10.5% TFe) for interpretation of the mineralisation for the current resource and different interpretation methods. The interpretation of the current resource involved larger down dip extensions where continuity of mineralisation from adjacent sections could be inferred. These factors resulted in a larger mineralised envelope for the current resource compared to the historic resource which was estimated by a polygonal method.

The differences in the TFe grade can be explained by the use of the ordinary kriging method for the current resource compared to the use of the polygonal method for the historic resource. The ordinary kriging method tends to "smooth" the grades resulting in a slightly lower result. This same explanation can be applied to the difference for the mFe grade together with the fact that some areas of lower mFe but high TFe would have been included in the current resource compared to the historic resource.

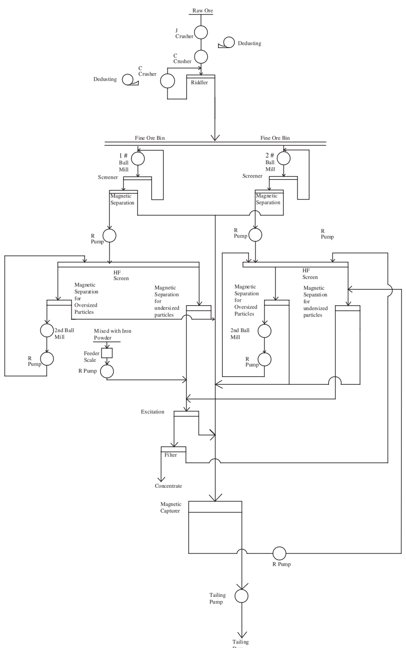
13 METALLURGY AND MINERAL PROCESSING

The Yang Zhuang project is currently an active, underground mining operation. As a result, no metallurgical testwork information has been provided but a brief reconciliation report for the project was provided.

The mineral processing for the project involves magnetic separation of the iron-bearing magnetite to produce a magnetite concentrate. The magnetite concentrate is sent to the smelter for extraction of the iron. The stages of processing are briefly described below and shown in the processing flowchart in Figure 13-1.

The raw ore is first subjected to two stages of crushing; primary crushing in a jaw crusher then secondary crushing in a cone crusher. The crushed ore passes through a riddler to separate the coarse particles from the fine particles. Coarse particles are returned to the crushing circuit while fine particles are sent to the fine ore bin. The fine ore is fed into the ball mills for pulverisation before passing through a screen before magnetic separation. The magnetic fraction is passed through a HF screen before the second stage of magnetic separation while non-magnetic material is sent to the tailings circuit. The second stage of magnetic separation involves the oversize and undersize fractions separated by the HF screen.

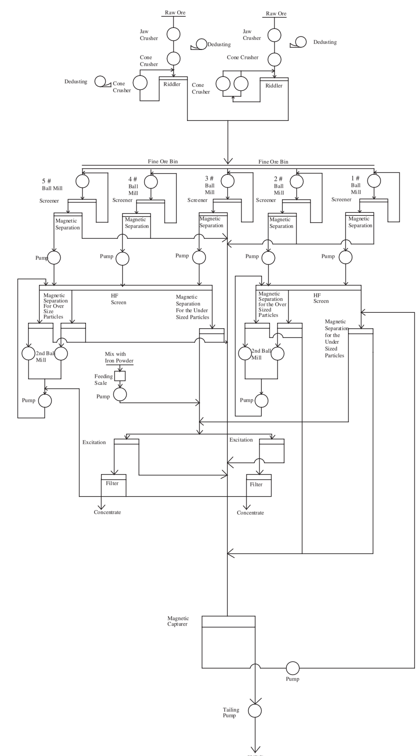
Processing Flowsheet of No. 2 Plant of Yang Zhuang Iron Ore Mine



Main Parameters of the Equipment

Equipment	Model	Power/KW	Qty/Set
J Crusher	PE750×1060	110	1
Simens C Crusher	S155B	185	1
Riddler	ZYA1848	11	1
Simens C Crusher	S155D	155	1
Magnetic Separator	CF-722	4	1
Dedust Fan	4-72 N010C	30	1
Ball Mill (Cone Ball Crusher)	MQG2140	210	2
Screener	FG15	7.5	2
Magnetic Separator (1st Stage)	CTB1021	4	2
R Pump	4PNJA	30	4
R Pump	2PNJB	11	8
Vertical Pump	50YZ20-15	5.5	2
HF Riddler	12×18	自制	2
Magnetic Separator	CTB1021	4	2
Feeding Scale	PDG500	1.1	1
Extitation	ф1500		1
Cone Ball Mill (2nd Stage)	MQY1530	80	1
Cone Ball Mill (2nd Stage)	MQY1535	95	1
Magnetic Capturer	JHY15-10	7.5	2
Magnetic Separator	CTB1050	3	3
Tailing Pump	6PNJB	75	2
Filter	ZPG30-6		1

Processing Flowsheet of No. 3 Plant of Yang Zhuang Iron Ore Mine



Main Parameters of the Processing Equipment

Equipment	Model	Power/KW	Qty/Set
J Crusher	PE750×1060	110	1
Cone Crusher	S155B	185	1
Riddler	ZYA1848	11	1
Cone Crusher	S155D	155	1
Magnetic Separator	CF-722	4	1
Dedust Fan	4-72N010C	30	2
Old Process			
J Crusher	PE750×1060	110	1
Cone Crusher	S155B	185	1
Riddler	2YA1848	15	1
Cone Crusher	1200	110	2
Magnetic Separator	CF-722	4	1
Dedust Fan	4-72N010C	30	1
Ball Mill	MQG2140	210	4
Ball Mill	MQG2150	245	1
Screener	FG15	7.5	5
M Separator (1st Stage)	CTB1021	4	5
Pump	4PNJA	30	8
Pump	4PNJB	11	16
Pump	2.5PN	3	2
HF Screen	6×37		4
HF Screen	12×18	Non Standard	2
磁選機	CTB1021	4	3
Feeding Scale	3N-PT	0.75	1
Magnetic Excitor	ф1500		1
Magnetic Excitor	ф2600		1
Magnetic Separator	CTB1050	3	3
Ball Mill (2nd Stage)	MQY1535	95	2
Cone-Ball Mill (2nd Stage)	MQY1535	95	1
Cone-Ball Mill (2nd Stage)	MQY1860	180	1
Magnetic Capturer	JHY15-10	7.5	2
Magnetic Capturer	JHY15-8	5.5	1
Magnetic Capturer	YCW15-10	7.5	3
Tailing Pump	6PNJB	75	4
Filter	ZPG30-6		2

Figure 13-1: Processing flowsheet for No. 2 and No. 3 processing plants, Yang Zhuang mine

Finally, the magnetic material is filter pressed to become the final concentrate.

The Yang Zhuang mine operates two processing plants; Number 2 plant and Number 3 plant.

Number 2 plant has two ball mills while the newer Number 3 plant has five ball mills. The processing procedure is the same for both plants and the provision of Number 3 plant has only resulted in an increase in throughput and capacity.

The Feasibility Study report from Shandong Lianchuang Architectural Design Company Ltd (2011) states that the production of the proposed processing plant would be 2 million tonnes per annum from 2012 to 2013 due to the expansion of the mining capacity, then ramping up to 3.5 million tonnes per annum thereafter with an average annual concentrate output of approximately 596,400 tonnes of 66% iron concentrate. The processing capacity of the plant is already at 3.5 Mtpa. The processing plant would consist of a three-section closed circuit crushing unit and a four-stage ore separating plant. Processing recoveries are stated as being 62.8% of TFe in the Feasibility Study report (Shandong Lianchuang Architectural Design Company Ltd, 2011) sent to MCS on 15th September 2011, however MCS believes using a recovery rate based on mFe is more reasonable as the processing plant is designed to recover the mFe (the quantity of the iron in the magnetic fraction of the ore) not TFe. The "Basic Engineering Design report for Yang Zhuang mine" (sent to MCS on 11th March 2011) stated a processing recovery of 98% mFe, which MCS considers 'unlikely'. MCS believes a recovery rate of 92% of mFe is more realistic. MCS acknowledges that some discrepancies exist between processing recovery rates provided in different revisions of feasibility reports provided by the client and that there is a lack of results from metallurgical testwork performed to support the revised numbers. The recovery rates used in this estimation are based on the experience of the Competent Person and are considered comparable to recovery rates for other mines with similar ore types and grades. MCS recommends that mineral processing testwork such as a commercial test be carried out to determine the true recovery rates for the particular ores, processing equipment and design parameters of this project. Based on the results of processing testwork recovery rates may need to be revised either upwards or downwards.

14 UNDERGROUND MINING STUDY

14.1 Scope of Work

The scope of work for the mining study was to convert the resources to reserves. This involved:

- calculating cut-off grades;
- panel design using MICROMINE software;

- checking the panel design results with the underground design produced by the Shandong Lianchuang Architectural Design Co. Ltd (2011);

- assessing the proposed mining method;

- producing a life of mine schedule;

- assessing the cost and revenue estimates for the project;

MCS had previously completed a resource and reserve estimate of the project in June 2011. The client commissioned MCS to complete an update of the reserve estimate for the project due to changes in modifying factor information outlined in the Feasibility Study report (Shandong Lianchuang Architectural Design Company Ltd, 2011). The changes in modifying factor information were as follows:

- An increase in the mining and processing capacity from 2 million tonnes per annum previously to 3.5 million tonnes per annum.

- A reduction in mining life from 21 years previously to 13.1 years.

- Capital expenditure for the proposed expansion of CN¥188 million.

- A reduction in processing costs from CN¥38.00 per tonne previously to CN¥33.84 per tonne.

All possible modifying factors are to be considered for the conversion of resources to reserves.

14.2 Mining Method

The following information has been summarised from *Preliminary Design of Yangzhuang Iron Deep Mining Project for Shandong Xingsheng Mining Company Limited*, the 'Basic Engineering Design' document.

The Yang Zhuang deposit has amenable technical conditions for mining. One of the aims of the mining method design is to improve the mining recovery rate and reduce the mining dilution rate. The following two underground mining methods are appropriate for the deposit:

- Sublevel caving method (filling after mining)

- Short hole shrinkage method (filling after mining)

The sublevel caving method is applicable to areas where the orebody has a thickness greater than eight metres while the short-hole shrinkage stoping method is applicable to areas where the orebody has a thickness of less than eight metres.

According to the design and the Reconciliation Report of the Chinese report, only the Short hole shrinkage method has been used until now due to instability of the hanging wall.

Sublevel Caving Mining Method

The sublevel caving underground mining method is divided into two design layouts; along the strike of the orebody and across the strike of the orebody. For this method, when the horizontal thickness of the orebody is more than 8 metres and less than 20 metres, the ore blocks are arranged along the strike of the orebody. For a small amount of ore blocks, if the thickness is more than 20 metres in the middle part of the orebody, the ore blocks are arranged across the strike of the orebody.

The length of a standard ore block arranged along the strike of the orebody is 50 metres, while the width of an ore block is equal to the horizontal thickness of the orebody which is 16 metres, taking into account 6 metres for a rib pillar and 6 metres for a crown pillar without a bottom pillar.

The length of a standard ore block arranged across the strike of the orebody is equal to the horizontal thickness of the orebody, while the width of an ore block is 32 metres with a crown pillar of 4 metres and a bottom pillar of 6 metres. The height of an ore block, which is also the distance between levels, is 60 metres.

The mining preparation and cutting works for the sublevel caving method consists mainly of construction of the lower ventilation rise, the roadway for ore removal, the sublevel drilling roadway access, the sublevel ore-pass, the sublevel connection, ore removal connection, accessway for the mining equipment such as the underground electric locomotive for ore transport and the sublevel ore-pass.

The sublevel caving method divides ore blocks into subsections with a height of 18 metres (or 13.23 metres) depending on the angle of inclination of the orebody. Mining will be carried out in subsections along the length of ore blocks from one end to a sublevel ore-pass. Retreat-stoping from top to bottom is commonly used on sublevels.

Upon the completion of mining and cutting works, stoping work is mainly composed of three processes; rock drilling, ore blasting and ore removal.

The rock drilling process will involve the use of YGZ90 drills to drill holes of medium depth. The blasting process will involve the use of ANFO explosives, while ore removal involves the use of the underground electric locomotive which will transport the caving ore from the bottom of the sublevel to the ore-pass.

For the filling process, all the mined-out stopes shall be filled with whole tailings (cemented). The waste rock from underground mining will remain underground to also be used as filling.

Short Hole Shrinkage Stoping Method

For the short-hole shrinkage (SHS) stoping method the ore blocks are arranged along the strike of the orebody. The length of the standard ore block is 48 metres and the width is the same as the horizontal thickness of the orebody. The horizontal thickness of the orebody is 8 metres which takes into account 6 metres for a rib pillar, 5 metres for the crown pillar and no bottom pillar. The height of the ore block which is also the distance between the levels is 60 metres.

The mining preparation and cutting works for the SHS stoping method consists mainly of construction of the roadway, lower ventilation rise, chamber air connection, sub-level air connection, ore removal air connection, ore-pass, accessway for the mining equipment such as the underground electric locomotive for ore transport, and the returning air and filling connection.

For stoping work, the short-hole shrinkage method is mainly composed of four processes, namely rock drilling, ore blasting, ore drawing and filling.

The rock drilling process involves the use of a short-hole drill, while blasting involves the use of ANFO explosives. The ore drawing process includes two steps. Firstly, before the ore in the chamber is stoped, after each blast, one third of the caving ore is drawn. After the blasting is finished, a larger amount of caving ore is drawn. The ore is removed by a motor-driven underground electric locomotive which transports the caving ore from the bottom of the stope to a sub-level ore-pass via the ore removal accessway and ore removal connection.

For the filling, all mined out stopes will be filled with tailings or a combination of waste rock and tailings.

14.3 Mining Equipment

The mining equipment for the project will consist of stope ore removal equipment, rock-excavating and mucking equipment and rock-drilling equipment. Over nearly 20 years of underground mine construction and production in China, the underground mine electric locomotive and loader has been the main equipment for ore removal and mucking. It is preferred over other loading and hauling equipment to ensure the production capacity of the mine, reduce the mining cost, save energy and improve the composite economic results of mining enterprises. It is likely that the underground mine electric locomotive and loader shall be used in stope ore removal and rock-tunnelling and mucking processes for the project.

According to the matching relation between loading work amount and productive power of the electric locomotive and loader, stope ore removal shall involve six sets of two cubic-metre motor-driven electric locomotive and loaders, 2 sets of two cubic-metre diesel locomotive and loaders and 3 sets of one cubic-metre diesel locomotive and loaders for rock-excavation.

Considering that the sublevel height of the stope is small and the drilled holes are quite shallow, the rock-drilling work will involve pneumatic drilling equipment including mining rock-drilling equipment and rock-drilling and excavating equipment.

For mining rock-drilling, medium-deep-hole YGZ90 drills with a maximum drilling depth of 30 metres and short-hole 7655 drills will be used.

For medium-deep-holes, the efficiency of the YGZ90 drill machine team is 30 metres/team, 330 days per year with 2 teams working per day. This will result in an ore caving amount of 9 tonnes per metre with a rock-drilling and annual operation rate of 75%.

The two ore blocks have totally 17 chambers, of which 13 are in service and 4 are standby. A total of 17 medium-deep-hole drills will be selected to meet the demand of production; four are standby, as a result there will be a total of 21 drills (by 1/4 proportional allocation).

For short-holes, the 7655 drill will be used. Considering that 25.64% of the whole mining work shall involve the short-hole shrinkage stoping method, two short-hole drills will be configured in each chamber. A total of four 7655 drills is designed to apply and four are for standby, as a result there will be a total of eight 7655 drills (by 1:1 proportional allocation).

For excavation work, the short-hole 7655 and YSP45 drills will be used.

There will be a total of six working faces that require tunnelling: 2 large sections, each of which is configured with three 7655 drills and 4 small sections, each of which is configured with two 7655 drills. Fourteen 7655 drills will be used with five for standby (by 1/3 proportional allocation) resulting in a total of nineteen drills. Rock-excavation and raise and ore-pass drilling will involve the use of YSP45 drills, three of which are designed to be used and one for standby; giving a total of four.

14.4 Ventilation

The ventilation systems of Gongdanshan ore block (orebody 1) and Eshan ore blocks (orebodies 2 and 3) are interrelated and independent on each other. Both are of the central-diagonal type and use a pumping ventilation method. The ventilation system of the Gongdanshan ore block is arranged as follows: the auxiliary shaft functions as a downcast shaft, and the main shaft and central return air shaft function as upcast air shafts. For the ventilation system of the Eshan ore blocks the auxiliary shaft functions as a downcast air shaft, and the main shaft and central return air shafts function as upcast air shafts. The central return air shaft works for both ore blocks at the same time.

One thing to be noted is that the lower ventilating rise of ore blocks along the boundary which is below +140 metre level of both ends of the Gongdanshan ore block and +160 m level of Eshan south end, is a permanent ventilation facility with the section size of 4 metres by 4 metres. It will be protected from the mining processes and must not be damaged.

15 RESERVE ESTIMATION

15.1 Introduction

The JORC code and definitions have been used for the conversion of Resources to Reserves.

The Resource has been classified as Measured. Indicated, and Inferred. By definition Reserves may not include Inferred Resources. Like Resources, Reserves, by definition, have two components; a quantity component (value) and a classification component (risk).

The quantity component of Resources is termed Gross Tonnes In Situ (GTIS), and is the starting point in the derivation of Reserves. The process used to convert GTIS to Reserves is as follows;

- Step 1: GTIS is converted to Mineable Tonnes In Situ (MTIS);
- Step 2: MTIS is converted to Reserves.

The classification component of Reserves is based on the classification of the Resource.

Step 1: the conversion of the GTIS, into MTIS

GTIS is split into Resources that will be mined utilizing Surface mining techniques and Resources that will be mined utilizing Underground mining techniques. The reason being that different sets of infrastructure and equipment are used for Surface and Underground mining which translates into different capital and working costs and mining rates. If a mining block had a tonnage of less than 80,000 tonnes, it was excluded from the MTIS.

Secondly all Inferred Resources are excluded.

Step 2: the conversion of MTIS into Reserves.

During this step appropriate factors are applied to the MTIS to obtain the Reserve.

These factors include grade cut-offs (where appropriate), economic cut-offs (such as block volumes) and losses due to the mining method envisaged.

A modelling estimation error is also applied.

The Reserve classification is based on the Resource classification. Once the Inferred Resources have been excluded the Reserve is classified. Indicated Resources can only go to Probable and Measured to Proven.

15.2 Yang Zhuang Resource to Reserve Calculation

These Reserves were based on the Resource model dated 8/4/2011, and the Reserves were therefore deemed to have the same date. However, the modifying factors parameters were changed and the reserves were recalculated with these new parameters in November 2011. It should be noted that the Reserves quoted here are a "snapshot" at a specific point in time. Should any of the inputs change, such as the Resource model, the Reserves should be recalculated.

In the case of the Yang Zhuang project all the surface mining Reserves have been exploited and are therefore are not considered in the Resources to Reserves conversion process. All the Resources are therefore only for underground mining techniques.

For Yang Zhuang there are Measured, Indicated and Inferred Resources. In the process of converting the Resources to Reserves, all the Inferred Resources have been excluded from MTIS. To convert the GTIS to MTIS the layout as defined by the Short Hole Shrinkage (SHS) mining method was applied to the ore wireframes. This had the effect of "blocking out" the ore wireframe with the SHS mine design parameters. These parameters are listed in Table 15-1. Figure 15-1 and Figure 15-2 shows the blocking out of the Resource based on the parameters given in Table 15-1.

Table 15-1: Parameters for Short Hole Shrinkage mining method

Description	Unit	Short Hole Shrinkage Mining Method Parameters
Length of Block	m	48
Minimum width of Block	m	8
Pillar between Blocks	m	6
Crown Pillar	m	5
Distance between levels	m	60

The Preliminary Design report (Shandong Province Metallurgical Engineering Company Limited, 2008) also highlighted a minimum ore-body thickness from a practical mining point of view which is 8 m. Using the parameters in the table above the minimum tonnage per block is 84,000 tonnes. A hurdle of 80,000 tonnes was set per block i.e. if a block had less than 80,000 tonnes it was excluded from Reserves.

The "blocked out" ore wireframes were then coded in MICROMINE to exclude the following:

- Inferred Resources;
- If the tonnage per block was less than 80,000 tonnes.

The resulting blocks then constituted the MTIS. This MTIS was then further manipulated using factors to derive the Reserve.

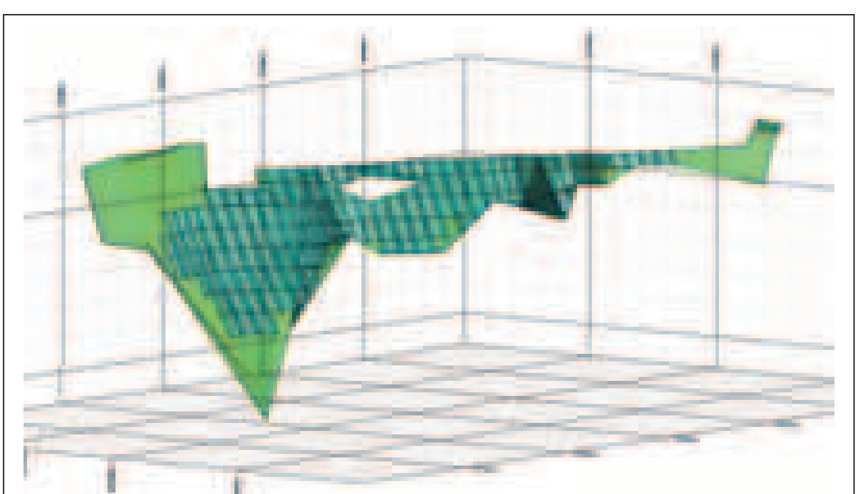


Figure 15-1: Orebody 1 showing blocked out stopes after Inferred Resources have been excluded

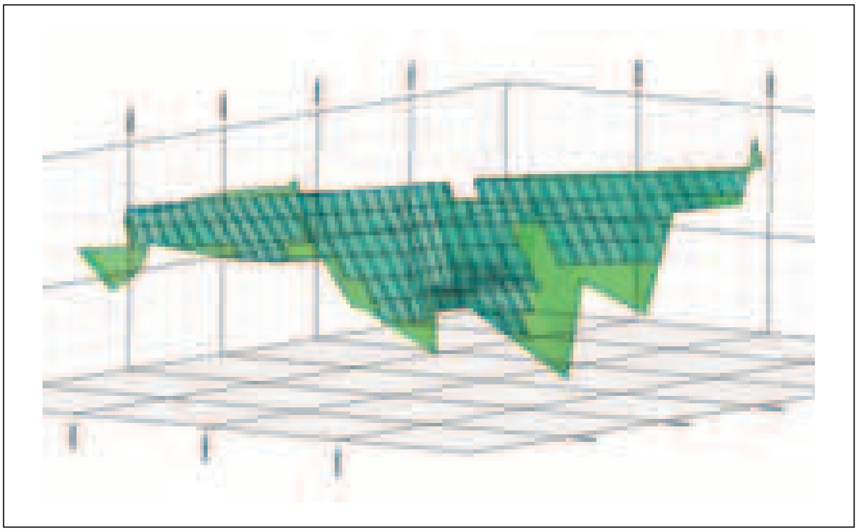


Figure 15-2: Ore body 2 and 3 showing blocked out stopes after Inferred Resources have been excluded

The factors applied to MTIS include the following:

- A loss of 18.5% which represents the ore left in pillars around the potential stopes. This was calculated based on the geometry of the stope;

- A modelling estimation error of 3%. This is an industry norm. For Measured Resources a factor of 3% is used and for Indicated a factor of 5% is used. In this case this is a brownfields project in that it has already been mined and therefore a factor of 3% is used although the majority of the Resource is Indicated;

- An mFe grade cut-off of 8.0% applied to each mining block. This value is based on the breakeven grade of the currently envisaged cost model for the underground mine.

Table 15-2 shows the GTIS and MTIS for the Yang Zhuang project prior to any economic cut-offs being applied. Table 15-3 shows the GTIS and MTIS for the Yang Zhuang project after the economic cut-off has been applied. This model is based on the values in the Preliminary Design report (Shandong Province Metallurgical Engineering Company Limited, 2008) and the Feasibility Study report (Shandong Lianchuang Architectural Design Company Ltd, 2011) supplied by the client. From the tables it can be seen that approximately 20% of the mineable ore is lost due to the application of a grade cut-off.

Table 15-2: Statement of JORC compliant Reserves for the Yang Zhuang project, November 2011 (without mFe grade cut-off)

Orebody Name	Class	GTIS	GRADE TFe	GRADE MFe	MTIS	GRADE TFe	GRADE MFe	Mining Recovery	Dilution	Proved Reserves	Probable Reserves	GRADE TFe	GRADE MFe
		(Mt)	*(%)*	*(%)*	*(Mt)*	*(%)*	*(%)*	*(%)*	*(%)*	*(Mt)*	*(Mt)*	*(%)*	*(%)*
1A_10_5Fe	Measured	10.297	25.95	10.74	10.065	25.95	10.74	78.5	9.0	8.612	–	23.81	9.85
1A_10_5Fe	Indicated	32.664	27.61	9.98	29.824	27.61	9.98	78.5	9.0	–	25.519	25.33	9.16
Total		42.961			39.889					8.612	25.519		
2A_10_5Fe	Measured	1.098	28.500	14.60	0.734	28.50	14.60	78.5	9.0	0.800	–	20.53	10.51
2A_10_5Fe	Indicated	4.551	28.74	15.30	3.731	28.74	15.30	78.5	9.0	–	3.192	26.37	14.04
Total		5.649			4.465					0.800	3.192		
3A_10_5Fe	Measured	6.397	26.31	12.61	6.397	26.31	12.61	78.5	9.0	5.474	–	24.14	11.57
3A_10_5Fe	Indicated	15.856	24.79	10.85	14.342	24.79	10.85	78.5	9.0	–	12.272	22.74	9.95
Total		22.253			20.739					5.474	12.272		
Grand total		70.863			65.093					14.886	40.983		

Table 15-3: Statement of JORC compliant Reserves for the Yang Zhuang project, November 2011 (with 8.0% mFe grade cut-off)

Orebody Name	Class	GTIS	GRADE TFe	GRADE MFe	MTIS	GRADE TFe	GRADE MFe	Mining Recovery	Dilution	Proved Reserves	Probable Reserves	GRADE TFe	GRADE MFe
		(Mt)	*(%)*	*(%)*	*(Mt)*	*(%)*	*(%)*	*(%)*	*(%)*	*(Mt)*	*(Mt)*	*(%)*	*(%)*
1A_10_5Fe	Measured	10.297	27.10	13.04	6.193	26.75	12.60	78.5	9.0	5.299	–	24.54	11.56
1A_10_5Fe	Indicated	32.664	27.90	10.81	22.754	27.87	10.79	78.5	9.0	–	19.469	25.57	9.90
Total		42.961			28.947					5.299	19.469		
2A_10_5Fe	Measured	1.098	29.323	15.18	0.688	29.32	15.18	78.5	9.0	0.750	–	21.12	10.93
2A_10_5Fe	Indicated	4.551	29.65	15.92	2.720	29.65	15.92	78.5	9.0	–	2.327	27.20	14.60
Total		5.649			3.408					0.750	2.327		
3A_10_5Fe	Measured	6.397	26.65	13.20	5.782	26.41	13.00	78.5	9.0	4.947	–	24.23	11.93
3A_10_5Fe	Indicated	15.856	24.83	10.91	13.021	24.75	10.88	78.5	9.0	–	11.141	22.71	9.98
Total		22.253			18.803					4.947	11.141		
Grand total		70.863			51.158					10.996	32.938		

16 RESERVE STATEMENT

The JORC Code provides guidelines which set out minimum standards, recommendations and guidelines for the Public Reporting of exploration results, Mineral Resources and ore reserves. Within the code is a "Checklist of Assessment and Reporting Criteria" (Table 1 – JORC Code). This checklist is a useful method for reviewing JORC compliance. A summary of key points are listed in Table 16-1.

Table 16-1: JORC Code Compliance Checklist for Yang Zhuang

Section	Comment
Is the Reserve derived from JORC compliant Resource Statement? Who are the competent persons?	This JORC Reserve is derived from JORC compliant Mineral Resources Statement signed by Mr. David Allmark of MCS.
What is the current project status?	The mine is currently operating. A life of mine plan has been prepared.
What cut off parameters and physical limits have been applied in estimating the Reserves?	A cut-off grade based on economic factors has been calculated and applied. Factors have been used for mining recovery and dilution based on the stope shapes and the selected mining method.
What mining and geotechnical assumptions have been made?	Geotechnical assumptions have been considered in the design of the underground mine. Ore quality is as per the geological model combined with recovery, dilution, and moisture adjustments.
Is there a metallurgical process used and what is suitability to the type of operation?	The project has a suitable metallurgical process in place. Ore is crushed, milled, and then separated using drum magnets.
How have the project capital, operating costs and royalties been derived?	The Capital and Operating costs are based on estimates using quotes as well as costs from similar mining projects. Royalties are based on government requirements.

Section	Comment
What is the market demand and supply of this commodity and what are the price and volume forecasts of the Reserves based upon?	The Ore from this mine is separated to produce an iron concentrate that meets customer requirements. MCS anticipates no foreseeable issues in demand for this product as it is good quality.
Any other factors that may potentially affect the viability of the project and the status of titles and approvals required for the project?	MCS is not aware of any other potential factors that could affect the operation viability. Approvals for the proposed expansion have been applied for.
What is the basis for the classification of the ore reserves and proportion of ore reserves which have been derived from Measured Mineral Resources?	Classification of Ore Reserves has been derived by considering the Measured and Indicated Resources and the level of mine planning. Inferred resources have been excluded from the estimate.
Results of audits or reviews of Reserves Statements	As per findings in this review, plus internal reconciliation and peer review.
Relative accuracy and confidence of the Reserves Estimate	The Reserve estimate is supported by approximately 25% of Measured Resources, the remainder coming from Indicated Resources. The Yang Zhuang mine is an operating mine with a technical team engaged in on-going mine planning. As a result there is a relatively high level of confidence in the estimate.

Following on from the calculations in Table 15-2, Table 15-3 and the checklist in Table 16-1, the MCS reserve statement shows the diluted and recoverable underground reserves for the Yang Zhuang project. Only Measured Resources have been considered for conversion to Proved Reserves and only Indicated Resources have been considered for Probable Reserves.

The MCS reserve statement **(the current Reserve, November 2011)** for the Yang Zhuang deposit is shown in Table 16-2.

Table 16-2: JORC Compliant total Reserves for the Yang Zhuang deposit

Reserve Classification	Ore Tonnes *(Mt)*	Grade TFe *(%)*	Grade MFe *(%)*	Contained TFe *(Mt)*	Contained MFe *(Mt)*
Proved	11.00	24.17%	11.68%	2.66	1.28
Probable	32.94	24.72%	10.26%	8.14	3.38
Total	43.93	24.58%	10.61%	10.80	4.66

Note 1: Numbers have been rounded to reflect that the reserves are an estimate. As such the numbers may not total to an equal amount.

Note 2: Contained TFe and mFe does not imply that all the TFe and mFe can be recovered. Processing recovery has not been accounted for in the calculation.

For Orebody 1 the Reserve is 24,769,000 tonnes, for Orebody 2 the Reserve is 3,077,000 tonnes and for Orebody 3 the Reserve is 16,089,000 tonnes. The total Reserve is estimated as 43,935,000 tonnes at a grade of approximately 24.6% TFe and 10.6% mFe.

The project has an estimated mine life of 13.2 years.

17 HISTORIC DEPLETION RATES

Historic resource depletion rates for the Yang Zhuang project for the period 2008 to 2011 were provided by the client and are shown in Table 17-1. The expected resource depletion rate for 2012 based on a mining recovery rate of 82% (annual average of previous years) is expected to be approximately 2.4 million tonnes.

Table 17-1: Historic resource depletion rates for the Yang Zhuang project

Year	2008	2009	2010	2011
Annual Production (t)	1,725,700	2,033,100	1,972,100	2,073,800
Mining Losses (t)	431,400	461,500	432,900	455,200
Resource Depletion Rate (t)	2,157,100	2,494,600	2,405,000	2,529,000
Mining Recovery Rate (%)	80.0	81.5	82.0	82.0

Note 1: All historic depletion rate data was provided by the client. MCS has been unable to determine the veracity of the data.

Note 2: Mining losses includes unrecoverable resources that are used for support pillars in the underground mining operation.

18 COSTS

18.1 Operating Costs

All mine operating costs have been supplied by the client. MCS has not been able to independently verify these costs, however they appear appropriate considering the mining method used and are comparable to other mines located in the People's Republic of China that have similar mining methods and orebody characteristics.

18.1.1 Cash operating costs

Information obtained from site personnel indicates that the average mining and processing costs (excluding capital expenditure) for the past four years was RMB616 per tonne of ore concentrate produced.

A summary of the total cash operating costs and cash operating costs per unit of iron ores is shown in Table 18-1.

		HISTORICAL COSTS			ESTIMATED FUTURE COSTS		
Cost Item	**Units**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014+**
PRODUCTION COSTS							
Total mining volume	tonnes'000	2,033	1,972	2,074	2,300	2,300	3,500
MINING COSTS							
Workforce employment	RMB'000	43,520	50,062	54,184	58,615	58,615	81,552
Product marketing and transport	RMB'000	14,155	18,604	17,800	19,255	19,255	26,790
Fuel, electricity, water and other services	RMB'000	6,459	9,222	5,355	5,793	5,793	8,060
Non-income taxes, royalties and other governmental charges	RMB'000	12,199	11,832	12,443	18,400	18,400	28,000
Unit mining costs per tonne of ore mined	RMB/tonne	37.54	45.50	43.29	44.38	44.38	41.26
Total mining costs	RMB'000	**76,333**	**89,721**	**89,782**	**102,064**	**102,064**	**144,402**
PROCESSING COSTS							
Total processing volume	tonnes'000	1,976	2,041	2,040	2,300	2,300	3,500
Workforce employment	RMB'000	8,608	10,443	15,410	16,671	16,671	23,194
Consumables	RMB'000	11,187	11,586	17,691	19,138	19,138	26,627
Fuel, electricity, water and other services	RMB'000	29,220	34,965	32,023	35,515	35,515	54,045
On and off-site administration	RMB'000	3,062	3,295	6,266	6,778	6,778	9,430
Transportation of workforce	RMB'000	0	0	0	0	0	0
Contingency allowances	RMB'000	0	0	0	0	0	0
Product marketing and transport	RMB'000	0	5,878	7,741	8,374	8,374	11,651
Non-income taxes, royalties and other governmental charges	RMB'000	200	250	400	444	444	675
Unit processing costs per tonne of ore processed	RMB/tonne	26.46	32.54	38.99	37.79	37.79	35.89
Total processing costs	RMB'000	**52,278**	**66,418**	**79,531**	**86,920**	**86,920**	**125,623**
Total Mining and Processing Cost	RMB'000	**128,611**	**156,138**	**169,313**	**188,984**	**188,984**	**270,025**
MANAGEMENT EXPENSES							
Environmental protection and monitoring	RMB'000	270	218	218	236	236	329
On and off-site administration	RMB'000	15,414	21,993	22,003	23,803	23,803	33,117
Product marketing and transport	RMB'000	4,434	4,381	9,451	10,224	10,224	14,224
Non-income taxes, royalties and other governmental charges	RMB'000	2,380	5,907	7,296	8,092	8,092	12,314
Other Expenses	RMB'000	0	0	0	0	0	0
Total management expenses	RMB'000	22,498	32,499	38,968	42,355	42,355	59,984
Total Cash Operating Expenses	RMB'000	151,109	188,637	208,281	231,339	231,339	330,008
Depreciation and Amortisation	RMB'000	14,587	14,336	17,851	19,798	19,798	30,127
Total Production Cost	RMB'000	**165,696**	**202,973**	**226,132**	**251,136**	**251,136**	**360,135**

18.1.2 Operating Cost Estimate

Information used to estimate the future operating costs was gathered from the Preliminary Design report (Shandong Province Metallurgical Engineering Company Limited, 2008) and the Feasibility Study report (Shandong Lianchuang Architectural Design Company Ltd, 2011) and information provided by the company detailing the present and future planned mining and processing design capacity and scheduled increases (Table 18-1).

Future operating costs have been estimated on the following basis:

- The total volume processed changes from 2.3 Mt per year to 3.5 Mt per year by 2014 following completion of the scheduled expansion of mining and processing facilities.

- The total volume processed remains fixed at 3.5 Mt per year from 2014 to the end of mine life (approximately 13 years, based on current reserves).

- The concentrate tonnage is a function of the estimated production rates and the head grades calculated from the mine schedule, taking into account losses due to mining and material that cannot be recovered during processing.

- Mining costs have been projected from recent historical costs, with costs forecast to increase at a rate proportional to 75% of capacity increase.

- Mining royalties were calculated on the basis of RMB6 per tonne of ore mined prior to 2012, and RMB8 per tonne of ore mined thereafter.

- Estimated processing costs are based on recent costs, with "fuel, electricity, water and other services" and "non-income taxes, royalties and other governmental charges", increasing directly proportionally to the increase in capacity, and other costs including "workforce employment", "consumables", "on and off site administration" and "product marketing and transport" forecast to increase at a rate proportional to 75% of the increase of processed ore.

- Contingency allowances are zero.

- Management expenses including estimated environmental protection and monitoring costs, on and off site administration, and production marketing and transport are based on recent costs, with costs forecast to increase at a rate proportional to 75% of capacity increase.

- Management expenses including non-income taxes, royalties and other governmental charges, and depreciation and amortization are based on recent costs, and are forecast to increase proportionally with tonnes processed.

- Costs are on a current cash basis and are not adjusted for inflation.

Having assessed the historical costs and the cost estimates provided in the Feasibility Study report, MCS considers that the above operating cost estimate for mining and processing is reasonable for an underground mine and magnetic separation plant of this size.

18.2 Capital Costs

The proposed capital expenditure for the expansion aimed at achieving the mining production and process feed rate of 3.5 million tonnes per annum of ore is shown in Table 18-2.

Table 18-2: Yang Zhuang Project Capital (Cost unit = RMB10,000)

No.	Work or expense description	Construction expense	Equipment purchase expense	Installation expense	Other costs	Amount *(RMB10,000)*
1	Engineering and Construction cost	10,890.83	4,747.16	488.05	0	16,126.04
2	Construction and other expenses	0	0	0	927.53	927.53
3	Reserve funds	0	0	0	1,706.36	1,706.36
4	**Total investment for expansion**	10,890.83	4,747.16	488.05	2,632.89	18,758.93
5	Interest During Construction Period	0	0	0	710.68	710.68
6	Working Capital	0	0	0	1,810.26	1,810.26
7	**Total capital**	10,890.83	4,747.16	488.05	5,153.83	19,469.61

Source: Shandong Lianchuang Architectural Design Co. Ltd (2010 and 2011)

A three year work program splitting the mine expansion into three stages was proposed in the expansion study. This was as follows:

(1) Stage 1 – renovation of the existing mining operation.

(2) Stage 2 – development of new declines.

(3) Stage 3 – development for new stopes.

Table 18-3: Yang Zhuang Project Capital Expenditure by Stage

Stages	Date	Construction Items	Construction Capital	Production Capacity
			Million RMB	*Million Tonnes*
1st	June 2012 – July 2012	Current Mining System Rebuild	62.43	2
2nd	August 2012 – June 2013	0 m Level above Development System Construction	65.40	2
3rd	July 2013 – December 2013	0 m Level above Production System Construction	84.97	3.5

The basis of estimation of capital expenditure was by use of quotes for Major Equipment items and estimations using approved tables, work rates, and escalation factors for installation and construction.

MCS believes the expansion plan is feasible and that the capital cost estimates are reasonable within a range of plus or minus 10%. It is assumed that the above capital figures do not cover the costs of geological prospecting and exploration expenses which were most likely included as part of the original capital investment. They also do not include any carryover of capital expenditure from the recent expansion to 3.5 Mtpa.

19 PRICE ESTIMATION AND FORECAST

The following information excerpt on price forecasts was sourced from the Feasibility Study report prepared by Shandong Lianchuang Architectural Design Co. Ltd (2011).

"In 2010, the price of iron concentrate powders (58% grade) in domestic was between RMB1,400 to RMB1,500/tonne, and the average price in December was RMB1,380/tonne. Analysing the fluctuation of iron ores prices and market factors at home and abroad, forecast the selling prices of iron concentrate (58% grade) will remain approximately at RMB1,480/tonne. The four trillion investment item and the top ten industry plan are under execution at present. The demand for steel and iron will increase continuously and stably for a long time. The iron ore price will remain synchronous and stable growth."

A marketing study was not part of the scope of this report, however MCS considers that the financial analysis provided by the client seems a little optimistic when compared to forecasts used by companies outside of China."

The product from the Yang Zhuang project is 66% Fe concentrate which would ordinarily attract a premium to the price quoted for 58% Fe concentrate. Whilst MCS is in agreement with the analysis that future demand for good quality iron ore concentrate in China will remain strong, given that recent prices have been in the range of RMB1,200 to RMB1,300/tonne for 58% Fe concentrate, MCS has elected to use the price of RMB1,390/tonne for future sales of the 66% Fe concentrate product from Yang Zhuang.

20 ENVIRONMENTAL PROTECTION

20.1 Design Basis

The following sources of information were used to guide the environmental protection initiatives:

(1) Regulations on the Administration of Construction Project Environmental Protection Promulgated by Decree No. 253 of the State Council;

(2) GuoHuan Zi (87) No. 002 Document Design Regulations of Construction Project Environmental Protection;

(3) Design Regulations of Environmental Protection for Metallurgical Industry YB9066-95;

(4) Regulations on Environmental Protection Facilities Division Scope for Metallurgical Industry YB9067-95;

(5) Integrated Emission Standard of Air Pollutants GB16297-1996;

(6) Emission Standard of Air Pollutants for Coal-burning Oil-burning Gas-fired Boiler GB13271-2001;

(7) Integrated Wastewater Discharge Standard GB8978-1996;

(8) Standard of Noise at Boundary of Industrial Enterprises GB12348-90.

20.2 Major Pollutants and the Control Measures

20.2.1 Mining Operations

20.2.1.1 Dust and Pollution Air

Mining dust is generates due to drilling, blasting, shovel loading, transport and other sectors. The amount of dust is minimised through the use of the mine's underground ventilation system, by using wet rock drilling and using sprinklers on the blast heaps, loading areas and haul roads. Portable fans are used in working areas where ventilation is otherwise poor. Personnel are employed to undertake periodic testing and facilitate timely adjustments ventilation structure or air flow.

20.2.1.2 Waste Gas

Harmful gases produced from blasting operations are dispersed with the use of the ventilation system. If necessary, auxiliary fans are set up on the upper part of return air shaft in the stope for ventilation. Emulsion explosives are used for blasting and non-electric detonators for detonating.

20.2.1.3 Underground drainage

Water is collected from the mine workings through the use of a pumping system. The water is transported to surface through the use of the underground pump house. The main pollutants in the pit drainage are suspended solids.

20.2.1.4 Waste rock

The daily waste rock amount is 129.9 m^3/d. After being transported to the surface, the expanded waste rock is delivered directly to the waste dump. Waste rock is used to backfill mined stopes, so most of mine waste rock will be left underground.

20.2.1.5 Equipment noise

Processes such as drilling, blasting and truck haulage generates noise greater than 85dB (A). Much of the noise generated is shielded by the pit walls and additionally the mine is far from the village, so the noise produced has almost no disturbing effect. For noise of industrial sites on the surface, noise is mitigated by placing equipment indoors and using noise dampening facilities.

20.2.2 Beneficiation Operations

20.2.2.1 Dust

Dust will be produced in the fine crushing and screening process, and in fine ore bin. Numerous wet scrubbers are used within the plant to suppress the dust produced from the operation. These include the CJ1226 type CJ1223 type wet scrubbers designed specifically for the intermediate and fine crushing plant. The air volume for these is 42,000 m^3/h and 36,000 m^3/h respectively. Four sets of CJ1220 type wet scrubbers and one set CJ1200 type wet scrubber are also used for the screening plant. A CJ1213 type wet scrubber is designed to be equipped for the fine ore bin, the air volume is 12,000 m^3/h. Collection efficiency of the wet scrubbers is 99%, so dust discharge concentration is not larger than 80 mg/m^3.

20.2.2.2 Waste water

All beneficiation wastewater is discharged into the tailing pond. After clarification, the water is either re-used in the beneficiation process or it also can be used as tailing seal water.

Total water consumption of the project is 50,480 m^3/d (including 1,700 m^3/d of unplanned water). Recirculated water is 5,003 m^3/d, reuse water is 27,460 m^3/d and therefore the ratio of water reuse is 67%. Production waste drainage of the whole mine is 936 m^3/d (including 840 m^3/d unplanned discharged water). Domestic sewage amount is 60 m^3/d, which could be used for greening and agricultural irrigation after being treated by septic tank.

20.2.2.3 Mine tailings and down-hole sludge discharge

The mine makes use of tailings by using it as fill material back into the excavated areas. Portland cement is used as an additive into the fill material. When filling, load waste rock is used along with sand bags to build the retaining wall and erect vent wells. At times when the filling and mixing station is being maintained, the tailings are sent to the to the tailings dam.

20.2.2.4 Equipment noise

The main processes producing significant noise on site include intermediate crushing, fine crushing and operation of the ball-mill. Measures taken to reduce the noise include the installation of an anti-vibration pad and the use of building insulation. This allows the site to meet the minimum requirements of Standard of Noise at Boundary of Industrial Enterprises GB12348-90.

20.2.3 Miscellaneous Production

Two boilers are used on site; one for heating and showers and one for use as an industrial boiler. Bituminous coal is used for the industrial boiler and it uses approximately 5,000 tpa. Multiple cyclones are used to remove dust and gas emitted from the boiler, its collection efficiency is 92%~95%. The boiler emissions include smoke and dust at 144 mg/m^3, SO_2 at 505 mg/m^3 and ash at 1,250 tpa.

20.3 Environmental Impact Analysis

Mining and beneficiation industrial sites are far away from the village and do not take up farmland. As a result, the area is conducive to pollutant dilution and diffusion. The only pollutants discharged into the environment during mine production are dust, underground exhaust gases and water.

Wet scrubbers with 99% collection efficiency are equipped on the coarse crushing station, intermediate and fine crushing plant, screening plant and fine ore bin. Exhaust gases contain dust and minor CO and NOX, which will be discharged from the pit via ventilation facilities. The discharged waste gas has an insignificant impact on atmospheric quality after it has been diluted by the air in the environment.

Where waste water is not discharged to the tailings dams, it is often re-used in the mining process. This prevents the mine having any effect on the environmental quality of the Donggou stream of Wangnian Village.

The ratio of backwater reuse of the project is only 67%, which is lower than the minimum standard of 75% specified in Integrated Wastewater Discharge Standard GB8978-1996. This is because, although the project re-uses water in the beneficiation plant, part of water supply needs to be used to cover the tailings surface in order to suppress dust. In addition to this, water for wet drilling, air compressor cooling, filling and mixing and other operations cannot be reused. This limits the amount of water that can be re-used.

Barren rocks and tailings in mining are all general solid wastes. During stope filling production, most waste rock and tailings are sent to underground for filling, not taking up arable land, but also reducing the destruction of mining on the environment. The tailings shall be sent to be piled in tailing pond if taking no filling operations. When piles the tailings, manifold ore drawing can be adopted to reduce the area of dry slope section and avoid dust emission of tailings, meanwhile, the water spraying device can ensure moisture content of the precipitation section, the other tailings can be covered by water closing, so dust pollution can be avoided. Therefore, tailings filling or piling both have little impact on ambient air quality and ecological environment.

The barren rocks and tailings are properly disposed of and have minimal impact on the environment. The solid waste from boiler ash can be comprehensively used in road works, coal ash brick making and so on. This is a profitable way of using the waste by-product and ensures it has no impact on environment.

20.4 Greening

Since the mining operations are underground the harm to the surface environment is minimised and the beatification of the surface works is maximised. The green area of mining and beneficiation industrial site is 3.3 ha and the ratio of green space is 15%.

20.5 Environmental Management and Monitoring

20.5.1 Environmental management organization

Environmental protection and occupational health and safety (OHS) works of the Yangzuang Mine makes use of the level 1 institution and level 2 management. In detail, the Security Environmental Protection Section will consist of six people and it is set up to strengthen the environmental management of the company. Part-time environmental and OHS personnel are employed in the production area, dressing plant and each working section to assist in emissions meet the standards and to ensure safety and health of the workforce.

The main responsibilities of Security Environmental Protection Section in environmental protection management are:

(1) Implement codes and standards about environmental protection, be responsible for environmental protection for the whole mine, work out environmental protection work plan of the whole mine, and perfect rules and regulations of the environmental protection organization;

(2) Monitor operating conditions of environmental protection processing facilities and ensure effectiveness of pollution control facilities of the mine;

(3) Supervise environmental incident reporting and undertake incident investigations;

(4) Comply to environmental reporting standards specified at Provincial, Municipal and National levels;

(5) Undertake environmental monitoring of the mine site.

20.5.2 Environmental monitoring

Yishui County or Linyi City Environmental Monitor Station is authorised to undertake annual environmental monitoring. The monitoring audits the pollutant emissions of the mine to ensure it meets the standards and requirements, and to determine the effect of these emissions on the local environment. The following items would be included in the annual monitoring process:

(1) Tailings exterior draining monitoring;

(2) Monitoring items: pH, SS etc.;

(3) Coordinate with Yishui County or Linyi City Environmental Monitor Station to take one or two times survey on key pollution sources every year.

20.6 Water & Soil Conservation and Reclamation

The predominant aim of the water and soil conservation plan is to effectively prevent and control the potential water loss and soil erosion of the project area during construction period. Additionally, any change to the ecological environment of the project area will be rehabilitated.

Preventative measures to be implemented include checking the dam in waste-rock yard, planting trees, sowing grass seeds and laying turf.

Numerous rehabilitation initiatives will be implemented upon the completion of mining to restore the environment to its original state. In particular, cement mortar will be injected on slopes and ground surfaces for slope protection and slopes will be covered with soil and plant vegetation. Grass seeds will be sowed at the waste-rock yard and tailings pond to restore the ecosystem.

20.6.1 Personnel Quota

When ore rock production scale reaches 3.5 million t/a, the total fixed number of project personnel is 827, including 749 production employees and 78 managers (Table 20-1).

Table 20-1: Estimated results of fixed number of project personnel

	Number of the employees	Enrolment coefficient	Number of people in the register
Production staff	576	1.3	749
Managerial personnel	78	1	78
Total	654		827

The main basis for personnel quota preparation is the planned production process and selection of equipment. Personnel quota is determined with reference to indicators of similar mines.

21 RISK ASSESSMENT

The Mining Industry and the projects within it are relatively high risk when compared to projects in industrial and commercial spheres. Each project is based on an estimate of the mineral deposit and each deposit has unique quality characteristics and response to mining and processing operations which, despite many advances in technology can still not be wholly predicted.

A risk analysis has been undertaken of the financial implications of using AS 4360 as the basis in line with the requirements of the Valmin Code (2005).

The MCS risk analysis (Table 21-1 and Table 21-2) of the Yang Zhuang project has not indicated that there are any risks with catastrophic consequences in the data presented for review. It is MCS view that the Yang Zhuang project has a project risk profile that is typical of mining projects at similar levels of resource estimation, mine planning and project development. Information from the risk assessment was used for the resource and reserve categorisation.

MCS notes that in most instances the risk identified in Table 21-2 could be mitigated by undertaking more detailed technical studies and providing additional information.

Table 21-1: Risk Assessment Matrix

Consequence →					
Financial (Value of Project)	1% of Project Value	2.5% of Project Value	> 5% of Project Value	> 15% of Project Value	Project Failure

Likelihood: Numerical	Historical			Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
>1 in 10	Is expected to occur in most circumstances	Almost Certain	5	6	7	8	9	10
1 in 10 - 100	Will probably occur	Likely	4	5	6	7	8	9
1 in 100 – 1,000	Might occur at some time in the future	Possible	3	4	5	6	7	8
1 in 1,000 – 10,000	Could occur but doubtful	Unlikely	2	3	4	5	6	7
1 in 10,000 – 100,000	May occur but only in exceptional circumstances	Rare	1	2	3	4	5	6

Table 21-2: Project Risk Summary

Items	Discussion	Risk
Drilling Techniques	Standard industry methods of diamond drilling were used, with regular downhole surveys taken.	4
Drill Sample Recovery	Mean weighted core recovery 96%	2
Sampling Techniques and Sample Preparation	Core was split and samples prepared using industry standard methods. Documented sample handling procedures appear appropriate.	3
Quality of Assay Data	Assay precision 412 samples (7.7% all assays) 3.10% TFe, 5.29% TiO_2. Assay bias of 206 samples (3.9% all assays) no sig bias.	3
Verification of Sampling and Assaying	A selection of diamond drill core was checked on site. All results checked were verified.	3

Items	Discussion	Risk
Location of Sampling Points	Surveying methods were adequate and but no collar locations could be identified as all under farm land. Plans and data independently verified. Downhole surveys utilised industry standard methods.	5
Data Density and Distribution	Mineralisation defined on adequate drill spacing and with trenches for the type of deposit and style of mineralisation. Sparser data at margins and deeper parts of the mineralisation reflected by lower confidence.	4
Audits and Reviews	Micromine is unaware of any external reviews.	3
Database Integrity	Verification of original drawings by MCS	3
Geological Interpretation	The mineralisation constraints are considered appropriate for the type and grade of mineralisation.	3
Specific Gravity Determinations	SG database from drillhole samples, representative throughout deposit.	4
Estimation and Modelling Techniques	Domaining and interpolation by Ordinary Kriging with the result cross-checked by Inverse Distance Weighting.	2
Mining Method	The mining method is currently being used. The proposed expansion plan and timeline is achievable. No significant problems are expected.	3
Stope Optimisation and Design	No stope optimisation has been carried out for the project at this stage and the final designs have been prepared manually. MCS checked the design against an the resource model and created new stope shapes using the parameters in this report.	3

Items	Discussion	Risk
Mine Scheduling	MCS developed a life of mine schedule based on sequential development and mining of the orebody.	2
Reserves Estimation	The reserves have been calculated using a Micromine block model as well as product prices, costs, and assumptions that are all susceptible to change. The sensitivity analysis shows that the project is robust.	6
Processing	The project has been in production for more than 3 years. Provided the ore characteristics remain relatively homogeneous, the risk of failing to achieve planned recoveries is minor to moderate.	2

This information was used for the resource and reserve categorisation.

22 CONCLUSIONS AND RECOMMENDATIONS

22.1 Resource Estimation

The total iron (TFe) resource as estimated by MCS is shown in Table 22-1. Resources, with an applied reported above an economic cut-off of 15% TFe, balancing cut of 38% TFe, are reported above an economic cut-off of 15% TFe.

Table 22-1: Resource statement for the Yang Zhuang project

Resource Category	Volume *(m^3)*	Tonnes *(t)*	SG *(t/m^3)*	TFe *(%)*	mFe *(%)*
Measured	5,599,000	18,218,000	3.25	26.23	11.72
Indicated	16,232,000	52,753,000	3.25	26.81	10.66
Total Measured and Indicated	21,831,000	70,971,000	3.25	26.66	10.93
Inferred	5,530,000	17,791,000	3.22	24.60	8.79
Total Resource	27,361,000	88,762,000	3.24	26.25	10.50

Note: Numbers have been rounded to reflect that the resources are an estimate. As such the numbers may not total to an equal amount.

Additional resource potential can be realised at depth along the length of the orebody and in the deepest parts in the southern part of orebody 1. There is also potential along strike of the orebody at both ends of the orebodies, where mineralisation has not been adequately defined.

22.2 Mining Study

The following two underground mining methods are appropriate for the Yang Zhuang deposit:

- Sublevel caving method (filling after mining)
- Short hole shrinkage method (filling after mining)

The sublevel caving method is applicable to areas where the orebody has a thickness greater than eight metres while the short-hole shrinkage stoping method is applicable to areas where the orebody has a thickness of less than eight metres.

Only the Short hole shrinkage method has been used until now due to instability of the hanging wall in the current operation.

The quantity component of Resources is termed Gross Tons In Situ, (GTIS) and is the starting point in the derivation of Reserves. The process used to convert GTIS to Reserves is as follows:

- Step 1: GTIS is converted to Mineable Tons In Situ (MTIS);
- Step 2: MTIS is converted to Reserves.

The classification component of Reserves is based on the classification of the Resource.

To convert the GTIS to MTIS the layout as defined by the Short Hole Shrinkage (SHS) mining method was applied to the ore wireframes. This had the effect of "blocking out" the ore wireframe with the SHS mine design parameters. The "blocked out" ore wireframes were then coded in MICROMINE to exclude the Inferred Resources and blocks with tonnages less than 80,000 tonnes.

Factors were applied to MTIS include a loss of 18.5% for ore left in pillars, a modelling estimation error of 3% and an mFe grade cut-off of 8.0% based on the cost model.

The MCS reserve statement **(current as of, November 2011)** for the Yang Zhuang deposit is shown in Table 22-2.

Table 22-2: JORC Compliant total Reserves for the Yang Zhuang deposit

Reserve Classification	**Ore Tonnes** *(Mt)*	**Grade TFe** *(%)*	**Grade mFe** *(%)*	**Contained TFe** *(Mt)*	**Contained mFe** *(Mt)*
Proved	11.00	24.17%	11.68%	2.66	1.28
Probable	32.94	24.72%	10.26%	8.14	3.38
Total	43.93	24.58%	10.61%	10.80	4.66

Note 1: Numbers have been rounded to reflect that the reserves are an estimate. As such the numbers may not total to an equal amount.

Note 2: Contained TFe and mFe does not imply that all the TFe and mFe can be recovered. Processing recovery has not been accounted for in the calculation.

The project has an estimated mine life of 13.2 years.

MCS recommends that pilot-scale mineral processing testwork be carried out to determine the true recovery rates for the particular ores, processing equipment and design parameters of this project. Based on the results of processing testwork recovery rates may need to be revised either upwards or downwards.

23 COMPETENT PERSON STATEMENT

This report was prepared and signed herein by Competent Persons who, having relevant experience to the style of mineralisation and the type of the deposit under consideration, are thereby considered Competent Persons according to the definition explained in the JORC Code.

Neither MCS nor any of the authors of this Report has any material, present or contingent interest in the outcome of this Report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of MCS. MCS's fee for completing this Report is based on its normal professional daily rates plus reimbursement of incidental expenses. Payment of that professional fee is not contingent upon the outcome of the Report.

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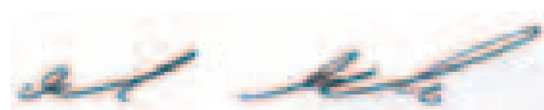
The issuer has not provided any indemnities to the Competent Person.

By signing this report, we hereby confirm that the reporting terminology, mineral resource and reserve classification, and estimation results in this report are compliant with the policy and procedures (required for the control of the quality of reporting of mineral resource and reserve estimates) as specified by the JORC Code.

17 April 2012

Signed by

David Allmark
MCS Senior Geological Consultant
Micromine Pty Ltd



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David Allmark, Senior Resource Estimation Consultant; BSc (Geology), MAIG, MAusIMM, graduated in 1993 from Curtin University of Technology in Perth, Western Australia with a Bachelor of Science (Applied Geology) and Postgraduate Diploma in Applied Geology. David later completed an Advanced Diploma of Business Systems majoring in Java programming from Spherion Institute. David has twelve years' experience in the mining and exploration industry involved predominantly in iron ore, base metals and gold exploration and mining. David has worked on the Higginsville and Chalice Gold Projects and the Bulong Nickel Project for Resolute Ltd, the Koolyanobbing and Windarling iron ore projects for Portman Ltd and the West Pilbara iron ore project for Aquila Resources. David has recent experience as Senior Project Geologist for Dragon Mountain Gold's Lixian Project in Gansu Province, China, and has conducted JORC resource estimate related work on gold and base metals projects in Mongolia for Micromine Pty Ltd.

Tony Cameron, Associate Mining Consultant; B Eng (Mining), Grad Dip Bus, M Comm Law, FAusIMM, graduated in 1987 from the University of Queensland and also has a Graduate Diploma in Business from Curtin University (WA), and a Masters in Commercial Law from Melbourne University. Tony has more than 20 years' experience in the mining industry involved predominantly in iron ore, base metals, gold, copper, and mineral sands mining. He held senior management positions with mining companies in Western Australia including St Barbara Mines, Sons of Gwalia, Tiwest, and McMahon between 1995 and 2001. Tony has worked as an independent mining consultant since 2001 and is expert in the use of mine optimisation, design, and scheduling software, having evaluated numerous international minerals projects to JORC and NI-43101 standards.

24 ACKNOWLEDGEMENTS

MCS would like to acknowledge the staff of JLL, particularly Mr. Jack Li and Ms. Annie Zhang, all the staff of Shandong Xingsheng Mining Company Limited and the Shandong No.8 Exploration Institute of Geology and Mineral Resources who assisted on site and in the preparation of this independent technical report. Report sections for Location and Transport, Geology and Project History were provided by the JLL team led by Mr. Simon Chan and assisted by Ms. Annie Zhang of JLL.

25 REFERENCES

(1) Shandong Province Metallurgical Engineering Company Limited (2008), *Preliminary Design of Yangzhuang Iron Deep Mining Project for Shandong Xingsheng Mining Company Limited*

(2) Shandong No.8 Exploration Institute of Geology and Mineral Resources (2008), *Yang Zhuang Iron Ore Deposit Detailed Geological Survey Report – Yang Zhuang Mine Surrounding Area and Deeper Location*

(3) Shandong Lianchuang Architectural Design Company Limited (2011), *Feasibility Study Report of Yangzhuang Iron Mine Production Capacity Expansion Project of Shandong Xingsheng Mining Company Limited.*

26 DISCLAIMER

Micromine Consulting Services has compiled this document for Shandong Xingsheng Mining Company Co. Ltd., based on the assumptions therein identified and upon reports, drawings, designs, data and other information provided by Shandong Xingsheng Mining Company Co. Ltd., and others. Micromine Consulting Services was unable to check the veracity of the supplied data. Micromine Consulting Services has relied upon information that has been prepared by non-qualified persons during the preparation of this report. Micromine Consulting Services are not in a position to, and do not, verify the accuracy of, or adopt as their own, the information and data supplied by others. Parts of the document have been prepared by others or extracted from documents prepared by others, as identified in the document; the documents have not been audited by Micromine Consulting Services.

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27 APPENDIX 1: TENEMENT LICENCE CERTIFICATE

28 APPENDIX 2: YANG ZHUANG IRON PROJECT DATABASE VALIDATION AND ACCEPTANCE REPORT

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Yang Zhuang Iron Project

Database Validation and Acceptance Report

For

Shandong Xingsheng Mining Company Limited

9 March 2011

DATA FOR ACCEPTANCE

Database Contents

Data was provided by Shandong Xingsheng Mining Company Limited (the client) on 11th and 20th January 2011 and was compiled by JLL.

The provided data consisted of two Excel spreadsheets, each containing collar, survey, assay, core recovery, specific gravity data and lithological descriptions and other information in 8 worksheets.

The Excel spreadsheets provided were as follows:

3. Xingsheng 2005 Drilling data – Yangzhuang part 1 – 60 million ton.xls

4. Xinsheng 2008 Drilling Data – Yangzhuang part 1 – 60 million ton.xls

The contents of each worksheet in the Xingsheng 2005 Drilling data – Yangzhuang part 1 – 60 million ton.xls spreadsheet is shown in Table 28-1, while the contents of each worksheet in the Xinsheng 2008 Drilling Data – Yangzhuang part 1 – 60 million ton.xls spreadsheet is shown in Table 28-2.

Table 28-1: Contents of spreadsheet Xingsheng 2005 Drilling data – Yangzhuang part 1 – 60 million ton.xls as supplied

Worksheet	No. of Holes, Trenches and Adits	No. of Records
Survey	41	41
Collar	41	41
Assay	40	484
Geology	26	96
Recovery	10	1197
SG	32	32
Lookup Codes	NA	NA
Notes	NA	NA

Table 28-2: Contents of spreadsheet Xinsheng 2008 Drilling Data – Yangzhuang part 1 – 60 million ton.xls as supplied

Worksheet	No. of Holes, Trenches and Adits	No. of Records
Survey	79	79
Collar	79	78
Assay	70	882
Geology	61	296
Recovery	27	4228
SG	47	57
Lookup Codes	NA	NA
Notes	NA	NA

Database Preparation and Validation

The files of both spreadsheets were then prepared so that they could be imported into MICROMINE. To import the spreadsheets, the following was carried out:

1. Sorted hole IDs for both files A-Z for all excel worksheets.

2. Unmerge cells in Assay worksheets and copy value to all cells previously merged.

3. Concatenate and change sample numbers in both assay and SG files so sample numbers are unique. Change all double dashes '—' to single dash '–' in sample and hole ID fields.

4. Delete top header rows of Chinese characters.

5. Unmerge cells in recovery worksheets, cut and paste and calculate values for depths in new cells.

The resulting MICROMINE files were named as follows:

- Collar_2005.DAT

- Survey_2005.DAT

- Assay_2005.DAT

- Recovery_2005.DAT

- SG_2005.DAT

- Collar_2008.DAT
- Survey_2008.DAT
- Assay_2008.DAT
- Recovery_2008.DAT
- SG_2008.DAT
- Geology_2008.DAT

The spreadsheet Xinsheng 2008 Drilling Data – Yangzhuang part 1 – 60 million ton.xls contained duplicates of the 2005 data in all worksheets. The duplicates records were removed from each file and the respective files for 2005 data and 2008 data were combined to produce a single file for each parameter. The resulting files were named as follows:

- all_collars.DAT
- all_surveys.DAT
- all_assays.DAT
- all_recovery.DAT
- all_SG.DAT
- all_geology.DAT

In addition, minor changes were made to the files after import into MICROMINE to enable production of a drillhole database in MICROMINE:

1. Changed field name in all_collars.DAT file from 'Depth (m)' to 'Depth'.
2. Changed field names in all_surveys.DAT from 'Dip (Degrees)', 'Azimuth_γ(degrees)' and 'Depth (m)' to 'Dip', 'Azimuth' and 'SDepth'.
3. A minus sign '-' was prefixed to all dip values in the all_surveys.DAT file.
4. Changed field name in all_surveys.DAT file from 'DEPTH (m)' to 'SDepth'.
5. Changed dip value of ZK10 from 'ND' to '-90.00 degrees'.

6. Changed azimuths of the following holes to '300.00' degrees:

   ZK21-1
   ZK25-1
   ZK28-1
   ZK32-1
   ZK44-1

7. Changed field name in all_assays.DAT file from 'Sample No#' to 'SampleID'.

8. Changed field names in SG.DAT file from 'Depth (from)' and 'Depth (to)' to 'From' and 'To'.

9. Added field named 'Interval' to SG.DAT and calculated sample intervals in metres.

10. Added field named 'Interval' to all_assays.DAT and calculated assay sample intervals in metres.

11. All blank spaces in required fields in all files were replaced with 'ND' (NO DATA).

The content of the single files in shown Table 28-3.

Table 28-3: Contents of MICROMINE files

Micromine files	No of Holes, Adits or Trenches	Number of Records
all_collars.DAT	78	78
all_surveys.DAT	79	79
all_assays.DAT	73	915
all_recovery.DAT	32	4,841
all_SG.DAT	47	57
all_geology.DAT	61	296

The original drawings from the exploration report were then supplied by the client on 20th January 2011 and MCS performed the following:

- Displayed geology plans and cross-sections in MapGIS then imported into MICROMINE. The plans and sections were then geo-referenced in MICROMINE and the collar positions and traces were checked.

- Checked collar coordinates, survey and assay data with the original data on the drawings.

- Entered additional downhole survey data for each drillhole that had not been included in the supplied data previously.

Several errors were discovered and corrected as detailed below:

File all_collars.DAT:

- Changed collar coordinates for ZK36-1 to match geo-referenced plan. Change from 3990582.537 N, 40393977.443 E, RL 339.99 m to 3990662.2 N, 40394014.0 E, RL 342.28 m.

- Changed collar coordinates for ZK36-3 to match geo-referenced plan. Change from 3990430.320 N, 40394336.313 E, RL 303.70 m to 3990466.5 N, 40394353.8 E, RL 304.50 m. Changed depth from '564.20' to '570.97'.

- Changed collar coordinates for CD9-7 from 3989146.260 N, 40392220.120 E to 3989050.830 N, 40392418.270 E. RL was not changed.

- Changed easting for ZK28-1 from 40339841.092 E to 40393841.092 E.

- Changed northing for ZK33-2 from 398768.766 N to 3987680.766 N.

File all_surveys.DAT:

- Trench azimuths all changed to '120.00' degrees from '0.00'.

- The data for 12 trenches and adits was not supplied. The azimuths were confirmed from the georeferenced exploration plan and all were altered from '0.00' to '120.00'. The hole IDs for these trenches and adits were as follows:

  CD7-36
  CD8-30
  CD8-32
  CD15-25
  TC8
  TC12
  TC16
  TC20
  TC29
  YD1-28
  YD1-30
  YD1-32

- Deleted records for CD8-32 from the survey file as there was no collar data.

File all_assays.DAT:

- Delete CD8-32 from assay database as there was no collar data.
- HoleID CD3-48, interval 14.40 m to 16.30 m. Changed 'To' value from 16.30 m to 16.40 m.
- HoleID CD08-1, interval 23.10 m to 25.10 m. Changed 'To' value from 25.10 m to 24.10 m.
- HoleID CD8-30, interval 17.60 m to 17.50 m. Changed 'From' value from 17.60 m to 17.10 m.

File all_SG.DAT:

- Added new field named 'New_holeID' and copied values from field 'HoleID' but deleted '–XT1' and '-XT2' suffixes from the end of some hole IDs to match the collar file.

The altered versions of the MICROMINE files were resaved under a different filename as below:

- all_collars.DAT saved as YZ_collars_v2.DAT
- all_surveys.DAT saved as YZ_surveys_v2.DAT
- all_assays.DAT saved as YZ_assays_v2.DAT
- all_SG.DAT saved as YZ_SG_v2.DAT
- all_recovery.DAT saved as YZ_recovery_v2
- all_geology.DAT saved as YZ_geology_v2

Additional recovery data for the 2008 drilling was later supplied by the client and incorporated with the previous data. The new combined recovery file YZ_recovery updated.DAT was added to the database instead of the previous file YZ_recovery_v2.DAT.

These new files are to be used as the final database for resource estimation.

The final database contains records for 40 drillholes, 8 trenches and 30 adits.

The number of records in the final database for each hole ID is shown in Table 28-4.

Table 28-4: Number of records for each holeID in final database

HoleID	Northing *(mN)*	Easting *(mE)*	RL *(m)*	Depth *(m)*	Survey Records	Assay Records	Geology Records	SG Records	Recovery Records
CD1-54	3991486.120	40394245.670	360.72	10.70	1	8	3	0	0
CD2-52	3991401.840	40394188.670	356.25	16.60	1	10	3	0	0
CD3-48	3991236.220	40394098.760	347.16	16.90	1	10	3	1	0
CD4-44	3991076.280	40393982.670	343.11	14.90	1	9	3	0	0
CD6-40	3990936.070	40393871.680	360.17	21.50	1	13	3	1	0
CD7-36	3990792.140	40393788.070	346.74	11.20	1	7	0	0	0
CD08-1	3989307.814	40393354.988	170.00	24.10	1	13	3	1	0
CD8-28	3990346.960	40393686.250	274.84	16.90	1	10	3	1	0
CD8-30	3990447.520	40393710.480	274.84	17.50	1	11	0	0	0
CD09-1	3988946.674	40392414.288	202.00	21.60	1	11	3	1	0
CD9-7	3989050.830	40392418.270	257.05	20.10	1	12	3	1	0
CD10-7	3989064.480	40392398.350	295.64	17.20	1	10	3	0	0
CD10-9	3988984.230	40392339.170	295.64	21.20	1	12	3	0	0
CD10-11	3988908.370	40392265.220	295.64	18.10	1	11	3	0	0
CD10-13	3988820.130	40392219.410	295.64	22.90	1	13	3	1	0
CD11-15	3988746.430	40392162.370	287.73	31.40	1	18	3	0	0
CD11-17	3988649.280	40392129.420	287.73	26.70	1	15	3	0	0
CD12-17	3988634.170	40392154.690	251.27	36.30	1	20	3	1	0
CD15-25	3988251.310	40391984.470	272.19	20.80	1	12	0	1	0
CD21-1	3988449.731	40392071.389	202.00	34.40	1	17	3	0	0
CD24-1	3990178.454	40393609.053	278.76	22.20	1	11	3	1	0
CD25-1	3988239.834	40391984.995	225.00	38.10	1	19	3	2	0
CD29-1	3988157.131	40391923.424	225.96	24.00	1	11	3	0	0
CD36-1	3990778.546	40393813.035	315.08	22.00	1	11	3	0	0
CD44-1	3991061.045	40394035.347	291.56	10.20	1	5	3	1	0
CD52-1	3991388.235	40394235.798	314.00	19.10	1	10	3	2	0
TC1	3989349.420	40392542.170	268.47	14.10	1	8	3	0	0
TC5	3989162.340	40392430.190	303.50	18.20	1	10	3	0	0
TC8	3989353.340	40393297.670	249.07	17.00	1	10	0	1	0
TC12	3989542.120	40393368.370	256.78	19.40	1	11	0	0	0
TC16	3989742.270	40393423.420	288.38	9.80	1	6	0	1	0
TC20	3989946.470	40393469.320	300.41	18.00	1	10	0	1	0
TC24	3990161.360	40393600.410	315.43	19.50	1	11	3	0	0
TC29	3988086.120	40391872.790	249.04	13.10	1	8	0	0	0
YD1-28	3990360.830	40393662.120	322.03	17.70	1	11	0	1	0
YD1-30	3990460.360	40393686.970	322.03	18.50	1	11	0	1	0
YD1-32	3990562.030	40393712.140	322.03	17.70	1	11	0	0	0
YD2-21	3988456.340	40392052.190	278.82	24.70	1	14	3	1	0

HoleID	Northing (mN)	Easting (mE)	RL (m)	Depth (m)	Survey Records	Assay Records	Geology Records	SG Records	Recovery Records
ZK1	3989136.590	40392479.230	300.47	105.20	1	12	6	2	53
ZK01-1	3989289.104	40392652.519	290.69	264.90	3	7	11	0	101
ZK2	3988789.540	40392271.380	394.12	199.40	2	10	5	2	105
ZK3	3988595.340	40392222.170	379.86	249.80	2	24	4	2	132
ZK4	3988218.640	40392043.380	308.94	180.30	1	13	4	0	128
ZK5	3988724.330	40392388.270	338.67	289.20	3	14	5	2	166
ZK05-1	3989015.280	40392609.201	280.44	366.80	8	0	4	0	129
ZK6	3990320.180	40393733.270	360.71	179.60	2	14	4	2	92
ZK7	3990538.140	40393757.230	387.74	174.80	2	24	5	2	117
ZK8	3990899.540	40393937.240	461.07	197.40	2	13	0	2	0
ZK08-1	3989183.536	40393587.420	247.33	386.70	4	0	11	0	170
ZK9	3991205.120	40394151.950	403.87	139.00	2	16	4	1	91
ZK09-1	3988859.625	40392501.053	309.71	265.50	6	7	10	1	99
ZK10	3990488.500	40393842.420	353.89	293.80	3	13	0	2	0
ZK10-1	3989379.654	40393493.230	257.80	200.60	4	3	3	1	147
ZK11	3987874.500	40391857.140	299.86	203.30	2	8	7	2	129
ZK12	3987313.410	40391876.270	249.01	260.10	1	11	4	0	184
ZK13-1	3988666.789	40392515.245	309.79	481.50	8	0	5	0	170
ZK16-1	3989675.976	40393589.364	269.73	384.90	8	6	22	1	168
ZK20-1	3989864.328	40393611.434	299.96	251.30	5	11	6	0	88
ZK21-1	3988336.592	40392264.278	331.71	371.00	8	20	0	2	127
ZK24-1	3990089.354	40393726.115	308.10	220.00	5	7	5	1	115
ZK24-2	3990033.701	40393830.015	287.25	381.20	7	4	5	0	153
ZK25-1	3988188.699	40392093.185	335.54	364.00	7	26	0	1	192
ZK28-1	3990255.934	40393841.092	322.02	271.70	3	8	0	1	169
ZK28-2	3990185.191	40393966.655	295.68	396.30	4	12	10	1	218
ZK28-3	3990057.054	40394199.208	301.90	716.10	7	0	6	0	361
ZK29-1	3988032.948	40391964.431	288.63	268.40	3	35	5	1	0
ZK29-2	3987996.943	40392053.839	314.48	415.60	5	16	12	1	154
ZK29-3	3987890.473	40392216.920	349.81	532.50	6	0	7	0	191
ZK32-1	3990381.934	40394027.868	300.10	390.50	8	11	8	1	157
ZK33-1	3987795.229	40391974.279	302.47	375.80	8	32	5	0	131
ZK33-2	3987680.766	40392197.465	306.04	533.80	10	16	5	0	184
ZK36-1	3990662.200	40394014.000	342.28	285.20	6	14	7	1	96
ZK36-3	3990466.500	40394353.800	304.50	564.20	10	17	4	0	196
ZK37-1	3987571.239	40391989.957	284.05	436.50	8	25	4	1	0
ZK37-2	3987478.969	40392161.372	270.35	675.00	7	17	4	1	233
ZK44-1	3990984.792	40394140.331	443.97	324.30	4	5	0	1	0
ZK44-2	3990883.391	40394303.843	425.60	642.50	7	4	5	1	255
ZK52-1	3991202.486	40394548.059	338.84	458.90	10	0	3	0	155

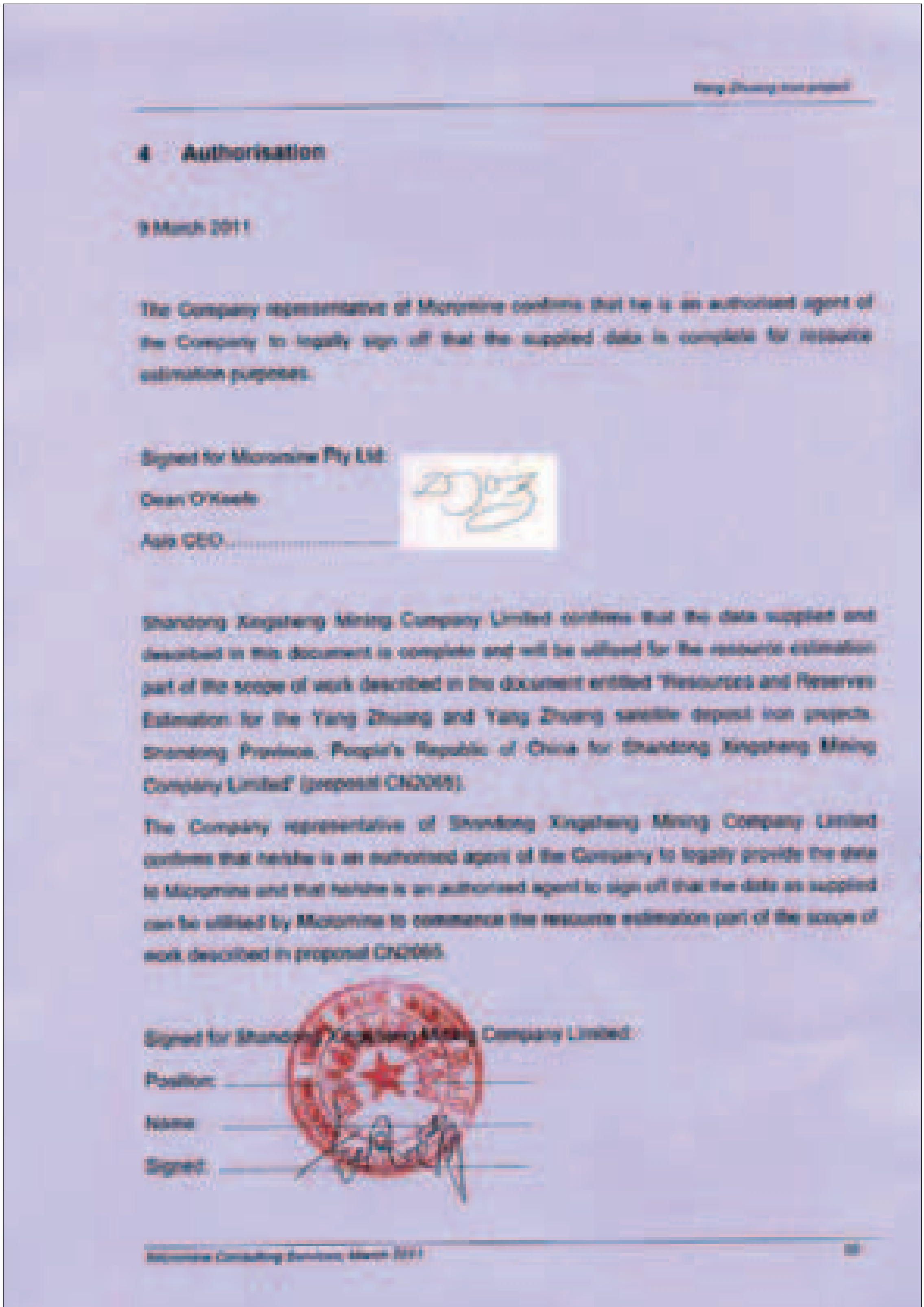
- A surface to which the deposit has been currently mined and outlines of underground mined-out areas and other underground development were provided to MCS by the client as plans and cross-sections in AutoCAD file format and as surveyed coordinate point data in ASCII file format on 12th February 2011. MCS has constructed three dimensional surfaces and solids from this data which will be used for the resource estimation.

Missing Data

- A total of 6 drillholes in the database have no assay data. MCS queried this with the client and were informed that assays were not performed on the samples from these drillholes.

- All data available that is required for resource estimation has been supplied to MCS by the client.

Authorisation



4 Authorisation

9 March 2011

The Company representative of Micromine confirms that he is an authorised agent of the Company to legally sign off that the supplied data is complete for resource estimation purposes.

Signed for Micromine Pty Ltd:

Dean O'Keefe

Asia CEO ....

Shandong Xingsheng Mining Company Limited confirms that the data supplied and described in this document is complete and will be utilised for the resource estimation part of the scope of work described in the document entitled "Resources and Reserves Estimation for the Yang Zhuang and Yang Zhuang satellite deposit iron projects, Shandong Province, People's Republic of China for Shandong Xingsheng Mining Company Limited" (proposal CN2065).

The Company representative of Shandong Xingsheng Mining Company Limited confirms that he/she is an authorised agent of the Company to legally provide the data to Micromine and that he/she is an authorised agent to sign off that the data as supplied can be utilised by Micromine to commence the resource estimation part of the scope of work described in proposal CN2065.

Signed for Shandong Xingsheng Mining Company Limited:

Position: ______________________

Name: ______________________

Signed: ______________________

29 APPENDIX 3: GLOSSARY OF TECHNICAL TERMS & ABBREVIATIONS

3D	Three-dimensional.
%	Percentage.
Anisotropy	Quality of a variably to having different physical properties when measured in different directions.
ASL	Above sea level.
Assay	A measured quantity of material within a sample.
Azimuth	Azimuth angle on which an exploration hole was drilled (deviation to North).
Balancing cut	Value to which erratic high grades should be reduced to prevent bias in estimation. Also known as a top cut.
Coefficient of variation (CV)	In statistics, a normalised measure of the variation present in a sample population.
Collar	Geographical co-ordinates of a drillhole or shaft starting point.
Compositing	In sampling and resource estimation, process designed to carry all samples to certain equal length.
Correlation coefficient	A statistical measure of the degree of similarity between two parameters.
Cumulative frequency graph	Graphical representation of data ranked in ascending or descending order, which are shown in a non-decreasing function between 0% and 100%. The present frequency and cumulative present frequency forms are interchangeable, since one can be obtained from the other.
Cut-off grade	The threshold above which material is selectively mined or queried.
Declustering	In geostatistics, the procedure allowing for restricted grouping of samples within octant sectors.

DTM	Digital Terrain Model.
Geostatistics	Science studying and describing the spatial continuity of any kind of natural phenomena: Zn grades in this study.
GTIS	Gross Tons In Situ.
Histogram	A graphical presentation of the distribution of data by frequency of occurrence.
IDW	Inverse Distance Weighting.
Inverse Distance Weighting	Geostatistical method to calculate mineral resource. Since this method makes the weight for each sample inversely proportional to its distance from the point being estimated it gives more weight to the closest samples and less to those that are farthest away. Method works very efficiently with regularly gridded data. Extreme versions of inverse distance weighting are the global declustering methods like the polygonal method and the local sample mean method.
JORC Code	Australasian Code for Reporting of Mineral Resources and Ore Reserves.
L/s	Litres per second.
m	Metre.
M	Million or mega (10^6).
Mean	Average.
Median	Value of the middle sample in a data set arranged in rank order.
mFe	Iron in magnetite.
MICROMINE.	Mining and exploration software.
Micromine	Micromine Pty Ltd.
Micromine Consulting Services	Consulting division of Micromine Pty Ltd.

Mt	Million tonnes.
MTIS	Mineable Tons In Situ.
Nugget effect	Measure of the variability in re-analysing a sample due to sampling errors or short scale variability. Though the value of a variogram at 0 distance should be 0, several factors, such as sampling errors and short scale variability, may cause sample values to be separated by extremely small distances. The vertical jump at the origin of a variogram graph from 0 to a certain value at extremely small separation distance is called the nugget effect.
OK	Ordinary Kriging interpolation method.
Omni	In all directions.
Operating cost	The threshold cost below which mining a block would be un-economic.
Percentile	One hundredths of the total data. 50th percentile corresponds to the median.
Population	In geostatistics population encompasses grades which show the same or close geostatistical characteristics. Ideally, one population is characterised by linear distribution.
Probability plot	Plot showing cumulative frequencies over different intervals on a log scale probability plot.
Range	Distance at which a variogram reaches its plateau.
Recovery ratio	Proportion of mineral or metal recovered from the ore.
Resource	Geological mineral resource (mineable and unmineable).
RL	Reduced Level i.e. elevation relative to a local datum.

ROM	Run Of Mine. The Ore delivered from the mine that reports to the processing plant.
SEHK	Stock Exchange of Hong Kong.
SG	Specific gravity (unit tonnes per cubic metre).
Short-hole shrinkage stoping	Underground mining method in which blasted ore is left in the stope for support purposes until it is to be mined. Blasting resulting from the drilling and loading of short holes.
Sill	Distance at which variogram reaches its sill. Physically, there is no correlation between paired samples at that distance.
Spatial continuity	The description or function how continuous is the data values over a certain distance in three dimensions.
Standard deviation	A statistical measure of the dispersion of sample data around the mean value.
Stope	Open space left behind after the removal of ore from an under- ground mine.
t	Tonne.
TFe	Total iron.
TiO_2	Titanium dioxide.
t/m^3	Tonne per cubic metre.
TO	End of an intersection.
Top cut	See balancing cut.
Variance	In statistics, a measure of dispersion about the mean value of a data set.
Wireframe	Three-dimensional surface defined by triangles.
Wireframe solid	Closed wireframe.

30 APPENDIX 4: LABOUR SAFETY & HEALTH AND FIRE FIGHTING

30.1 Labour Safety & Health

30.1.1 Design basis

(1) Production Safety Law of the People's Republic of China;

(2) Law of the People's Republic of China on Safety in Mines, No. 65 Decree of the President of the People's Republic of China, 1992;

(3) Regulations for the Implementation of the Law of the People's Republic of China on Safety in Mines, 1996.10.30;

(4) No. 3 Decree of the Ministry of Labor, Supervisory Provisions of Labor Safety and Health in Construction Project (Engineering);

(5) Safety Regulation of Metal and Non-metal Underground Mine GB16424-1996;

(6) Safety regulations for Blasting GB6722-2003;

(7) Mine Safety Signs GB14161;

(8) Hygienic Standards for the Design of Industrial Enterprises GBZ1-2002;

(9) Standard for the Design of Noise Control System in Industrial Enterprises GBJ87-85;

(10) Sanitary Standard for Drinking Water GB5749-85.

30.1.2 Analysis of main hazards and harmful factors

The possible security influence factors in mining are mainly unpredictable accidental factors in the nature and security problems caused by irresistible causes. Such problems mainly lead to the release of compressive stress and resulting in roof caving, and sudden underground gushing water caused by unknown water body and not proven guide structure; second, illegal operations during the transport and equipment operations or security issues caused by equipment quality problems, human factors, and management factors. Specific possible safety factors in mining include the following:

(1) Danger of tail gas generated by the diesel shipping equipment.

(2) Surface subsidence.

(3) Roof and wall caving.

(4) Fire disaster.

(5) Flood.

(6) Explosive and blasting equipment hazards.

(7) Poisoning, suffocation and dust hazards.

(8) Electrical shock.

(9) Vehicle damage.

(10) Operating equipment damage.

(11) Noise damage.

30.1.3 Labour safety measures

30.1.3.1 Exhaust gas generated by the underground equipment for shipment

The tail gas generated by the down-hole vehicles contains hazardous substances, mainly CO and nitrogen oxides (NOx). These gases directly endanger human health and cause poisoning. Main preventive measures are:

(1) Use the special transport vehicles for underground mines, provide exhaust gas purification devices, and ensure it is in good working conditions in normal period.

(2) Enhance ventilation and provide fans and air volume according to the specified value in the safety regulations.

30.1.3.2 Surface subsidence

Main factors: after the ore is mined, the original rock stress balance is destructed, causing the wall rock deformation, displacement, cracking and collapse, and even large-scale movement. As the stoped out area continues to expand, the scope of the rock movement increases correspondingly. When the rock move and expand to the surface, the surface will emerge deformation and subsidence.

Preventive measures: the ore body occurs at the contact line on the top of Qunliuhang Formation of the Taishan rock and the Matsuyama unit monzogranite (partially metamorphosed to muscovite quartz schist due to the ductile shear). The ore body roof is of biotite hornblende granulite and amphibolite rocks, and the thickness varies in 1-10 m range. It locally contacts directly with the muscovite quartz schist. The bottom plate is generally the biotite hornblende granulite, locally the garnet-biotite-plagioclase granulite, and felsic pegmatite rock. Ore body roof lithology belongs to hard and semi-hard rock, with good compressive, tensile and shear properties and excellent solid performance, good mechanical properties, stability and engineering geological conditions. Ore body bottom wall rock belongs to hard and semi-hard rock, with good compressive, tensile and shear properties, solid performance, good mechanical properties and stability.

According to the observation of the mine roadway, most wall rocks in the pit are stable and shoring and other measures are not required. Therefore, the overall stability of the deposit roadway rock is better. The rock mass is stable, not easy to produce subsidence, collapse and other bad geological phenomena.

As the mined-out area adopts waste rock and tailings for filling, locally unstable roadways can be supported with sprayed concrete, so the large-scale collapse is unlikely.

In summary, formation wall rock in the mining area is solid. Filling measures have been taken and the preventive measures are reliable. Therefore, the surface subsidence is unlikely and the mine safety can be ensured.

30.1.3.3 Roof and wall caving

Main factors: the tectonic joint of the area is not developed, belonging to hard rock, with good mechanical properties, less prone to wall caving and roof fall accidents. In mining operations, affected by ore joints and cracks, local areas are prone to wall caving and roof fall accidents, which can damage the equipment and hurt workers or cause heavy casualties.

Preventive measures:

(1) According to the occurrence and geological structure features of the ore body, the mining method suitable for the geological characteristics of mining area is selected.

(2) In the mining process, improve mining intensity, speed up the cycle, shorten the top exposure time, strengthen the roof tapping work and diligently carry out inspection and handling.

(3) In construction, for the local unstable section, use sprayed concrete for shoring with a thickness of 100 mm. Spray-anchor is used for shoring of joint development section, using a 2.5 m long wedge bolt

and the net degree of 1.0 m × 3 m, to ensure the safety of construction and production.

(4) According to a reasonable mining sequence, conduct recovery in the mine, first mining on the first stage, and then the next stage. Fist conduct mining of the top wall ore bodies and then the footwall ore bodies. Retreating mining method is used for the return air shaft in the same section, trying not to destroy the top wall in the mining process.

Such measures can effectively prevent wall caving and roof fall accidents.

30.1.3.4 Surface and Underground Fire

Main factors: the fire-prone locations on the surface main include offices, warehouses, power distribution rooms, staff quarters and so on. Underground fire-prone locations are mainly in the distribution chamber, water pump house, maintenance chamber and so on.

Underground fires are mainly due to flammable materials ignited by accidental fire source or electrical short circuit or other causes. Underground flammable materials include rock drilling machine, water pump, lubricating oil used in portable blower, the oil cotton yarn, cotton cloth, plastic and cables, etc. used in work, of which underground cable is not only flammable, but also a fire source. When there are problems occurred in the cable quality, selection, laying, insulation and security protection, it will cause cable fire and result underground fires.

Preventive measures:

(1) Ground buildings shall be designed and constructed in accordance with the fire safety requirements in relevant fire prevention regulations promulgated by the state and fire authorities.

(2) Fire passages shall be set up between plant buildings. It is prohibited to pile materials in the fire passages. Combined with domestic water supply, a good ground fire-fighting system is established.

(3) Reasonably set up fire hoses. The production water supply pipes double as the fire hoses.

(4) Transformer substation fire protection. Substation fire passage shall be unobstructed, equipped with fire sand, foam fire extinguishers and other appropriate facilities.

(5) Other surface fire protection: set up a fire-fighting equipment station in each living area and production area in the mining area, equipped with fire fighting sand, buckets, shovels, fire extinguishers and other tools.

Some permanent supporting in the mine adopts the concrete or sprayed concrete supporting (such as water pump house, etc.). There are no internal fire conditions within the mine, but external factors such as pit electrical equipment may cause fire. Thus, necessary fire protection facilities shall be set in the fire-prone places during the production, especially in the underground yard, substation, machine repair room and other underground chambers shall be equipped with foam extinguishers. A pipe branch and water supply connector shall be set for every 50 ~ 100 m of water supply pipe, as the fire hose.

30.1.3.5 Flood

Main factors: ground water inrush results in submergence accidents and damages the plant and equipment, resulting in shut down and casualties. Underground permeability become a common risk factor in the underground mining in China, sudden, difficult to escape, etc. It has become one of risk factors with higher mortality in underground mining.

Yangzhuang Iron Mining Area is hilly in landscape, higher in the east and lower in the west, gradually slowing down from east to west. E'shan in the mining area has the highest altitude of 491.90 m, and the lowest point is the Gongdan mountain village, with an altitude of 208.8 m. The relative height difference is about 183 m. The altitude of the base level of erosion is about 150 m. It is undulating terrain, with crossed valleys and many small reservoirs and embankments. Xiuzhen River mine is located west of 1 km from the mining area, running of from north to south. Water quantity varies with the seasons, larger in summer and autumn. The ore bodies occur below the base level of erosion. Main water source of groundwater recharge is precipitation water, which is easy to form surface runoff , only partially into the ground. The supply conditions are poor. Hydrogeological conditions in the mining area are simple.

Preventive measures:

Mechanical drainage is used underground. Build drainage pumping stations in two ore block sections. The gushing water discharges out of the surface along the ramp. Water storage capacity is considered by the normal water inflow of 8 hours and the design water storage is divided into two part. Set drainage pumping stations at ±0 m level of surface in the future, forming a relay drain off water with the upper level pumping station. Gushing water is directly discharged into the surface along the ramp, and connected with external drainage network connectivity, ensuring smooth drainage. Additionally, the following measures shall be taken:

(1) Well heads on the ground shall be 1.0 m above the maximum historic flood level, so as to prevent water accumulated in rainy season from entering the mine and thus damaging subsurface safety.

(2) The boundary of historic mined-out area shall be correctly ascertained prior to construction of the mine, so as to make sure than there are sufficient safety pillars left between the mining boundary and the historic mined-out area.

(3) Pillars are set and the mined-out area treated in accordance with the design code, so as to prohibit boundary-crossing mining. Boreholes are drilled in advance for advanced water and structure probing, if water conductive structures, crush belts and karst structures are found, blocking water and concreting measures shall be taken immediately in order to strengthen totality and stability of structures and crush belts, thus preventing the occurrence of underground water disasters.

(4) It shall pay attention to observing geology and hydrologic conditions during the production of mill, and timely block water pour points. Observation and early warning measures are taken and hydrogeological personnel specifically appointed to supervise changing hydrogeological conditions in pits. In-well staff shall be educated about water control and prevention, and dangerous signs such as water inrush timely reported in order to evacuate in-well staff. In-well production shall be suspended in case of rainy season and continuous torrential rain or heavy rain, so as to ensure mining safety.

30.1.3.6 Explosive and blasting equipment hazards

Main factors: blasting operation is an important link in mine safe production, and crucial to safe production in mines. Underground blasting will cause various damages such as vibration, blasting fume, noise and dust, and accidents such as collapse, water transmission, fire disasters, explosion of explosive gases and poisoning, and blasting shock waves will make damages on personnel and equipment, and thus provoke accidents.

Preventive measures:

(1) Enterprises and blasting operation staff shall strictly follow the Control Regulations of the People's Republic of China on the Management of Civilian Explosives and Safety Regulations for Blasting Operation.

(2) Blasting operation staff shall receive training and pass examinations as well as hold operation certificates for explosives issued by public security organs.

(3) Selected explosion igniting elements shall be qualified for explosion of non-electric detonating tubes, processing and usage of nonel tubes, section, quantity, and installation and storage structure of primers shall meet design requirements and made according to explosion procedures. Explosives shall be loaded according to operational procedures.

(4) Equipment and personnel shall be evacuated to safe places prior to in-well explosion operation.

Considering the management of explosion equipment, the following measures shall be taken:

(1) Enterprises and blasting operation staff shall strictly follow the Control Regulations of the People's Republic of China on the Management of Civilian Explosives and Safety Regulations for Blasting Operation.

(2) Blasting operation staff shall receive training and pass examinations as well as hold operation certificates for explosives issued by public security organs.

(3) Selected explosion igniting elements shall be qualified for explosion of non-electric detonating tubes, processing and usage of nonel tubes, section, quantity, and installation and storage structure of primers shall meet design requirements and made according to explosion procedures. Explosives shall be loaded according to operational procedures.

(4) Explosion equipment shall be transported with special vehicles, and one 1 t vehicle is specially arranged for explosion equipment in the mine area, as well as two policemen appointed to guard the transportation of explosion equipment.

30.1.3.7 Poisoning, suffocation and dust hazards

Main factors: a large quantity of blasting flume will be generated during mining explosion, with CO and NOx gases contained in blasting fume and content of oxygen reduced. These gases will directly damage human health and cause blasting fume poisoning. Poisoning may occur due to poor ventilation conditions in air compressor station and delayed maintenance of equipment as well as failing to discharge wastes.

Preventive measures: the following measures shall be taken to prevent poisoning and suffocating.

(1) Mechanical pull-out type ventilation is designed, and sectional ventilation applied to the whole mine, with two ventilation systems employed in Gongdan Mountain and E Mountain respectively.

(2) Deploy ventilating wells and local fans in all mining districts.

(3) Formulate poisoning and suffocating emergency rescue plans, confirm places where poisoning and suffocating accidents are likely to occur, put targeted emergency rescue organizations, personnel and equipment into place, and make regular drills.

(4) Emergency exit signs and refuge route map are hung in main in-well parts and forks.

The following measures are adopted to prevent dust damages:

(1) Dust-proof measures such as regular sprinkling are employed in places prone to dust such as waste-rock stacking yards and haulage roads.

(2) Wet drilling is applied at the bottom of well, and only by sprinkling waste stone ballasts in mine piles and digging mine lanes within the mining district can loading and transport of waste stone ballasts be made.

(3) Mine main fan shall keep running all day, and local fans set in poor-ventilated places in order to improve ventilation conditions.

(4) Water mist dustproof systems are installed in all stone gates of each middle section, so as to ensure the quality of fresh air flow.

(5) In-well workers shall wear anti-dust respirators for individual protection, and regularly scrub lane dusts.

(6) Regularly test dust concentration and handle any found problem.

30.1.3.8 *Electrical shock*

Main factors: probabilities for electricity short-circuits and electric leakage of in-well lightning, ventilation, water drainage and electric equipment, electrical equipment is relatively frequent, thus, electric shock accidents can be easily caused.

Preventive measures:

(1) Lighting voltage: 36V voltage is employed in conveyor lanes, evacuation working faces, light wells, and places between light well and coal face, and running light voltage designed as 36V. 220V lighting voltage, portable electric tools and signal voltage of less than 127V are applied to main conveyor lanes and well bottom installations.

(2) Gap of cable suspension points in the lane is 3 m, with more than 60 mm clear distance from the perimeter of lane.

(3) Cables are designed to be suspended on the opposite side of air duct.

(4) Illuminated circuits are specially designed so as not to mix with power circuits.

(5) Length of mobile rubber-sheathed lines for mobile machines shall be no more than 45 m, without connectors in the middle.

(6) Working power of machines shall be cut off when the drive leaves the machine after the mobile mechanical work is completed.

(7) Grounding main lines in all middle sections are connected to the main grounding electrode.

30.1.3.9 *Vehicle damage*

Main factors: vehicle damages can be divided into damages on ground vehicles and in-well vehicles. Ground vehicle damage means that personal safety is damaged due to heavy vehicles and other vehicles failing to run along the specified route. In-well vehicle damage means that pedestrians are damaged by scraper machine and mining truck during transport.

Preventive measures:

(1) Shallow ground: vehicles shall run according to specified route and speed within the factory territory.

(2) Well bottom:

a. Dispatching command system is set to ensure safe and orderly running of vehicles.

b. In-pit transport is mainly composed of run-of-mine transport and transport of tunnel driving wastes and fillings. Trackless transportation is used. Slopes of ramp road and horizontal lane are 12% and 3% respectively. Negotiable radius of ramp road is usually more than 20 m, bending radius of access road in the middle section for large trackless equipment to run or winding ramp road shall be no less than 15 m, and specifications for haulage roads are usually 5.5×5.5 m, with illuminating lines laid according to relevant requirements.

c. Regularly inspect whether safety devices (brake, lamp and hooter) are complete, flexible and reliable, if one of these items is abnormal, vehicle shall not be put into use. Drivers shall hold driver licenses.

d. Temporary signals shall be set in places 80 m away from the front and back of workplace during line maintenance, and dismantled when line maintenance is completed.

e. Vehicles shall slow down and warning sign emitted when they pass through lanes, curves, extremely gradient sections or other vehicles appear in the front of them or visual barriers occur.

f. Driver shall stop the vehicle if anybody find any obstacle vehicle running and emits the warning sign.

g. It shall pay attention to shuttling vehicles and hide vehicles in safe places while travelling in in-well lanes.

h. Pulling onto and jumping from a moving vehicle shall be prohibited.

i. Slope of ramp roads for transporting ores shall be more than the designed slope, and with vehicle failure sliding strictly prohibited.

j. Good lighting conditions shall be provided in in-well transporting operation segments.

k. People are prohibited to be carried on slag in vehicles for transporting rock ores.

l. Vehicle hoppers are prohibited to carry people and to rise and fall during running.

m. Strengthen safety production education, and actions of operation against rules, scheduling against rules, drive without license, overweight and overload, drunk driving are prohibited to ensure safe transport.

n. Route of ramp roads shall be designed according to procedures and regulations, and constructed strictly according to designed cross-section shape, effective height, effective width, structures of ditches and road surfaces, route longitudinal gradient, turning radius, support form and other specifications, in particular, support shall be strengthened in intersections between ramp roads and various middle sections.

  - Sufficient running signals such as lighting, truck sound and light shall be provided in ramp roads, and safely confirmed.

o. Status of auto tyres shall be regularly checked to make sure whether there is any horse stone between tyres, so as to avoid tyre burst.

p. Drivers shall manipulate trucks according to regulations, and with speeding prohibited.

q. Comprehensive automobile maintenance shall be strengthened to prevent "faulty operation" of vehicles.

r. Vehicles with exhaust emissions meeting standard requirements shall be selected.

s. Safety protection equipment shall be set, and striking warning signs and traffic signals arranged in turnings and intersection points.

t. All equipment shall be provided with complete and effective fire extinguishers.

u. Overloading or extremely high loading is prohibited for transport vehicles so as to avoid falling of ore rocks, otherwise, accumulated falling ore rocks will damage truck tyres and reduce effective height of ramp roads, thus cause accidents.

v. Dry sections on ramp road shall be equipped with sprinkle facilities.

30.1.3.10 *Operating equipment damage*

Main factors: main mining equipment may easily cause damages on personnel due to improper operation or failure.

Preventive measures:

(1) Equipment such as in-well water pumps, ventilating fans and scrapers that are likely to cause damages shall be operated according to operating procedures.

(2) Platform with the height of above 0.6 m shall be equipped with rails. Openings or holes on platforms shall be equipped with rails or cover plates, and safety guards set on platform edges, with ladder angles of less than 45°.

(3) Equipment exposed transmission parts such as belt shall be provided with safety guards.

30.1.3.11 *Noise damage*

Main factors: air compressor is designed as shallow ground noise sources, rock drilling machine, fan and water pump as the in-well noise sources. Such noise sources mainly damage personal hearing, nervous system, digestive system and cardiovascular disease.

Preventive measures:

(1) Select qualified low-noise products.

(2) Adopt insulation and sound absorption measures, reduce the noise transmission and diffusion, and install soundproof duty room in air compressor station.

(3) Strengthen personal protection: operators shall wear personal protective articles such as earplug in order to reduce noise damages.

(4) Ventilators at the exit of air exhausting duct shall be provided with sound attenuation materials for noise elimination.

(5) Factory buildings shall be provided with sound insulation materials for noise isolation.

30.1.4 *Occupational Health Design*

30.1.4.1 *Dust Control*

Wet drilling is applied to the well bottom, dust catchers designed in primary crushing cave room and dust suppression by spraying employed in ore-loading points. Mechanical ventilation is employed in mining work face and local fans or auxiliary fans used in poor-ventilated places.

One CJ1217-type wet dust collector is designed for the coarse ore bin, with the dust-removing air volume of 19,000 m^3/h, and one CJ1220-type wet dust collector designed for waste rock bin, with the dust-removing air volume of 27,000 m^3/h, as well as one CJ1213-type wet dust collector for the transfer station, with the dust-removing air volume of 12,000 m^3/h. Dust-removing efficiency is 99%.

With the entry of fresh air and dust catching and cleansing of wet dust collectors, dust and harmful gases on work faces have been diluted and discharged, thus making concentration of harmful gases meet requirements of GB16424-1996 Safety Regulations for Metal and Nonmetal Underground Mines (namely, the maximum permissible concentration of free SiO_2 10% dust is 2 mg/m^3).

In-well workers shall wear labour protection appliances such as working clothes, mask cover and earplug.

Dust will be generated in the processes of ore rock fine crushing and sieving and from the dust bin. Medium and fine crushing factory buildings are provided with one CJ1226-type wet dust collector with the air volume of 42,000 m^3/h and one CJ1223-type wet dust collector with the air volume of 36,000 m^3/h respectively, sieving factory buildings provided with four CJ1220-type wet dust collectors and one CJ1220-type wet dust collector with the air volume of 25,000 m^3/h, as well as dust bin provided with one CJ1213-type wet dust collector with the air volume of 12,000 m^3/h. Dust-removing efficiency of west dust collectors is 99%.

After west dust collectors are designed for dust removing and cleansing, dust concentration in workplaces shall meet requirements of GBZ2-2002 Occupational Exposure Limit for Hazardous. Agents in the Workplace (time weighted average concentration and short-term exposure permissible concentration of dust containing 10%~50% free SiO_2 are 1 mg/m^3 and 2 mg/m^3 respectively).

30.1.4.2 Noise Control

Drillers and blasters must wear individual noise cancelling items – anti-noise earplugs; design cushion blocking and soundproof rooms for crushers, sieving machines, air compressors and other equipment with strong noise. Air compressors and fans shall be set in the corresponding rooms, to make use of building noise isolation to reduce the noise hazards.

30.1.4.3 Living and welfare facilities

Pit-mouth Service building, shower room and changing room are provided, working clothes of mine workers and in-well workers shall not be allowed to bring home and to dormitory buildings, health-care station is set at well head and equipped with specific-purpose personnel on duty and provided with telephones, emergency drugs and stretchers, as well as in-well dining rooms are arranged to ensure in-pit staff provided with clean boiled water.

30.1.4.4 Water Supply Hygiene

Quality of domestic water after being purified and sterilized shall meet requirements in GB5749-85 Standards for Drinking Water Quality.

30.1.5 Occupational Safety and Health Management

Mine Department has a safety and environmental protection agency with 6 members, of which 4 work full-time in mine labour safety and health management; part-time environmental protection and occupational safety and health administrators are arranged in every work section of mining field and ore concentration plant to assist the safety and environmental protection agency in overseeing the of the discharge of "three wastes" in the working section and protecting workers' safety and health. Safety and Environmental Protection Division should develop safety operation procedures for all positions in the whole mine, and be responsible for the prevention of occupational hazards, safety education and training, production and security incident management, major hazard control and rectification of major hazards, equipment safety management, safety production document management, safety production reward and punishment system and other system and for the organization of safety production inspection, supervision and technical guidance.

30.1.6 Expected Results

The engineering design has taken more comprehensive safety production and labour health protection measures. As long as these measures are strictly implemented in the mine and an appropriate safety production and labour health management system is developed and conscientiously implemented, the production activities in the Yangzhuang mine will be safe and the health of workers will be ensured.

30.2 Fire Water Supply

30.2.1 Fire Water Standards and Water Consumption

(1) Outdoor fire water 20L/s

(2) Indoor fire water 10L/s

(3) The number of fire at the same time is 1

(4) The fire lasts for 2h

(5) Water consumption is 216 m^3 for each fire.

30.2.2 Fire Water Supply System

Fire water is supplied using the piping system combined with that for production water supply. Pipe network is ring-shaped, with dual-port underground fire hydrants. Fire water is stored in a 3,500 m^3 production water tank. In event of fire, supply fire water by pressurizing with a fire pump. Set up 2 XBD6.8-30 fire pumps in the pressure pump room of the pressure station, 1 for use and 1 for standby. In order to ensure safe water supply, water pumps are with dual power supply.