

NI 43-101 Technical Report
Jiama Copper Polymetallic Mine
Mineral Resource and Reserve Update

Huatailong Mine Development Company

Changchun Gold Design Institute

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1 EXECUTIVE SUMMARY

1.1 Introduction

The Jiama Copper Polymetallic Mine in Tibet ("Jiama Project" or "Jiama Mine") is a large metallic deposit of copper, molybdenum, gold, silver, lead, and zinc. Tibet Huatailong Mining Development Company ("Huatailong" or "Huatailong Company"), a subsidiary of China Gold International Resources Corporation ("CGG"), listed on the Toronto Stock Exchange in Canada and the Hong Kong Stock Exchange in China, owns 100% of the Jiama project. Geological exploration work at Jiama Project began as early as the 1950s. Development of the Jiama copper polymetallic mine began at the beginning of this century. The first phase of the Jiama project's Tongqianshan and Niumatang open pit mine began commercial operation in September 2010, with a processing capacity of 6,000 tons per day. Phase II of the Jiama project began commercial production on July 1, 2018. Phase II was developed into two series, each with a mining and mineral processing capacity of 22,000 tons per day, totaling 44,000 tons per day. After the Phase II development and expansion, the Jiama project's ore processing capacity had increased to 50,000 tons per day. By the end of 2022, its capacity remained at 50,000 tons per day. Due to overflow issues at the Guolanggou tailings dam beginning in early 2023, the Phase I of the processing plant, with a daily ore processing capacity of 6,000 tons, ceased operations as of May 2024. Currently, only Phase II of the processing plant is operating, with an ore processing capacity of 44,000.00 tons per day.

In early 2026, CGG and Huatailong commissioned the Jilin Changchun Gold Design Institute ("Changchun Institute") in China to conduct a comprehensive technical assessment and update of the resource and reserve estimate of Jiama project in accordance with Canadian NI43-101 (2014) and Canadian CIM (2019) standards, as well as the requirements of HKEX Chapter 18.

Based on the requirements of CGG and Huatailong, the resource estimates in this technical report cover the entire mining and exploration rights area of the Jiama project. The estimated reserves cover two open-pit mines of the north pit and south pit, as well as underground mines. The Jiama project uses traditional mining methods for both open-pit and underground mining operations.

1.2 Effective Date

The database cutoff date for this technical report is December 31, 2025. The effective date of the report and resource and reserve estimates is June 30, 2026.

1.3 Location of the Jiama Project

The Jiama project is in the 210° direction of Mozhugongka County, Tibet, China. The jurisdiction of Jiama Township and Sibü Township is in Mozhugongka County. Geographical coordinates are 91°44'27"~91°46'32"E longitude and

29°41'15"~29°43'12" N latitude.

The Jiama project is 100% owned by Tibet Huatailong Mining Development Co., Ltd.. It is affiliated with China Gold International Resources Limited (TSX.CGG), which is listed on both the Toronto Stock Exchange (CGG) and the Hong Kong Stock Exchange in China (2099HK).

Huatailong was founded in the Tibet Autonomous Region on December 9, 2007. It is a comprehensive mining company integrating mineral exploration, mining, and mineral processing.

The Phase I project of the Jiama mine began production in 2010, and Phase II started in 2018, operating continuously for more than 16 years with significant economic success and social benefits. Its annual output value exceeds \$800 million USD, annual after-tax profits exceed \$200 million USD, and annual tax payments approach \$80 million USD.

Since its establishment in 2009, Huatailong has achieved outstanding success, winning multiple national and local mining and environmental awards, and has been recognized as an outstanding enterprise for employing farmers and herders in Mohinga County, Tibet, China.

1.4 Accessibility, Climate, Local Resources, Infrastructure and Physiography

1.4.1 Accessibility

From the Jiama mining area, head 10 km north along a simple road to National Highway 318, 60 km west to Lhasa city, and 8 km east to Mozhugongka County. The mining area has convenient transportation.

1.4.2 Climatic conditions

The climate within the mining area is typical of continental plateau climate. The rainy season is humid and cold, while winters are bitterly cold and dry, with large temperature differences between day and night. There is no multi-year meteorological data for the mining area. The Mozhugongka county seat (about 3900m elevation), located 7 km from the mining area, has had an average temperature of 6.0°C from 1978 to 2008, with an extreme high temperature of 28.3°C and an extreme cold temperature of -23.1°C. The average monthly temperature is higher in June to August; temperatures are lower from November to April, with a nadir in January. Air density is 0.80 kg/m³

1.4.3 Local Resources

Jiama Township and Sibu Township are both agricultural and pastoral areas with a population of about 6,000 peoples, mostly Tibetan, with a large surplus of labor during the off-season. The main grain crops are highland barley, winter wheat, peas, and potatoes; the economic crop is rapeseed. Animal husbandry raises yaks, yellow

cattle, sheep, horses, donkeys, and more. It is rich in livestock hides and beef and mutton, with a relatively underdeveloped economy.

A comprehensive system of mining production, environmental, livelihood infrastructure, and comprehensive facilities of roads, power supply, water supply and drainage, communication networks, tailings treatments and maintenance and ecological management have been established in the Jiama mining area, which will eventually support the safe and efficient mining operations in the Jiama mine.

One 110kV power substation was set up for Phase I process plant. The main and backup power sources for the Phase I 110kV substation are drawn from the 110kV Tangjia substation.

One 110kV substation was established for Phase II process plant, with the backup power supplied by the Mozhugongka County 220kV substation.

One 110kV substation at the mining site was set up, with two 110kV power sources at the stope substation fed from the busbars I and II of the 110kV substation of the second phase plant.

Phase II tailings dam currently houses a 10kV distribution room, with the 10kV power supplied by the 110kV substation.

The power supply for the 110kV substation at the Phase III Youlongbu Tailings Dam is drawn from the #2 connecting line of the 110kV substation at the Phase II plant.

1.4.4 Infrastructure and Physiography

Jiama mine is in the northeast of the main peak of Guokalariju Mountain in the eastern section of the Gangdise Mountains Range. It belongs to a high-altitude deep cut area, with ridges running north-south and east-west. The mountain tops are mostly rounded, with well-developed gullies on the slopes. The elevation is 4350~5407.5m, and the terrain is higher in the south and lower in the north. Steep slope, high elevation, and large relative elevation varies are the three main features of the Jiama mine terrain.

Quaternary deposits are widely developed within the mining area, covering more than 85% of the area. Half the slope is covered with dense shrubs, while the other half is either covered with humus soil or by fallen rocks formed by frost weathering, with a thickness generally of 1~5m. The vegetation is mainly alpine meadows with a small amount of alpine cold-hardy moss. The water system is well developed, supplied by atmospheric precipitation and meltwater from ice and snow. Annual rainfall is around 500mm, mostly occur from June to September.

1.5 History

The earliest exploration of the Jiama project began in the 1950s, with large exploration campaigns and development starting in the early 20th century. Phase I project in Jiama mine was completed in 2009, with 1.8 million tons per year capacity, mining near-surface ore bodies with two open-pit mines: Tongqianshan and Niumatang. Since 2011, Phase II expansion project has been planned and developed with 12.6 million tons per year capacity. Currently, two open-pit mines and two underground mining areas have been developed in Jiama mining area.

1.6 Geological Setting and Mineralization

The Jiama mining area is in the Gangdise Cu, Mo, Pb, Zn, Au and Ag metallogenic belt of the Tethys-Himalayan orogenic region, one of the world's major porphyry copper ore-forming regions. The geo-tectonics lie in the northern middle segment of the Late Yanshanian Gangdise–Early Himalayan epicontinental magmatic arc in the Gangdise-Nyenqing Tangura secondary structural unit with multi-stage and multi-type magmatic activities and structural-processes, providing favorable geological conditions for mineralization. The rock types within the Jiama mining area are usually passive epicontinental clastic rocks and carbonate rocks. The strata consist of the Upper Jurassic Duodigou Formation dominated by marble and limestone, and the Lower Cretaceous Linbuzong Formation dominated by sandstone, slate and hornfels. The mining area is located at the front section of the regional thrust system. The structure plays a role in allocating and storing magma and ore-bearing fluids, mainly through the south-to-north slip-over and the north-to-south thrust-over in the area, specifically through interlayer slip structures; the resulting secondary fold controls the mineralization bodies.

Within the Jiama mining area, there are three types of copper polymetallic mineralization: skarn, hornfels, and porphyry mineralization. These three types of mineralization form a complete porphyry mineralization system.

1.7 Exploration

The exploration work in the Jiama mining area covers mapping, geological, geophysical-geochemical exploration. The mining area uses the 2000 China National Geodetic Coordinate System and the 1985 China National Elevation Datum.

Since the 1950s, geological mapping has been carried out successively in the mining area. Geophysical exploration, through magnetic surveys, induced electricity surveys, and audio-magneto telluric work, confirmed the presence of concealed deep mineralization within the mining area. Based on comprehensive exploration data and deep drilling results, multiple major orebodies are not yet fully revealed, and the deep part of the orebodies remains unknown. There is significant exploration potential at the mine depth and peripheral areas. In general, the existing exploration work conducted so far is compatible with Jiama deposit types and the exploration results are reliable.

1.8 Drilling

Drilling in the Jiama mining area began in the 1990s, and the Sixth Geological Brigade of Tibet completed diamond core drilling over 7,298.75 meters with 24 holes from 1990 to 1999. Since 2008, Professor Tang Juxing's team from the Chinese Academy of Geological Sciences, commissioned by Huatailong, has continued to organize and manage surface drilling from 2008 to 2025, completing drilling 282,044.04 meters with 558 holes. Since 2014, Huatailong has conducted its own underground drilling in the Jiama mining area. As of December 31, 2025, the Jiama mining area has completed surface core drilling totaling 28,9342.79 meters/ 558 holes,

and underground core drilling totaling 20,958.46 meters/150 holes.

In the all-drilling programs, core extraction rates, hole survey, hole sealing, and core sample processing all meet Chinese National Standards and the general requirements of the international mining industry, which ensure that the drilling quality is qualified for this report.

1.9 Sample Preparation, Analyses and Security

The major exploration work in the Jiama mining area is drilling. All core samples are cut in half along the long axis of the core, with one half sent for testing and the other half preserved. During sampling, equipment and site cleanliness are maintained without contamination. Sample lengths are as follows: each core sample for hornfels and porphyry ore bodies is 2 meters long; for skarn ore bodies, each core sample is 1 meter long.

After sample collection and processing, samples are sent to relevant laboratories for analysis with a series of QA/QC procedures.

1.10 Data Verification

Data verification and data QA/QC for the 1990, 2008–2009 and 2010 drilling programs has been previously summarized in the March 2012 Behre Dolbear Asia Incorporated report 'Resource Update Report for the Jiama Copper-Polymetallic Project in Metrorokongka County, Tibet Autonomous Region, People's Republic of China'. Data verification and QA/QC for the 2011 drilling program have been reviewed in the pre-feasibility report undertaken by Minarco-MineConsult (MMC), in November 2012. MINING ONE has reviewed the QA/QC results reported for the pre 2012 drilling programs as outlined in the MMC and Behre Dolbear reports. All previous reviews have not identified any issues that would have a material effect on the resource and reserve estimation. Exploration work and data after 2012 were verified in the copper polymetallic deposit resource verification report for the Jiama Mine in Mozhugongka County, Tibet Autonomous Region, released by China National Gold Group Geology Co., Ltd. in June 2022, which also did not identify any issues that could have a material impact on resource estimation. In 2026, 7 verification samples were collected during the site visit and were sent to the internationally recognized SGS laboratory in Tianjin China for testing. The results are consistent with the exploration and production data in the Jiama mine.

1.11 Mineral Processing and Metallurgical Testing

The main ore types currently mined in the Jiama mine are skarn-type copper-lead-zinc ore, skarn-type copper-molybdenum ore, hornfels copper-molybdenum ore, and porphyry copper-molybdenum ore. Over the years, Huatailong has conducted multiple beneficiation studies on the three main ore types, continuously optimizing the beneficiation process and chemical usage during processing.

1.12 Mineral Resource Estimates

In December 2012, MINING ONE reported the mineral resource estimate for the Jiama project at a cutoff grade of 0.3% copper equivalent (Table 1.1). MINING ONE reports measured and indicated mineral resources as 1,486 Mt with an average copper grade of 0.41%, molybdenum 0.034%, lead 0.05%, zinc 0.03%, gold 0.11 g/t, silver 6.14 g/t, containing 6.14 Mt of metallic copper, 503,000 tonnes of molybdenum, 794,000 tons of lead, 495,000 tons of zinc, 5.33 million ounces of gold, and 2,934 million ounces of silver. The reported inferred mineral resource as 406 Mt with an average copper grade of 0.31%, molybdenum 0.03%, lead 0.08%, zinc 0.04%, gold 0.10 g/t, silver 5.13 g/t, containing 1.25 Mt metallic copper, 124,000 tons of molybdenum, 312,000 tons of lead, 174,000 tons of zinc, 1.32 million ounces of gold, and 66.9 million ounces of silver.

Table 1. 1 2012 Jiama Mineral Resource Estimates (Mining One, 0.3%CuEq cutoff)*

Category	Mass	Cu %	Mo%	Pb%	Zn%	Au g/t	Ag g/t	Cu	Mo	Pb	Zn	Au	Ag
	Mt							Kt	Kt	kt	Kt	Moz	Moz
Measured	100.2	0.41	0.035	0.04	0.02	0.11	6.53	415	36	43	24	0.35	21.04
Indicated	1,385.80	0.41	0.034	0.05	0.03	0.11	6.11	5722	468	751	470	4.99	272.35
M & I	1,486.00	0.41	0.034	0.05	0.03	0.11	6.14	6138	503	794	495	5.33	293.39
Inferred	406	0.31	0.03	0.08	0.04	0.1	5.13	1247	124	312	174	1.32	66.93

*M&I; Measured & Indicated

By combining mineralized units together with lithology, a full three-dimensional (3D) solid and block models were constructed in the mineral resource estimation for Jiama project. Mineralization wireframes are defined using a cutoff grade of 0.3% Cu (in local areas, a 0.2% Cu cutoff grade is used when molybdenum, gold, silver, lead, or zinc content is significant).

In Leapfrog, radial basis function interpolation (RBF interpolation) is used to create mineralized bodies (domains) based on copper grades in the combined samples and distinct molybdenum, gold, silver, lead, and zinc (where applicable).

Block models of copper, molybdenum, and other metals, as well as specific gravity (SG), were modeled using the conventional Krigin method (OK) and local variable directivity (dynamic anisotropy).

The mineral resource estimates data for the Jiama mining area is as of December 31, 2025. The data was provided by Huatailong, verified and refined by the Changchun Institute. Mineral resource estimates are based on 3D geological and mineralization models using the diamond drill hole data.

Mineral resource estimates are based on the Canada CIM Mineral Resources and Reserves Definition Standard, officially adopted on May 10, 2014, and then subsequent MRMR Best Practice Guide updated in 2019, as well as Canada NI43-101 "Mineral Project Standards and Disclosures," (2012). Changchun Institute considers the mineral resource estimate appropriate and meeting the reporting

standards of Chapter 18 of the Hong Kong Stock Exchange Listing Rules. The mineral resource is estimated by using a cut-off grade of 0.3% copper. Mineral resource estimates for Jiama project are summarized in Table 1.2.

The mineral resources of the Jiama project are estimated based on diamond core drilling data and meet the requirements of the CIM definition standard (2014 edition). Changchun Institute has verified the data and the methods used to build the resource model and have validated the resource model visually. Jiama resource model covers the categories of Measured, Indicated and Inferred resource.

Table 1. 2 Results of Mineral Resource Estimates for Jiama Project at cutoff grade 0.3% Cu as of June 30, 2026*

Category	Mass	Cu	Mo	Ag	Au	Pb	Zn	Cu	Mo	Ag	Au	Pb	Zn
	Mt	%	%	g/t	g/t	%	%	Mkt	Mt	Moz	Moz	kt	kt
Mining License Area													
Measured	565.9	0.73	0.04	13.93	0.30	0.08	0.05	4.09	0.20	253.46	5.52	474.28	263.81
Indicated	598.3	0.71	0.03	13.37	0.32	0.07	0.04	4.23	0.20	257.28	6.19	420.37	221.95
M & I	1,164	0.72	0.03	13.65	0.31	0.08	0.04	8.32	0.40	510.74	11.71	894.65	485.76
Inferred	357.5	0.69	0.03	14.37	0.32	0.15	0.05	2.46	0.11	165.13	3.65	520.21	194.09
Exploration License Area													
Measured	57.2	0.50	0.02	5.51	0.14	0.01	0.01	0.28	0.01	10.13	0.26	4.52	4.58
Indicated	113.6	0.48	0.02	5.41	0.13	0.01	0.01	0.54	0.02	19.75	0.48	6.08	8.22
M & I	170.8	0.49	0.02	5.44	0.13	0.01	0.01	0.83	0.03	29.88	0.74	10.60	12.80
Inferred	97.2	0.48	0.02	5.79	0.13	0.01	0.01	0.53	0.02	18.10	0.39	5.57	11.58
Mining and Exploration License Areas at Jiama Mine													
Measured	623.1	0.71	0.03	13.16	0.29	0.08	0.04	4.38	0.21	263.59	5.77	478.80	268.39
Indicated	711.9	0.68	0.03	12.10	0.29	0.06	0.03	4.77	0.23	277.03	6.67	426.45	230.17
M & I	1,335	0.69	0.03	12.60	0.29	0.07	0.04	9.15	0.44	540.62	12.45	905.25	498.55
Inferred	454.7	0.65	0.03	12.53	0.28	0.12	0.05	2.99	0.13	183.22	4.04	525.79	205.66

*:

1. Mineral Reserves and Mineral Resources have been estimated as of 30 June 2026 in accordance with NI 43-101 - Standards of Disclosure for Mineral Projects (NI 43-101) as required by Canadian securities regulatory authorities.
2. 0.3% copper cut-off grade has been used to report the Mineral Resource Estimation (MRE).
3. Reported Mineral Resources contain no allowances for hanging wall or footwall contact boundary loss and dilution. No mining recovery has been applied.
4. The Mineral Resources was depleted to account for UG mining tunnel and mined-out, and current open-pit excluded.
5. Mineral Resources are reported inclusive of Mineral Reserves.
6. All Mineral Resource Estimates including Cu, Mo, Au, Ag, Pb, and Zn grade and their tonnages have been rounded to reflect the imprecise nature of the estimates for each classification category, therefore totals may not appear to sum correctly due to rounding.
7. Tony (Yingting) Guo, PhD, PGeo and Chaoxian (Ian) Zhou, MSc estimated the Mineral Resources. This Mineral Resource Estimation (MRE) was estimated with an effective date of 30 June 2026, and depleted to account for annual production up until 31 December 2025.
8. Mineral Resources, which are not Mineral Reserves, do not have demonstrated economic viability.

As of June 30, 2026, the measured copper metal resource within the mining license area in the Jiama mine is 4.09 million tons, with a grade of 0.73%; molybdenum metal amount is 0.20 million tons, grade 0.04%; lead metal amount is 0.47 million tons, grade 0.08%; zinc metal amount is 0.26 million tons, grade 0.05%; associated gold metal amount is 5.52 million ounces, with a grade of 0.30g/t; associated silver metal amount is 253.46 million ounces, with a grade of 13.93 g/t. The indicated resource in the mining license area of the Jiama project, copper metal amount is 4.23 million tons, grade 0.71%; molybdenum metal amount is 0.20 million tons, grade 0.03%; lead metal amount is 0.42 million tons, grade 0.07%; zinc metal amount is 0.22 million tons, grade 0.05%; associated gold metal amount is 6.19 million ounces, grading 0.32g/t; associated silver metal amount is 257.28 million ounces, grade 13.37 g/t. The Inferred resources within the mining license area of the Jiama project is: copper metal amount of 2.46 million tons, grade 0.69%; molybdenum metal amount of 0.11 million tons, grade 0.03%; lead metal amount of 0.52 million tons, grade 0.15%; zinc metal amount of 0.19 million tons, grade 0.05%; associated gold metal amount of 3.65 million ounces, with a grade of 0.32g/t; associated silver metal amount of 165.13 million ounces, with a grade of 14.37 g/t.

The measured copper metal resources within the exploration license which is around the Jiama mining area are 0.28 million tons, with a grade of 0.50%; molybdenum metal amount of 0.01 million tons, grade 0.02%; lead metal amount of 0.045 million tons, grade 0.01%; zinc metal amount of 0.046 million tons, grade 0.01%; associated gold metal amount is 0.26 million ounces, grade 0.14g/t; associated silver metal amount is 10.13 million ounces, with a grade of 5.51g/t. Indicated resource of copper metal amount is 0.54 million tons, grade 0.48%; molybdenum metal amount of 0.02 million tons, grade 0.02%; lead metal amount of 0.061 million tons, grade 0.01%; zinc metal amount of 0.082 million tons, grade 0.01%; associated gold metal amount is 0.48 million ounces, grade 0.13g/t; associated silver metal amount is 19.75 million ounces at a grade of 5.41g/t. The inferred mineral resource contains 0.53 million tons of copper metal, with a grade of 0.48%; molybdenum metal amount 0.02 million tons, grade 0.02%; lead metal amount of 0.56 million tons, grade 0.01%; zinc metal amount of 0.012 million tons, grade 0.01%; associated gold metal amount is 0.39 million ounces, grade 0.13g/t; associated silver metal amount is 18.1 million ounces, with a grade of 5.79g/t

The total measured resources in the Jiama Project include 4.38 million tons of copper metal, with a grade of 0.71%; molybdenum metal of 0.21 million tons, grade 0.03%; lead metal of 0.48 million tons, grade 0.08%; zinc metal amount of 0.27 million tons, grade 0.04%; associated gold metal of 5.77 million ounces, grade 0.29g/t; associated silver metal of 263.59 million ounces, with a grade of 13.16g/t. Indicated resource of copper metal is 4.77 million tons, grade 0.68%; molybdenum metal of 0.23 million tons, grade 0.03%; Lead metal of 0.43 million tons, grade 0.06%; zinc metal of 0.23 million tons, grade 0.03%; associated gold metal of 6.67 million ounces, grade 0.29g/t; associated silver metal of 277.03 million ounces, with a grade of 12.10g/t.

The inferred resource contains 2.99 million tonnes of copper metal, with a grade of 0.69%; molybdenum metal of 0.13 million tons, grade 0.03%; lead metal amount of 0.53 million tons, grade 0.12%; zinc metal of 0.21 million tons, grade 0.05%; associated gold metal of 4.04 million ounces, grade 0.28g/t; associated silver metal of 183.22 million ounces, with a grade of 12.56g/t .

In 16 years of mining operation in the Jiama mine, it has produced approximately 80.15 million tons of copper ore: 579,413 tons of copper ore, 63.17 million tons of molybdenum ore, 19,130 tons of molybdenum, 21.08 million tons of lead ore, 352,008 tons of lead metal, 19.27 million tons of zinc ore, 183,005 tons of zinc metal, 57.29 million tons of gold ore, 596,814 ounces of gold, and 7,679,000 tons of silver ore, contains 34,115,222 ounces of silver. By continuing efforts on the exploration in Jiama mine, the amount of copper, gold, silver, and other mineral resources in the Jiama mining area has increased significantly. Using a cutoff grade of 0.3% copper, as of June 30, 2026, the Jiama mining area retains 1.335 billion tons of measured and indicated mineral resources, with copper grades of 0.69%, molybdenum grades of 0.03%, silver grades of 12.6 g/t, gold grades of 0.29 g/t, lead grades of 0.07%, zinc grades of 0.04%, and containing copper metal 9.15 million tons, molybdenum 124,500 tons, lead 905,000 tons, zinc 498,000 tons, gold 12.45 million ounces, and silver 540.62 million ounces. Compared with resource estimate in 2012, the average grade of copper, gold and silver has increased significantly with copper metal increasing by 3 million tonnes, gold by 7.12 million ounces, silver by 247.23 ounces, molybdenum by 60,000 tons, lead by 110,000 tons, and zinc by 3,000 tonnes. The inferred resources is 454.7 Mt with copper metal increased by 1.74 million tons, gold by 2.72 million ounces, silver by 116.3 million ounces, while molybdenum, lead, and zinc remained largely unchanged.

1.13 Mineral Reserve Estimates

Mineral reserve estimates are based on the 2019 definition standards set by the Canadian Institute of Mines, Metallurgy and Petroleum (CIM).

Currently, open-pit mining and underground mining have a break-even point of copper grade 0.39% and 0.69%, respectively at Jiama mine. The mineral reserves of the Jiama project were completed by Dr. He Siwei, a Canadian registered mining engineer who meets the Canadian 43-101 requirements as a QP, who verified and refined the reserve estimate data and conducted the estimation. Reserve estimates are based on data and information as of December 31, 2025. The author believes that the reserve estimate is suitable for reporting and meets the reporting standards of Chapter 18 of the HKEX Listing Rules. The reserves are estimated by using a cutoff grade of 0.3% copper. The reserve estimate results are summarized in Table 1.3

The estimated reserves in the Jiama mining area are shown in Table 1.3

As of the June 30, 2026, the two small open-pit mining pits of north pit and south pit within the Jiama mining license have open-pit reserves of 113 million tons of ore, containing 550,000 tons of copper at a grade of 0.49%, and 21,700 tons of molybdenum at a grade of 0.02%, containing 16.09 million ounces of silver at a grade

of 4.44 g/t, and containing 0.18 million ounces of gold at a grade of 0.05 g/t.

As of the June 30, 2026, the underground mining reserves under Jiama mining license in the Jiama project are 553 million tons of ore, containing 5.2 million tons of copper at a grade of 0.94%, 220,000 tons of molybdenum at a grade of 0.04%, 353.79 million ounces of silver at a grade of 19.9 g/t, and 8.18 million ounces of gold at a grade of 0.46 g/t.

Table 1. 3 Open-pit and Underground Mining Reserves at Jiama Project as of June 30, 2026*

		Average Grade					Amount				
Open-pit Reserves											
Category	Amount	Cu	Mo	Ag	Au	CuEq	Cu	Mo	Ag	Au	CuEq
	Mt	%	%	g/t	g/t	%	Mt	Mt	Moz	Moz	Mt
Proven	239.44	1.00	0.04	22.11	0.50	1.68	2.39	0.10	170.21	3.85	4.02
Probable	313.52	0.89	0.04	18.21	0.44	1.47	2.79	0.13	183.55	4.44	4.61
Total	552.97	0.94	0.04	19.90	0.46	1.56	5.20	0.22	353.79	8.18	8.63
Underground Reserves											
Proven	77.7	0.51	0.02	5.41	0.06	0.65	0.40	15.07	13.51	0.15	0.51
Probable	35	0.44	0.02	2.29	0.04	0.53	0.15	6.63	2.58	0.05	0.19
Total	112.7	0.49	0.02	4.44	0.05	0.61	0.55	21.7	16.09	0.18	0.69

*: 1. The mineral reserves report date is June 30, 2026;

2. All mineral reserves are determined according to the CIM standard specified in Canadian National Standard 43-101

3. Mineral reserves are estimated based on the following mining and economic factors:

open-pit mining:

a) mining methods use a 5% dilution factor and a 95% mining recovery rate;

b) The overall openpit slope is 43 degrees;

c) Copper price at \$4.66 per pound;

d) Overall copper processing and recovery rate is 85%

Underground mining:

a) Mining dilution by 12%;

b) Mining losses by 15%

c) Beneficiation yield of 85%.

4. Mineral reserves: Open-pit copper equivalent grade 0.61% CuEq, underground copper equivalent grade 1.56% CuEq; $CuEq = Cu + 0.01 * Ag + 1.69 * Mo + 0.79 * Au$; Cu, 4.66 USD/lb, Mo, 20 USD/lb, Ag, 40USD/oz, Au, 2890 USD/oz

5. The mineral reserve estimate was prepared by Dr. Siwei He, an external consultant at Changchun Institute. He is a qualified QP under the Canadian NI43-101 standard.

Mining one has conducted the reserve estimate for Jiama project in 2013. The reserve estimate for the Jiama open pit mine is based on conventional truck shovel mining for the Hornfels open pit and South open pit. The reserve estimate for the Jiama underground mine is based on a combination of Sub Level Open Stopping with Paste fill, Room and Pillar and Cut and Fill. These mining methods are described in section 16. The mineral reserve estimates are summarized in Table 1.4 which are inclusive of the modifying factors for mining recovery and dilution.

Table 1. 4 Mineral Reserve Estimate for Jiama Mine by Mining One in 2013

Open pit									
Type	Mass Mt	Cu %	Mo %	Au g/t	Ag g/t	Cu Metal Kt	Mo Metal Kt	Au Moz	Ag Moz
Proven	7.90	0.41	0.019	0.03	4.1	32.3	1.5	0.01	1.05
Probable	232.80	0.52	0.018	0.09	9.84	1,205.50	40.82	0.68	73.63
Subtotal	240.70	0.51	0.018	0.09	9.65	1,237.80	42.32	0.69	74.68
UNDERGROUND MINE RESERVES									
Type	Mass Mt	Cu	Mo	Au	Ag	Cu (kt)	Mo(kt)	Au(Moz)	Ag(oz)
Proven	17.02	0.748	0.049	0.267	14.735	12.70	8.42	0.15	8.06
Probable	183.06	0.734	0.05	0.315	13.664	1,342.90	92.28	1.85	80.43
Total Reserve	200.00	0.735	0.05	0.311	13.755	1,470.00	100.70	2.00	88.49

Notes:

- The Mineral Reserve as of 20th November 2013.*
- All Mineral Reserves have been estimated in accordance with the JORC code and have been reconciled to CIM standards as prescribed by the National Instrument 43-101.*
- Mineral Reserves were estimated using the following mining and economic factors:*
 - Open Pits:*
 - 5% dilution factor and 95% recovery were applied to the mining method;*
 - overall slope angles of 43 degrees;*
 - a copper price of USD\$ 2.9/lbs;*
 - an overall processing recovery of 88 - 90% for copper*
 - Underground:*
 - 10% dilution added to all Sub-Level Open Stopping;*
 - Stope recovery is 87% for Sub-Level Open Stopping;*
 - An overall processing recovery of 88 – 90% for copper.*
- The cut-off grade for Mineral Reserves has been estimated at copper equivalent grades of 0.3%Cu (NSR) for the open pits and 0.45%Cu (NSR) for the underground mine.*
- Mineral Reserve Estimates were prepared by Anthony R. Cameron who is a sub-consultant to Mining One Pty Ltd. He is a Fellow of the Australasian Institute of Mining and Metallurgy and has over 26 years of relevant engineering experience and is the Qualified Person for Mineral Reserves.*

2013 Jiama Reserve Estimate Results from MINING ONE compared to the 2026 Reserve Estimates by Changchun Institute in this Report shows that after nearly 16 years of mining operation, the current open-pit ore reserves in the Jiama mining area have dropped significantly from 240 million tons to 110 million tons although it still can support more than 20 years of mine life for two current open pit operations at the

current mining capacities. However, underground ore reserves have increased from 200 million tons in 2013 to 550 million tons in 2026, copper metal from 1.47 million tons to 5.2 million tons, molybdenum from 100,000 tons to 220,000 tons, gold from 2 million ounces to 8 million ounces, and silver from 88 million ounces to 354 million ounces.

1.14 Mining Methods (Open-Pit + Underground)

1.14.1 Mine Overview

The I-1 and II-1 skarn orebodies are mined in the underground area.. The primary mining methods employed in Jiama mine are the panel trench small-stage open stoping with subsequent backfill method and the two-step wo-step sublevel open stoping with backfilling method.

The central portion of the ore body between exploration lines 0 and 40 is mined in the hornfels open pit. The orebody occurs as a thick tabular body with significant thickness. The maximum single-hole ore intersection thickness reaches 820 m (intercepting thickness) (ZK3216). There is a relatively thick portion of the orebody in mountain peak areas with a thin overburn, making open-pit mining suitable with low stripping ratio and low production costs in this area.

The upper portion of the steeply inclined skarn ore body in the southern part of the deposit between exploration lines 36 and 72 is mined by open-pit mining method. The deep skarn ore bodies under Phase I open pit and the South open pit will be extracted by underground mining method.

1.14.2 Mining Methods

The ore body dip angle varies considerably within the mining area, ranging from nearly horizontal to extremely steep. Ore body thickness ranges from thin to extremely thick, with medium thick to extremely thick being predominant. The ore and wall rock belong to the hard to moderately hard rock group with a relatively simple rock structure. Geotechnical exploration type falls into Categories III to IV based on the Chinese mining standards, with the geotechnical complexity rated as medium. The surface above the underground mining areas includes the hornfels open pit, surface crushing station and surface ore convey belt corridor, where significant deformation and damage are not permitted, therefore the backfill mining method is taken.

The primary mining method is the panel trench small-stage open stoping with subsequent backfill, with ore-pass access drifts arranged at intervals on both sides of the stope along the long-axis direction, forming a bottom ore extraction structure at the stope base. The sublevel open stoping with subsequent backfill method uses a flat-bottom ore extraction structure. In localized areas of the underground mining area where rock mass stability is generally moderate, the upward horizontal slice cut-and-fill method is adopted (Table 1.5).

Table 1.5 Main Mining Methods and Applicable Conditions

Applicable conditions		Mining Method	Proportion (%)
thickness (m)	dip Angle (°)		
<15	<30	Upward horizontal slice cut-and-fill method	5
15~30		Panel trench small-stage open stoping with subsequent backfill	15
>30	-	Sublevel open stoping with subsequent backfill	80

Mining and Striping Technology at the Hornfels and South Open Pit:

Based on the ore body occurrence conditions, the open pit mine employs the conventional bench (15 m height) mining technology.

Stripping adopts the combined bench steep-slope operation, while mining uses gentle-slope operation. Stripping proceeds from top to bottom according to the final pit limits.

The combined bench steep-slope operation parameters are as follows:

Working bench height: 15 m

Working bench face angle: 70°

Number of benches in combined bench: 3 to 4

Minimum working platform width: 50 m

Non-working platform width: 20 m

Single advance width: 30 m

Working slope angle: 21° to 26°

1.15 Recovery Methods

The processing facilities of Tibet Huatailong Mining Development Co., Ltd. mainly include crushing, grinding, flotation, concentrate thickening and filtration, and auxiliary facilities.

The crushing system consists of two systems: open-pit and underground, with identical processing capacity and flow sheets. Crushing employs a single-stage open-circuit crushing process. Skarn-type ore from underground mining is transferred via conveyor belt to the process plant stockpile after underground primary crushing.

Hornfels-type ore from open-pit mining is transferred via conveyor belt to the process plant stockpile after primary crushing. The feed ore delivered to the process plant stockpile has a particle size of less than 300 mm.

The grinding system consists of two parallel series, each processing the two ore types with identical processing capacity and flow sheets. The grinding circuit employs a SAG mill + pebble crushing + ball mill process (i.e., SABC circuit). The SAG mill product has a fineness of -0.074 mm at 30% content, the ball mill product has a fineness of -0.074 mm at 50%–55%, and the hydrocyclone overflow has a fineness of -0.074 mm at 70%.

Flotation is divided into two series: Series 1 adopts copper-lead-zinc bulk flotation, while Series 2 adopts copper-molybdenum bulk flotation followed by copper-molybdenum separation, producing a copper-lead-zinc bulk concentrate, a copper concentrate, and a molybdenum concentrate.

The copper-lead-zinc bulk concentrate adopts a two-stage dewatering process of thickening + pressure filtration, with concentrate moisture below 12%, and is bagged for sale. The copper concentrate adopts a two-stage dewatering process of thickening + pressure filtration, with concentrate moisture below 12%, and is bagged for sale. The molybdenum concentrate adopts a dewatering process of agitated storage + pressure filtration.

1.16 Project infrastructure

To ensure the full lifecycle of mining production and operation, the supporting facilities of this project are divided into two main sections: on-site and off-site, with an overall layout that balances production safety, operational efficiency, and long-term sustainability.

The mining industrial zone consists of hornfels open-pit, southern open-pit, and underground mine; Ancillary facilities include surface crushing stations, open-pit ore convey belt transportation systems, underground ore convey belt transportation systems, filling stations, 110kV substations, high-level water pools, underground mining areas, and waste rock dump sites.

The surface facilities of the open-pit ore conveying belt system include: the crushing station, the surface transport conveying belt for the ore-pass, the ore-pass site, and the No. 1 ore transfer station. The ore is ultimately transported from Transfer Station No. 1 to the raw ore yard of the processing plant.

The surface facilities of the underground ore belt conveying system include: the inclined shaft entrance of the underground belt and surface conveying belt corridor, and Transfer Station No. 2. The ore is ultimately transported from Transfer Station No. 2 to the raw ore yard of the processing plant.

The mining operation area is arranged from west to east with mine offices, boiler rooms and baths, spare parts warehouses, metal materials warehouses, general material warehouses, supporting log wood processing workshops, locomotive repair

workshops, and trackless equipment repair workshops. Each material warehouse, processing and repair workshop is connected by a narrow track to a 4450m tunnel. The industrial site elevation is 4447 meters.

The dumping site includes Dump Sites 1, 3, and 4. Dump Site 1 serves underground mining, while Dump Sites 3 and 4 serve open-pit mining. Underground mining waste rock is transported out of the surface via underground waste rock ore-pass and a 4,261-level adit, then dumped by surface dump trucks to Waste Rock Dump Site No. 1. Open-pit waste rock is transported by dump truck to dump sites No. 3 and 4.

Currently, there are two processing plants in Jiama mine: Phase I and Phase II. Phase I is designed to process 6,000 t/d ore. The second phase of the plant is designed to process 44,000 t/d ore.

1.17 Environmental study, permit approval, and social and community impacts

1.17.1 Base line environmental study and impact assessment

Huatailong Mining Development Co., Ltd. has conducted a series of comprehensive environmental and social studies and impact assessments for the Jiama copper polymetallic mine, covering all stages of mine infrastructure and production operations. Recently, in April 2022, Huatailong officially commissioned Shenyang Wanyi Safety Technology Co., Ltd. to prepare the environmental impact assessment report for the Youlongbu tailing facility project. The relevant report was finalized in October 2024 and officially submitted to the Tibet Autonomous Region Department of Ecology and Environment for approval in November 2024. This report strictly complies with the Environmental Protection Law of the People's Republic of China, the Environmental Impact Assessment Law of the People's Republic of China, and the Environmental Protection Regulations for Mineral Resource Development in Tibet Autonomous Region, among other regulations.

The report identifies various environmental impacts throughout the entire mine life. The overall conclusion shows that the project has no major environmental constraints. All potential adverse impacts have matured prevention and mitigation measures and can reach acceptable levels, and will not pose substantial issues to mine development or long-term operation.

1.17.2 Waste, tailings, water resources, and monitoring

The project's tailings rely on the company's existing dry tailings facility and Guolanggou paste discharge tailings facility, as well as the ongoing centralized disposal of the Youlongbu tailings facility. It uses an HDPE impermeable lining process and a comprehensive rainwater collection and leachate treatment system. The tailings are non-leaching toxic and corrosive, are not hazardous waste, and a normalized monitoring mechanism has been established.

Water resource management centers on maximizing recycling, with stable daily water reuse in tailings pond return systems, significantly reducing freshwater intake. To address the acidic wastewater that may be generated from waste quarries, the project has built seepage collection pools and treatment facilities to ensure compliant reuse. The project has established an environmental monitoring system covering the entire mining area, with monitoring data regularly submitted to the ecological environment authorities.

1.17.3 Permit approval

The project holds a mining license covering the entire mining area, valid until October 13, 2043. At the same time, it has obtained all major permits such as environmental impact assessment approval, pollutant discharge permit, safety production permit, and water intake permit, all of which are still valid.

1.17.4 Social and community impact

The social impact of the Jama project involves several communities within the mining area, with stakeholders including local villagers, village organizations, local governments, and related social organizations.

Huatailong strictly implements the relevant regulations of the Chinese National Government and the Tibet Autonomous Region Government, safeguarding the legitimate rights and interests of the residents. Community development is driven by enterprise-local co-development agreements, with over 20 million USD invested in livelihood projects, including building vegetable greenhouses, improving roads and water supply facilities, donating schools and health centers, and conducting vocational skills training. The company prioritizes hiring residents and promotes local economic development by forming local transport organizations and purchasing local supplies. In terms of cultural heritage, it has completed a survey of cultural relics within the mining area, established protection and community consultation mechanisms, and respected local folk customs.

Social risk assessment shows that land acquisition, relocation, and livelihood transition are the main residual risks. The project is managed through resettlement compensation, employment assistance, and industrial support, and no major non-mitigating social risks have been identified.

1.17.5 Mine closure and ecological restoration

Huatailong has prepared the "Mining Area Geological Environment Protection and Land Reclamation Plan" to implement the plan for mine geological environment protection and land reclamation, basically restoring the original land use functions and achieving consistency with the surrounding environment.

Reserved mine ecological restoration fees will be implemented according to the annual reclamation plan, with unified management to strengthen land use and protection after reclamation. It covers surface facility demolition, mining and dump site management, tailings pond ecological restoration, soil improvement and vegetation

reconstruction, and post-closure monitoring.

1.18 Conclusions and Recommendations

Changchun Institute has reviewed and validated all data provided by Huatailong, concluding that the data are reliable and can be used for resource/reserve estimation. Current resource/reserve estimation applies a cut-off grade of 0.3% copper for determining mineralized zones (domains) based on the current open-pit and underground production at the Jiama mining area. If large-scale open-pit mining is considered in the future, the cut-off grade for resources and reserves may decrease, which is expected to result in a significant increase in resources and reserves.

Based on the review of the Jiama project it is considered that the current open-pit operation is too small and the opportunities exist for expansion. The hornfels, skarns, and porphyry deposits at the Jiama mining area actually constitute a single interconnected giant porphyry mineralization system, making large-scale open-pit mining for the whole mineralized body within the entire mining area feasible. It is recommended that Huatailong initiates a feasibility study for large-scale open-pit mining as soon as possible.

The large open-pit feasibility study should: thoroughly evaluate the basic data parameters such as resource utilization scope, resource utilization rate, and industrial indices; formulate an overall project development strategy; clarify the production transition plan during the development period, and; consider the smooth production transition of the mining operation.

There exists further exploration potential within the Jiama mining area, especially the northern and western parts of the mineralized zones 1_1 and 3_1. The molybdenum-gold mineralization discovered at Bayi Ranch exploration license area warrants continued drilling.

2 INTRODUCTION

Chuanchun Gold Design Institute (“CGDI”) at the request of China Gold International Resources Corp Ltd (China Gold), were commissioned to review data including geology, mineralization, exploration, drilling, mining, processing plants, tailing ponds, ESG etc. and prepares the NI43-101 resource and reserve estimate update technical report for Jiama project (“Report”).

This report has been prepared in accordance with the Canadian Securities Administrators’ National Instrument 43-101 (NI 43-101) in accordance with Form 43-101F1 - Guidelines for the Preparation of Technical Reports.

Mineral Resource and Mineral Reserve estimations have been prepared in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards – On Mineral Resources and Mineral Reserves (2019) as incorporated by reference NI 43-101.

This report has been prepared by CGDI for use by China Gold management to provide technical and economic information on the Jiama Project. The Report incorporates two open pits and an underground operation. This report is submitted on the understanding that the technical data contained herein has been provided by China Gold and Huatailong and reviewed by technical professionals who have validated the technical data and assumptions contained in the respective bodies of work.

2.1 Terms of Reference

China Gold International Resources Corporation Ltd is a Canadian based gold and copper producer with two producing mines in China. These mines include the CSH Gold Mine in Inner Mongolia, and Jiama Copper-Polymetallic Mine in the Tibet Region. China Gold International Resources Corporation Ltd is the only overseas listing vehicle of the largest gold producer in China and 39% shareholder, China National Gold.

Jiama project is a large polymetallic deposit containing copper, molybdenum, gold, silver, lead and zinc. Phase 1 of Jiama Project commenced commercial production in September 2010 and included the development of the Tongqianshan and Niumatang open cut pits. Phase II of the Jiama project began commercial production on July 1, 2018. Phase II was developed into two series, each with a mining and mineral processing capacity of 22,000 tons per day, totaling 44,000 tons per day. After the Phase II development and expansion, the Jiama project's ore processing capacity has increased to 50,000 tons per day. By the end of 2022, its capacity remained at 50,000 tons per day. Due to overflow issues at the Guolanggou tailings dam at the beginning of 2023, the Phase I of the processing plant, with a daily ore processing capacity of 6,000 tons, ceased operations since May 2024. Currently, only Phase II of the processing plant is operating, with an ore processing capacity of 44,000.00 tons per day.

This technical report covers both mining and exploration license areas of the

Jiama project. The resource and reserves estimate covers both the hornfels open-pit and southern open-pit mine, as well as the mining areas of the underground operation. The Jiama mine uses traditional mining methods for both open-pit and underground mining operations.

This technical report provides a comprehensive review of the current operations of the Jiama mine and mineral resource and reserve estimates update. The Jiama open pit mine employs traditional mining methods, including drilling, blasting, excavation, and transportation. Various underground mining methods have been proposed for the Phase II expansion with the primary mining method proposed being Sub-Level Open Stoping with Filling (Primary / Secondary/Tertiary).

The reserve estimate for the Jiama underground mine is based on a combination of Sub-Level Open Stoping with fill, Long Hole Stoping (LHS) with paste fill, and Room and Pillar and Cut and Fill from the underground mining areas.

The purpose of this report is to provide an update estimate of the Mineral Resource and Ore Reserve for Jiama project and provide an estimate of the mine operation considering mining modifying factors, geotechnical constraints, mining methods and metallurgical characteristics of the deposit.

The Authors of the report were engaged by China Gold to prepare a technical report in compliance with NI43-101. This technical report was prepared by Changchun Gold Design Institute (CGDI).

Unless otherwise stated, currency values are denominated in US dollars (USD).

Table 2. 1 Abbreviations

Abbreviations	Unit or Term
AAS	Atomic Absorption Spectrometry.
AES	Atomic Emission Spectrometry.
Ag	Silver.
Au	Gold.
bcm	Bank cubic metre.
BRIMM	Beijing General Research Institute of Mining and Metallurgy.
CAPEX	Capital Expenditure.
CGDI	Changchun Gold Design and Research Institute.
China Gold	China Gold International Resources Corp Ltd.
CNAL	Chinese National Accreditation Board for laboratories.
CV	Capping of variation.
Cu	Copper.
EAD	Exploration data analysis.
F	Fault.
g	Grams.

g/t	Grams per tonne.
HKEx	Hong Kong Stock Exchange.
Huatailong	Tibet Huatailong Mining Development Company Ltd (indirectly wholly owned by China Gold International Resources Corporation).
ICSG	International Copper Study Group.
lb	Pound.
LHD	Load-Haul-Dump.
M&I	Measured & Indicated.
Med & Ind	Measured & Indicated.
Mo	Molybdenum.
MSO	Mineable Solid Object.
N	North.
NI43-101	Canadian Securities Administrators' National Instrument 43-101.
NPV	Net Present Value.
OPEX	Operational Expenditure.
OP	Open.
oz	Ounce.
Pb	Lead.
RMB	Yuan – (¥).
S	South.
SLC	Sub Level Caving.
Southwest Centre	Southwestern Metallurgic Geology Analytical Centre.
t	Tonne.
RBF	Radial Basis function.
ROM	Run of mine.
RQD	Rock quality designation.
P&P	Proven & Probable.
QA	Quality Assurance.
QC	Quality Control.
US	United States.
USD	United States Dollars (\$).
Zn	Zinc.

2.2 Author’s Qualifications & Responsibilities

The Jiama Project has been operational since September 2010. Operations from both the Open-pit and underground mining operation provide a substantial level of confidence in the operational assumptions made in the evaluation of the two new open pit mines as is the case with the existing underground operations. As a result of this confidence, a single site visit was conducted to validate the assumptions made for the development of both the open-pit and underground mining sites.

Responsibilities for the preparation of certain sections of this Technical Report have been assigned to individual authors as shown in Table 2.2 of this report and such individual authors are not responsible for sections of this report other than those indicated in this table.

Table 2.2 Technical Reporting Responsibilities

Report Sections	(Qualified Person)
1-3,10-12,14,20-22	Tony Guo, Ph.D, Geology,P.Geo (EGBC), MMSA (QP)
15	Dr. Siwen He, Mining Engineer, P.Eng. (EGBC), (P.Eng) , QP
4-9,13, 16-19	Guangpian Zhang, FAusIMM, QP

Dr. Tony Guo is a Canadian registered geologist and a QP member of the American Mining and Metallurgical Association with 30 years of experience in geological exploration and academic research, specializing in geological exploration, 3D geological modeling, and resource estimation, meeting the requirements of NI43-101 QP. Dr. Guo visited the Jiama site in March 2024 (Figure 2.1), and from April 22 to 24, 2026, visited Huatailong Company headquarters in Lhasa, Tibet, providing video guidance for mining engineers and geologists from Changchun Institute during the Jiama field inspection. Geologist and resource modeling engineer Ian Zhou, under the guidance and commission of qualified candidate Dr. Guo Yingting, visited the site and collected seven validation samples from April 22 to 26, 2026.

Dr. He Siwei, a Canadian Registered Mining Engineer, has 30 years of mining and academic experience, specializing in mining engineering and reserve estimation, meeting the requirements of NI43-101 QP.

Mr. Zhang Guangpian has over 30 years of experience in mining, having held senior and executive positions in mine design, R&D, equipment development, project engineering, and operations management. Zhang Guangpian has extensive experience in feasibility, due diligence, and valuation studies. Zhang Guangpian is a senior member of Australia's FAusIMM, meeting the QP requirements of NI43-

101 Mr. Zhang Guangpian visited the Jiama site from April 25 to 26, 2026 (Figure 2.2).

2.3 Limitations and Exclusions

This technical report has been prepared by the Authors for China Gold and is based on a review of data provided by Huatailong.

The independent Authors have not performed any sampling or assaying, performed any detailed geological mapping, excavated any trenches, drilled any holes, or carried out any independent exploration work.

3 RELIANCE ON THE OTHER EXPERTS

This report has been prepared by the Authors for China Gold International Resources Corp Ltd and is based on the review, analysis, interpretation and conclusions derived from information that has been made available by China Gold and Huatailong. Additional validation of the data has been augmented through consultation with current employees of Huatailong and China Gold.

The independent authors have not performed any sampling or assaying, performed any detailed geological mapping, excavated any trenches, drilled any holes, or carried out any independent exploration or testing of the proposed mining area.

This technical report has been prepared with assistance of a number of China Gold employees who have provided local insight to many sections of this report and include Mr. Wang Wen, Vice General Manager for Huatailong, Mr. Yang Zheng kun, General Manager of Geology Department, Mr. Ge Sang, Vice General Manager of Geology Department etc., and Mr. Xie Xingshan, Cui Yanchao, Mr. Tao Nan, Mr. Wu Ziyong, Ms. Tian Nan, Mr. Wen Xiaowei. . Their contribution including data preparation and compilation and studies has been invaluable in defining and validating operational and physical data used for the purpose of this technical report.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Introduction

The Jiama Copper-Polymetallic Project (Jiama Project) is in Metrokongka County, Tibet Autonomous Region, the People's Republic of China (Figure 4.1).

The mine lies approximately 68 km east-northeast of Lhasa, the capital of Tibet Autonomous Region. The project was fully owned by Tibet Huatailong Mining Development Company Ltd (indirectly wholly owned by China Gold International Resources Corporation) and represents one of China's largest copper-gold mines.

Huatailong holds two mining licenses and two larger adjacent exploration licenses in the area. The Niumatang (73.5 ha) and Jiama (216 ha) mining licenses are set in the centre of the Jiama exploration license while the Bayi Ranch license is located southwest of the current mining area.

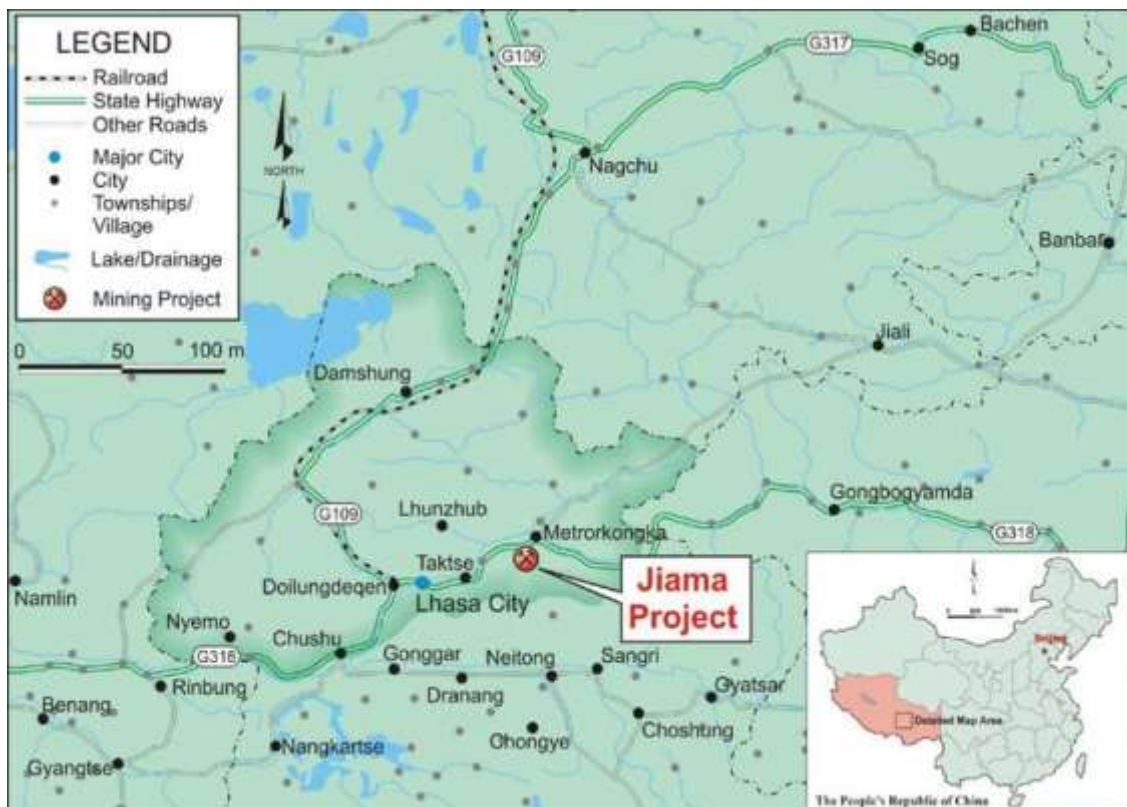


Figure 4. 1 Location Map of Jiama Project (after Mining One, 2014)

4.2 Ownership Structure of the Jiama Project

Tibet Huatailong Mining Development Co., Ltd. is 100% directly owned by Tibet Jiaertong Mining Development Co., Ltd.; Tibet Jiaertong Mining Development Co., Ltd. is wholly owned by Skylan Mining Co., Ltd., registered in Barbados; Skylan Mining Limited is a wholly owned subsidiary of China Gold International Resources

Co., Ltd., a Canadian registered and listed entity. Through the above wholly owned hierarchical structure, China National Gold International Resources Co., Ltd. indirectly holds all equity of Jiama Project.

Tracing back, China National Gold Group Limited holds a wholly owned stake in China Gold Group Hong Kong Limited, which holds 40.01% of China Gold International Resources Limited, with the remaining 59.99% held by public investors. Through this multi-layered shareholding structure, China National Gold Group has achieved ultimate actual control over Tibet Huatailong Mining Development Co., Ltd (Figure 4.2)

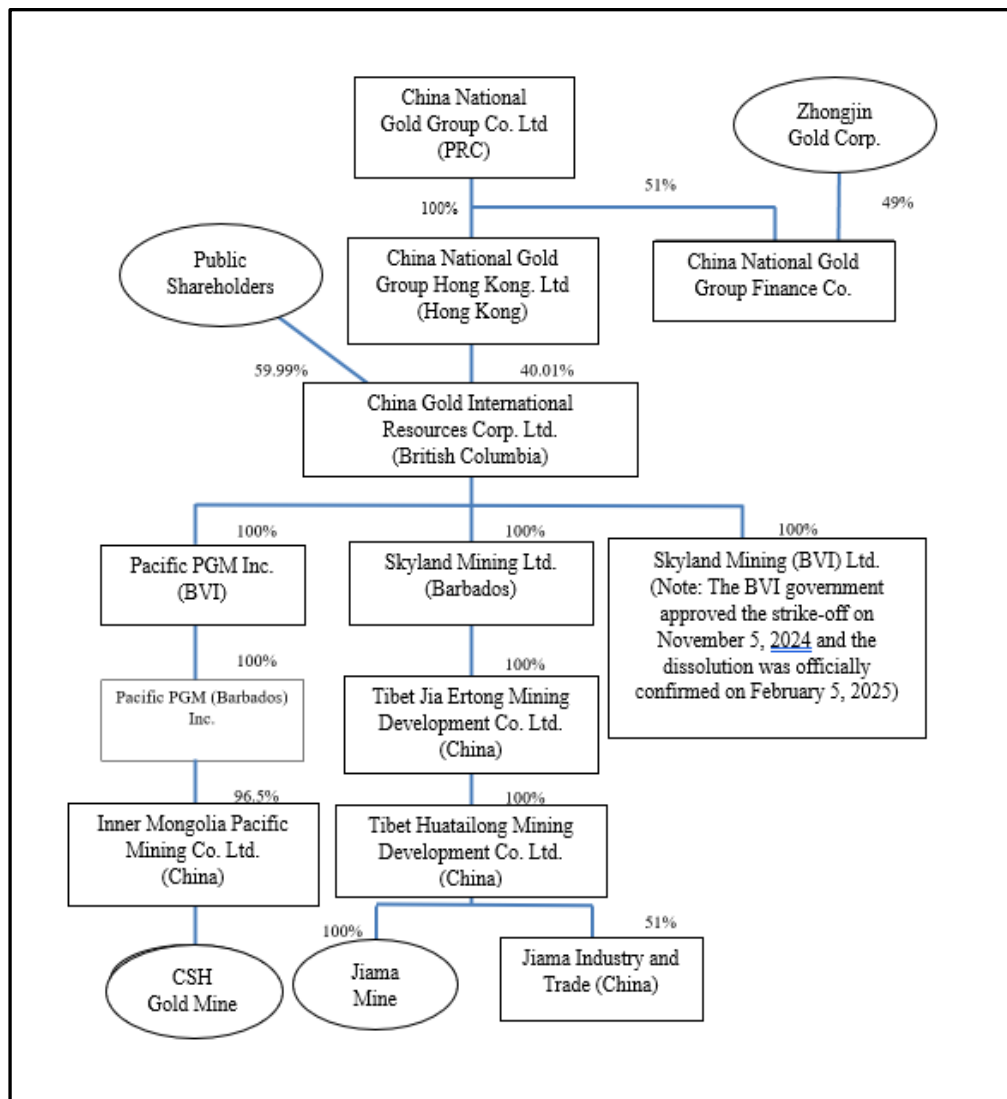


Figure 4. 2 Ownership Structure of China Gold International Resources Corporation

4.3 Mining License

The mining license for Jiama Copper Polymetallic Mine is issued by the Tibet

Autonomous Region Department of Natural Resources (Table 4.1 and Figure 4.3).

Table 4. 1 Jiama Copper Polymetallic Project – Mining License

Mine/Project	Jiama Copper Polymetallic Min2
Name of Certificate	Mining License
Certificate No.	C5400002011113220119758
Owner	Tibet Huangtailong Mining Development Company Ltd.
Address	13F, Foreign Economy & Trade Building, Lhasa Jinzhu West Road 75
Mine Name	Jiama Copper Polymetallic Mine
Company Type	Limited Liability Company
Metal	copper, molybdenum, lead, zinc, gold, silver
Mining Type	Open-pit or Underground
Scale	14.4 million tons/year
Area	6.74 square kilometers
Mining Evaluation	5300m to 4085m
Validation	October 13, 2023, to October 13, 2043
Issue Date	November 1 st , 2023

4.3 Exploration License

Tibet Huatailong Mining Development Co., Ltd. holds two exploration Licenses (Table 4.2,4.3 and Figure 4.3):

1, The exploration license of the Bayi Ranch copper-lead deposit is issued by the Tibet Autonomous Region Department of Natural Resources.

Table 4. 2 Exploration license for the Bayi Ranch copper-lead property

Mine/Project	Exploration of Bayi Ranch Copper Deposit in Mozhugongka County, Lhasa, Tibet
Name of Certificate	P.R. China Mineral Resource Exploration Permit
Certificate No.	T5400002008073050010979
Mine Right Holder	Tibet Huatailong Mining Development Company Ltd.
Location	Mozhugongka County, Lhasa City, Tibet Autonomous Region
Name of Project	General Exploration of Bayi Ranch Copper-lead deposit in Metrokongka, Lhasa, Tibet
Exploration Acreage	37.12sq. km.
Validation	September 30, 2021, to September 26, 2026
Issue Date	September 30, 2021

2, The detailed exploration permit for the copper and lead deposits surrounding the Jiama mine (Table 4.3 and Figure 4.3)

Table 4. 3 Exploration License for Jiama Mine Periphery Copper – Lead Project

Mine/Project	Jiama Periphery Copper Lead Deposit Exploration
Name of Certificate	P.R. China Mineral Resource Exploration Permit
Certificate No.	T5400002008073050010972
Mine Right Holder	Tibet Huatailong Mining Development Company Ltd.
Location	Jiama Town, Metrokongka County, Lhasa, Tibet
Name of Project	Detailed Exploration of the Copper-Lead deposit of the periphery area in Jiama Mine, Mozhugongka County, Lhasa, Tibet
Exploration Acreage	39.73 sq. km.
Validation	September 30, 2021 to September 30, 2026
Issue Date	September 30, 2021

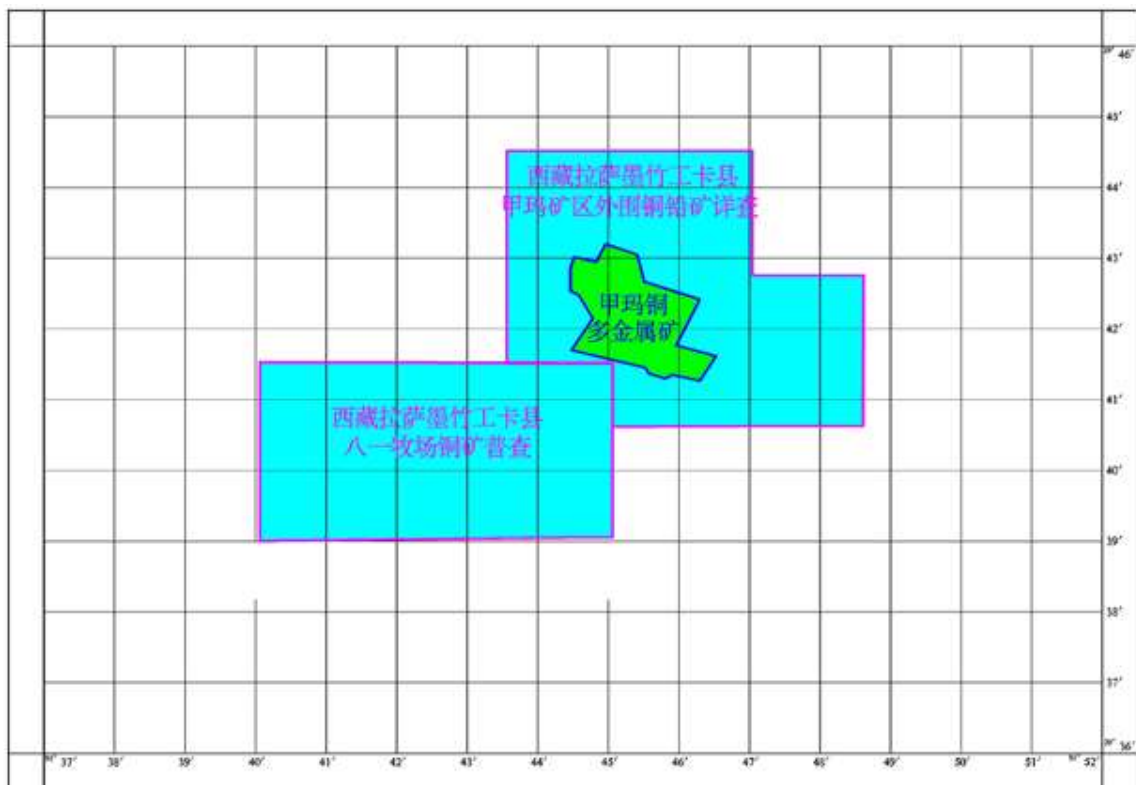


Figure 4. 3 The Diagram Map of Mining License and Exploration Licenses owned by Huatailong in Tibet, China (1954 Beijing Coordinate System)

(Bright green, mining license for Jiama, Teal green, exploration licenses for Jiama)

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Project Accessibility

Access to the project site is via the Sichuan–Tibet Highway (National Road G318) approximately 60 km east of Lhasa. An 8 km paved road connects the mine and camp to the highway. Lhasa is connected to other locations via road, rail (Qingzang Railway) and has daily national and international flights from the Lhasa–Gonggar Airport. The project is considered well located due to its proximity to the Tibetan capital.

The external road connecting to the Jiama copper polymetallic mine is generally a three-tier network consisting of "mining area simple road + National Highway 318 + Lalin high-grade highway," mainly asphalt, smooth year-round. Overall, the mining area is close to Lhasa, has good road conditions, is accessible year-round, and can be reached by heavy loads. Among similar mines in Tibet, it stands out for its transportation advantages, providing solid road support for development and operation.

5.2 Climate and Vegetation

The climate in Lhasa consists of cold dry winters with an average temperature of -1.6 degrees Celsius. Summer periods are characterized by a humid but cool climate with an average temperature of 16 degrees Celsius. Climatic conditions at the Jiama project will be slightly cooler due to the additional elevation. The high elevation also impacts on the air quality with thin air likely to affect personnel.

The average annual precipitation is 500 mm with rain commonly falling in July, August and September. Nearby Lhasa receives almost 3000 sunlight hours per annum, prompting many locals to name it the 'Sun city'.

5.3 Local Resources

Jiama Township and Sibu Township are both agricultural and pastoral areas with a population of about 6,000 peoples, mostly Tibetan, with a large surplus of labor during the off-season. The main grain crops are highland barley, winter wheat, peas, and potatoes; the economic crop is rapeseed. Animal husbandry raises yaks, yellow cattle, sheep, horses, donkeys, and more. It is rich in livestock hides and beef and mutton, with a relatively underdeveloped economy.

A comprehensive system of mining production, environmental, livelihood infrastructure, and comprehensive facilities of roads, power supply, water supply and drainage, communication networks, tailings treatments and maintenance and ecological management have been established in the Jiama mining area, which will eventually support the safe and efficient mining operations in the Jiama mine.

One 110kV power substation was setup for Phase I process plant. The main and backup power sources for the Phase I 110kV substation are drawn from the 110kV Tangjia substation.

One 110kV substation was established for Phase II process plant, with the backup power supplied by the Mozhugongka County 220kV substation.

One 110kV substation at the mining site was set up, with two 110kV power sources at the stope substation fed from the busbars I and II of the 110kV substation of the second phase plant.

Phase II tailings dam currently houses a 10kV distribution room, with the 10kV power supplied by the 110kV substation.

The power supply for the 110kV substation at the Phase III Youlongbu Tailings Dam is drawn from the #2 connecting line of the 110kV substation at the Phase II plant.

5.4 Infrastructure and Physiography

Jiama mine is in the northeast of the main peak of Guokalariju Mountain in the eastern section of the Gangdise Mountains Range. It belongs to a high-altitude deep cut area, with ridges running north-south and east-west. The mountain tops are mostly rounded, with well-developed gullies on the slopes. The elevation is 4350~5407.5m, and the terrain is higher in the south and lower in the north. Steep slope, high elevation, and large relative elevation vary are the three main features of the Jiama mine terrain.

Quaternary deposits are widely developed within the mining area, covering more than 85% of the area. Half the slope is covered with dense shrubs, while the other half is either covered with humus soil or by fallen rocks formed by frost weathering, with a thickness generally of 1~5m. The vegetation is mainly alpine meadows with a small amount of alpine cold-hardy moss. The water system is well developed, supplied by atmospheric precipitation and meltwater from ice and snow. Annual rainfall is around 500mm, mostly occur from June to September.

5.6 Conclusions

The access roads to the mining area are smooth, with complete supporting infrastructure, manpower support, power supply, water supply, and communication systems, fully meeting the production and operational needs of mining, beneficiation, and tailings disposal, as well as ensuring personnel living support, providing a solid guarantee for the mine's long-term stability and sustainable development.

6 HISTORIES

6.1 Pre 2008

Surface trenching exploration and geological works undertaken between 1951 and 1990 identified and delineated a 3.6 km long zone of copper-lead zinc mineralisation, although artisanal mining of lead occurred prior to this. In 1990, following a review of these early results, the Tibetan Geology and Minerals Resource Bureau implemented a much larger field program. Between 1990 and 1999, the No. 6 Geological Brigade (Brigade 6) from the Bureau completed 31 diamond drill holes for a total of 10,091 m on 16 exploration traverses. 407.5 m of underground development and 16,474 m³ of surface trenching was completed during this time.

As a result of this work, four mining licences within the current Jiama Project mining licence boundary were issued and mining operations commenced shortly after:

The Jiama Township Fupin Development Company Limited constructed a 300 tpd concentrating plant and commenced mining in 2004. A total of 14 adits were developed for mining with an estimated 49,000 tonnes of ore being mined to the end of June 2006.

Open pit and underground mining practices were carried out on the mining licence by the Lhasa Mining Company. Open pit mining commenced above the MSL elevation of 4,780 m in 1995. Prior to 2006, a total of ten adits were developed between MSL 4,606 m and 4,780 m with total production from the open pit and underground workings approximating 130,000 tonnes.

A joint venture between the Tibet Jiama Mining Development Company Limited, and Henan Rongye Trading Company Limited was established. Mining commenced in 2003, with a total of 109,000 tonnes of ore being mined through until the end of June 2006.

The Original Tibet Huatailong Mining Development Company Limited commenced mining in 2005. The estimated mine production from three mining adits was 80,000 tonnes to June 20, 2006.

In the period prior to 2006, it is estimated that the total mining production for the four operations at Jiama was 368,000 tonnes. In the absence of any reliable total historical mine production figures, the Resource Institute conducted a systematic survey of the existing underground workings using mined stope volume as a proxy for consumed mineral resources. The Tibetan government stopped all 4 operators from mining in April 2007, and in an agreement with the China National Gold Group Corporation consolidated the mining/exploration licences and awarded it to the newly reorganised Tibet Huatailong Mining Development Company.

6.2 2008-2012

Exploration work has been completed in a number of distinct phases following the consolidation of the licenses. 2008 marked the beginning of an extensive exploration

program with 105 diamond holes drilled, the development of survey control points and the completion of a 1:200 topographic survey. In 2009, exploration consisted of an in-fill drill programme in the Niumatang Open Pit area and step-out drilling along the northwest margin of the known zone of mineralisation.

Further exploration drilling during 2010 greatly expanded the mineral resource and was followed by in-fill drilling in the area of the proposed Jiama Open Pit throughout 2011. Huatailong commissioned a pre-feasibility study in 2012 and continued in-fill and step-out drilling in the region of the proposed South Pit.

6.3 2013-2025

In 2013, the Institute of Mineral Resources of the Chinese Academy of Geological Sciences conducted resource and reserve verification work on the Jiama project. Completed 1:2,000 mapping of 10 km², drilled 12,450.67m/27 holes, conducted 7,239 basic analysis samples, and submitted the "Verification Report on Copper Polymetallic Resource and Reserves estimates in Jiama mine, Mozhugongka County, Tibet Autonomous Region."

Before 2017, surface drilling was the main method; Since 2017, most of drilling are underground drilling in Jiama project.

The 3,000-meter scientific deep drilling project began in 2019, mainly aimed at obtaining deep structures over 3,000 meters and define, three-dimensional structure, clarifying the deep copper resource potential in the Jiama mining area

In 2022, Geology Company of China Gold Group collected nine years of exploration data and annual mineral resource reserve reports. Based on these data, and new industrial standards, they estimated resource reserves and compiled the "Verification Report on Copper Polymetallic Resource Reserves in Jiama Mine, Mozhugongka County, Tibet Autonomous Region."

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geological Setting

Tibet is composed of an amalgamation of distinct structural terranes formed during episodes of oceanic lithosphere subduction and accretion during the Palaeozoic to Mesozoic (Shundong et al., 2007). The four major terranes, separated from one another by regional scale, semicontinuous east–west sutures, are the Songpan–Ganze, Qiangtang, Lhasa and Tethyan Himalayan terranes (Figure 7.1).

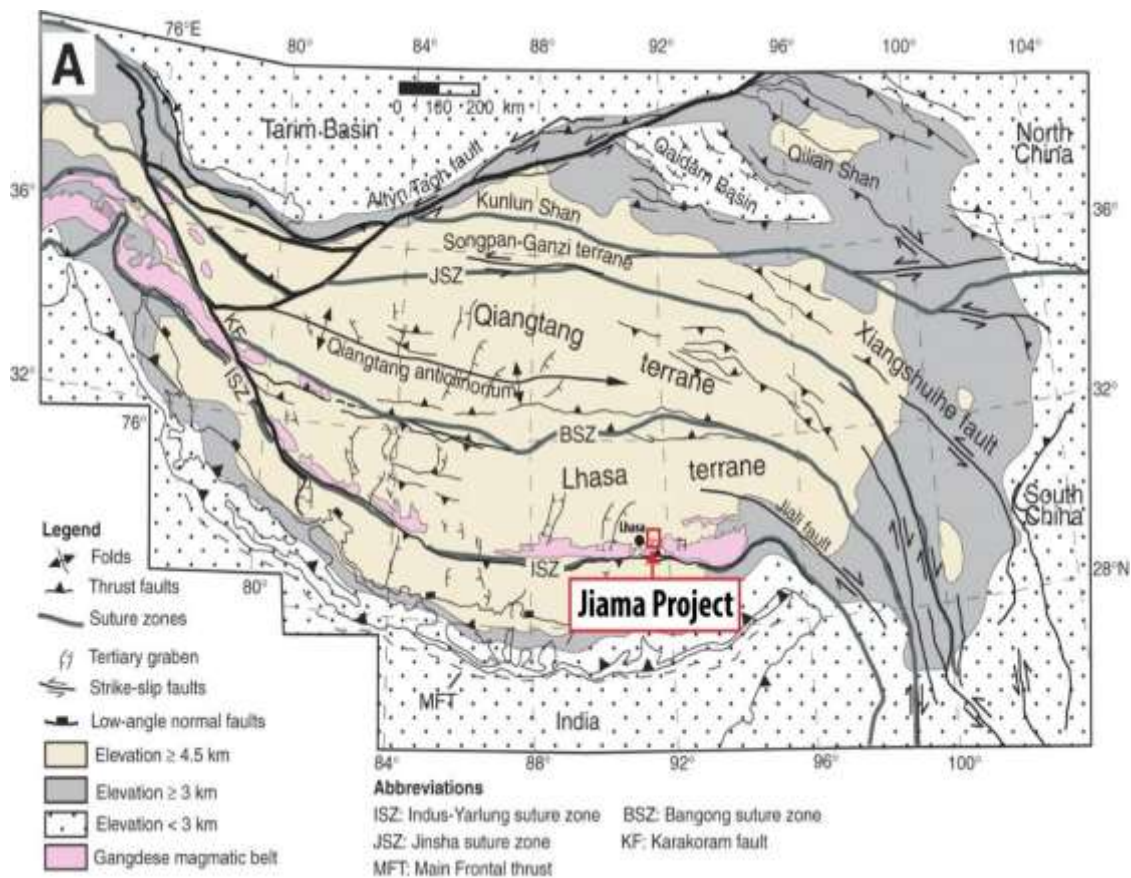


Figure 7.1 Simplified Tectonic Map of North-West China (after Mining One, 2012)

The Lhasa Terrane (in which the Jiama Project is located) is the southernmost crustal fragment that was accreted to the margin of the Eurasia Plate during the Jurassic to Early Cretaceous, prior to the collision of the Indian and Eurasian continental plates. The terrane is thought to overlie older crystalline basement and consists predominantly of Jurassic–Cretaceous fluvial/marginal marine clastic and carbonates and Late Cretaceous intermediate to felsic intrusive (Da-Ren Wen et al., 2008).

The regional strata consist of the crystalline basement of the Precambrian Gangdise group and the Late Paleozoic-Quaternary volcanic sedimentary strata. The Triassic-Cretaceous strata are the most widely distributed and widely exposed. It is

the major distribution area of copper polymetallic deposits in the Gangdise metallogenic belt. The Jiama copper polymetallic deposit is mainly composed of Jurassic and Cretaceous strata.

7.2 Regional Geology

7.2.1 Strata and Structure

The strata distributed in the Jiama area are mainly clastic-carbonate series from the passive epicontinental limestone of the Upper Jurassic Duodigou Formation, the sandstone and slate of the Lower Cretaceous Linbuzong Formation, as well as Quaternary alluvial deposits and glacial flood deposits locally.

The skarn mineralized bodies in the Jiama mining area are found in the Duodigou Formation and Linbuzong Formation, while porphyry mineralized bodies are mainly found in the Linbuzong Formation.

The Jiama mining area is located at the front section of the regional thrust fault system (Figure 7.2).

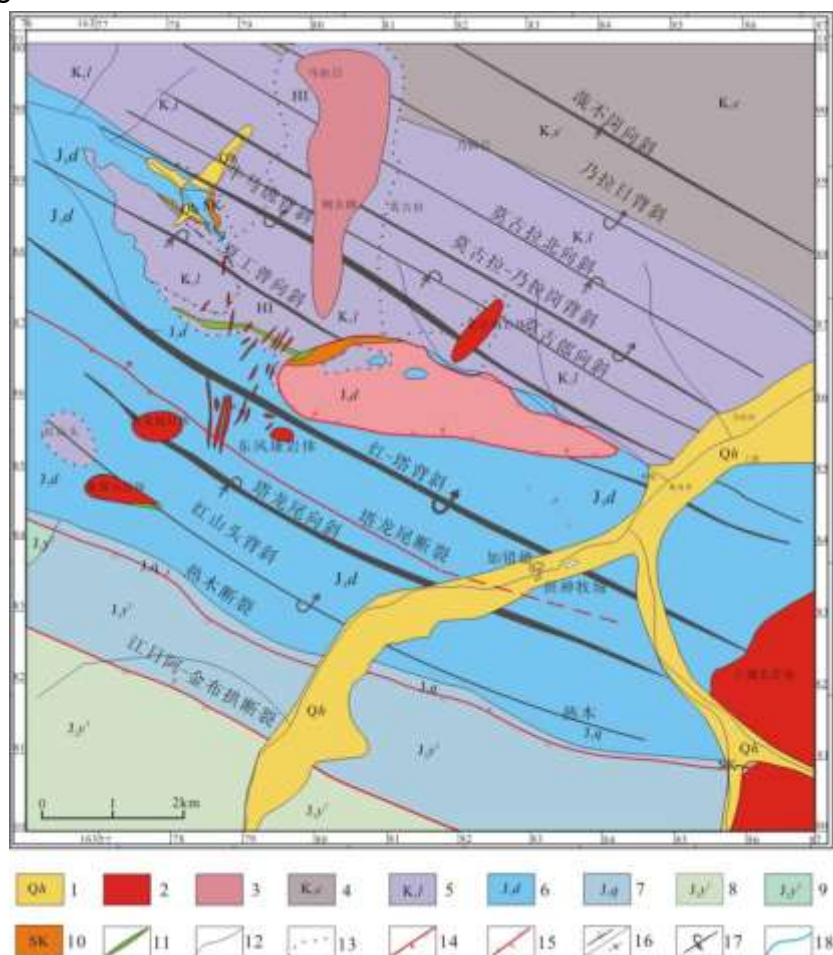


Figure 7. 2 Outline Structural Map of the Jiama Mining Area (After 2022 Jiama verification report)

Legend in Figure 7.2 :1 - Quaternary; 2 - Granite; 3 - Silicon cap; 4 - Chumulong Formation; 5 - Linbuzong Formation; 6 - Duodigou Formation; 7 - Quesang Hot Springs Group; 8-Yeba Formation- III; 9-Yeba Formation II; 10-Skarn; 11-orebody; 12 - Stratigraphic boundary; 13- Hornfels alteration boundary; 14 - Normal fault; 15-Reverse fault; 16 - Oblique tilted inverted anticline/normal anticline; 17- Tilted Reverse Anticline; 18 - Water system

Structure plays an important role in allocating and storing magma and ore-bearing fluids, mainly through the south-to-north slip overburden and the north-to-south overburden in the mining area, specifically through interlayer slip structures and the secondary folding ore-forming control caused by them.

The main folds at the front of the overburden structural system include the Hong-Ta anticline, Niumatang anticline, and Xiagongpu syncline.

The Hongta anticline is the main fold in the area, oriented northwest, located on the southwest side of Mineralized Belt No. 1, running through the entire mining area from Hongqiling to Dongfengya, with the northwest end rising upward. The northeast wing strata tilt northeast with an inclination angle of 30~45°; the southwest wing near the core strata tilts southwest, while the lower part turns northeast with an inclination angle of 50~70°. The axis tilts northeast, forming a compound anticline with a concentric inverted incline, and folds are well developed within the strata on both wings.

The Jiama mineralized body mainly contains the northern wing of the Hongta anticline, distributed in the secondary Niumatang anticline and Xiagong syncline.

From south to north, the sliding body can be divided into: the posterior band, the middle band, and the anterior band. The exposed area of the entire slipcover is about 4 km², which is relatively small within mining permit area.

The igneous rocks in the Jiama mining area are mainly intrusive rocks, appearing as intrusive branches and dikes, with complex rock types including granite porphyry, granodiorite porphyry, monzonite porphyry, quartz diorite, diabase. Granite porphyry is closely related to mineralization in Jiama mining area.

7.2.2 Metamorphism

Three types of metamorphism in Jiama mining area: contact, gas-liquid, and dynamics, with contact and gas-liquid metamorphism being the main control types of mineralization.

(1) Contact metamorphism: Early thermal contact metamorphism forms hornfels and marble, providing metallogenic space; Contact metamorphism occurs in the stratigraphic contact expansion zone, mainly calcium skarn, which aggregates 80% of the skarn-type mineralization in the mining area, making it the main ore type.

(2) Gas-liquid metamorphism: Under the combined influence of magma and atmospheric precipitation, temperature drop causes the fluid to shift from weakly alkaline to moderately acidic, leading to the development of various alterations. Silicification is closely related to Cu and Mo mineralization, the strong silicified zone in the Gulang area serves as a direct prospecting indicator.

(3) Dynamic metamorphism: occurs in tectonic active zones and stratigraphic contact zones, develops in multiple phases, is controlled by tectonic stress and heat flow, forming various types of breccia and fault gauges.

7.2.3 Alterations

The main alterations in the Jiama mining area are skarnization, hornfelsitization and silicification, while carbonate and clay alteration are later superimposed alterations; The intrusive rocks mainly undergoes sericitization and carbonatization. Regional metamorphic overprinting masks the alteration zonation in the Jiama mining area. The mineralization mainly occurs in skarn and hornfels alteration area.

7.2.4 Mineralization

Mineralization is divided into four phases and is stacked in succession: first, the thermal contact metamorphism stage, which forms hornfels and marble; Second, the dry skarn stage, which is the main mineralization period of skarn; Third is the wet skarn stage, where early skarn degradation alteration accompanied by chalcopyrite and other sulfide deposit; Fourth is the quartz-sulfide stage, with abundant development of copper, lead, and zinc sulfide veins, which is a key mineralization stage.

Three types of copper-polymetallic mineralisation are recognised in the Jiama project area, these include skarn, hornfels and porphyry (Figure 7.3 & Figure 7.4).

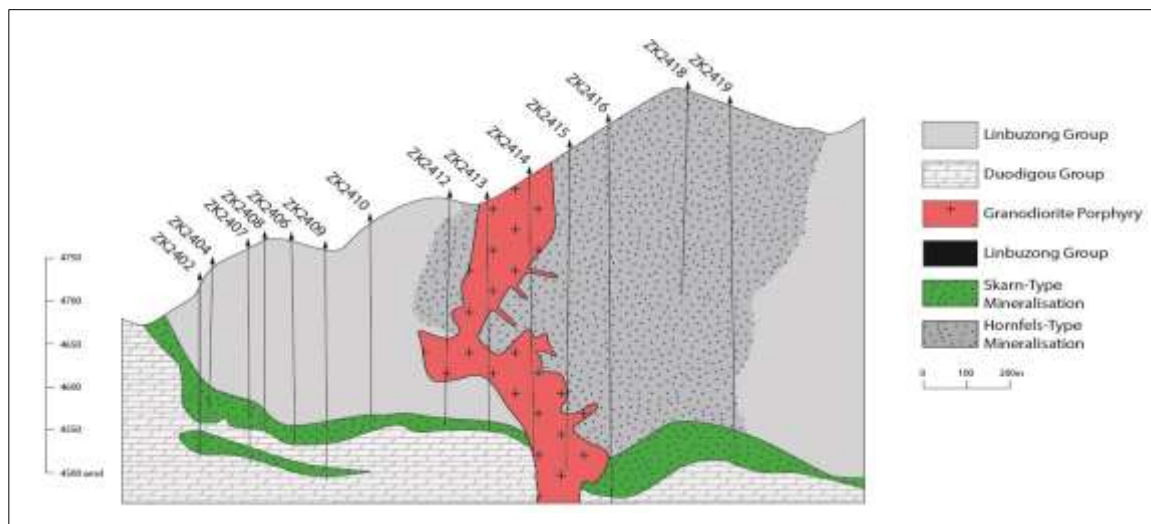


Figure 7.3 Geological Cross-Section along Exploration Line 24 (After Mining One, 2012)

1, Skarn-Type Copper-Polymetallic Mineralization

High grade copper-polymetallic mineralisation is associated with skarn type alteration within shear zone contacts between the Duodigou and Linbuzong Formations. This stratiform fault mineralization zone is tabular to lenticular in shape, has a variable dip, strikes west-northwest and hosts the primary lode.

The mineralized body itself has a 60° dip angle near surface which flattens to an average dip of 10° with depth. Thicknesses of mineralized body vary between 2 m to 240 m, averaging 33 m, its strike length is approximately 2,400 m and its length down dip ranges between 150 to 1,900 m.

Copper mineralization shares associations with chalcopyrite, bornite and chalcocite and is hosted by either thin veinlets, as disseminated sulphide crystals or as massive sulphide zones.

2, Hornfels Hosted Copper-Polymetallic Mineralization

Hornfels hosted mineralisation is of lower grade than that of the skarn type deposits and occurs predominantly as disseminated sulphides. Mineralization is fine grained and consists of copper in association with chalcopyrite, bornite and molybdenum. No massive sulphide zones or veining have been recognized within the texturally massive and highly fractured rock mass. Earlier observations of copper associated with pyrite and pyrrhotite coating fracture planes have been attributed to secondary enrichment.

The mineralized body shows no preferential orientation, it is shallow, tabular shaped and approximately 1,200 m in length, 1,000 m wide and generally 10 to 50 m thick, although a maximum thickness of 826 m was intercepted in drillhole ZK3216.

3 Porphyry-Type Molybdenum-Copper Polymetallic Mineralisation

Mineralization in porphyritic granodiorite and monzogranite is characterized by molybdenum with lesser amounts of chalcopyrite and bornite. Sulphides are medium to coarse grained and confined to a thin horizontal pipe shaped body with a maximum known thickness of 476 m. The porphyritic host lies beneath the Duodigou Formation and appears intruded into the sheared contact between the two basement units.

7.3 Deposit Geology

The Jiama copper polymetallic deposit consists of deep concealed porphyry-type molybdenum (copper) mineralized bodies, skarn-type copper polymetallic mineralized bodies formed along the interlayer-hornfels of the Lower Cretaceous Linbuzong Formation sand-slate–hornfels and Upper Jurassic Duodigou Formation limestone–marble. Hornfels-type copper-molybdenum mineralized bodies lie on above the porphyry bodies. Porphyry-type orebodies are mainly controlled by folding and fault structures in the mining area. S skarn orebodies are mainly controlled by the contact zone and interlayer expansion space caused by overthrust fault. Hornfels orebodies are mainly controlled by fracture systems caused by the breakup of brittle hornfels at

the top during the emplacement of porphyry bodies.

Based on the ore-forming lithology and spatial location, four mineralized zones are divided: No. I skarn zone, No. II skarn zone, No. III hornfels zone, and No. IV porphyry zone.

7.3.1 Mineralized Zone Classification

(1) No I Skarn Mineralized Zone

The No. I skarn mineralized zone occurs in the interlayered structure of the overlying Linbuzong Formation sandstone and hornfels, and the underlying Duodigou Formation limestone and marble. Its distribution range extends from Exploration grid line 49 in the west to Exploration grid line 52 in the east.

The No. I skarn mineralized zone is dominated by copper-molybdenum mineralization, associated with lead, zinc, gold, and silver. In the southern Qianshan Mountain area, lead, zinc, and copper mineralization coexist, accompanied by gold, silver, and molybdenum. The mineralization is mainly controlled by diamond drilling accompanied by a small number of trenches in certain sections. Grid lines 0, 4, 8, 12, 16, 32, 36, and 40 have intercepted thick mineralization and most drilling holes along these grid lines have terminated within the mineralization zone and do not penetrate the orebody. The elevation of No I skarn mineralized zone is 4350~4650m.

(2) Skarn Mineralized Zone II

The No. II skarn mineralized zone is mainly controlled by the sliding fault and occurs at the front edge of the slip overthrust. The surface boundary line for the sliding fault is located in the southern area near exploration line No. 42, which gradually turning northeast to near east-west, extending to the easternmost corner of the mining tenement; Mineralized zone No. II is distributed on the southeast side of Line 42. The elevation of Mineralized Zone II is 5200~4320 m, which is overall higher than Mineralized Zone I.

Above 4700m elevation, the No. II skarn mineralized zone is mainly lead-zinc-copper mineralization, with lead, zinc, and copper coexistent, associated with molybdenum, gold, and silver. Below 4700m elevation, copper-molybdenum mineralization is mainly coexistent, accompanied by lead, zinc, gold, and silver. The main mineralized body II-1 has been defined by a high degree of confidence through surface drilling, in-pit drilling and trenches. A lot of drill holes on grid lines 46, 50, 54, and 56 do not penetrate this mineralization zone.

(3) III Mineralized Zone

The No. III hornfels mineralized zone mainly occurs within the hornfels of the Lower Cretaceous Linbuzong Formation, distributed from exploration grid line 43 in the west to exploration grid line 54 in the east with elevation of 5270~4132m.

Above 4700m elevation, the III hornfels mineralized zone is dominated by copper or copper and molybdenum coexistent, accompanied by gold and silver; Below 4700m

elevation, mainly molybdenum or coexistent of molybdenum and copper, with associated gold and silver. The main mineralized body III-1 is controlled by surface drilling.

(4) IV Mineralized Zone

The No. IV porphyry mineralized zone is controlled by porphyry intrusions, located in the central part of the Jiama mining area, surrounded by No. I and III mineralized zones, distributed along exploration grid lines 16-32, with an elevation of 5088~4208m.

IV porphyry mineralized zone is mainly molybdenum mineralization or coexisting copper and associated gold and silver. The main mineralized body IV-1 is controlled by surface drilling; The drill holes on lines 16 and 24 have not penetrated the mineralized body.

The relative spatial positions of the four mineralized zones in the Jiama mining area are shown in Figures 7.4 and 7.5

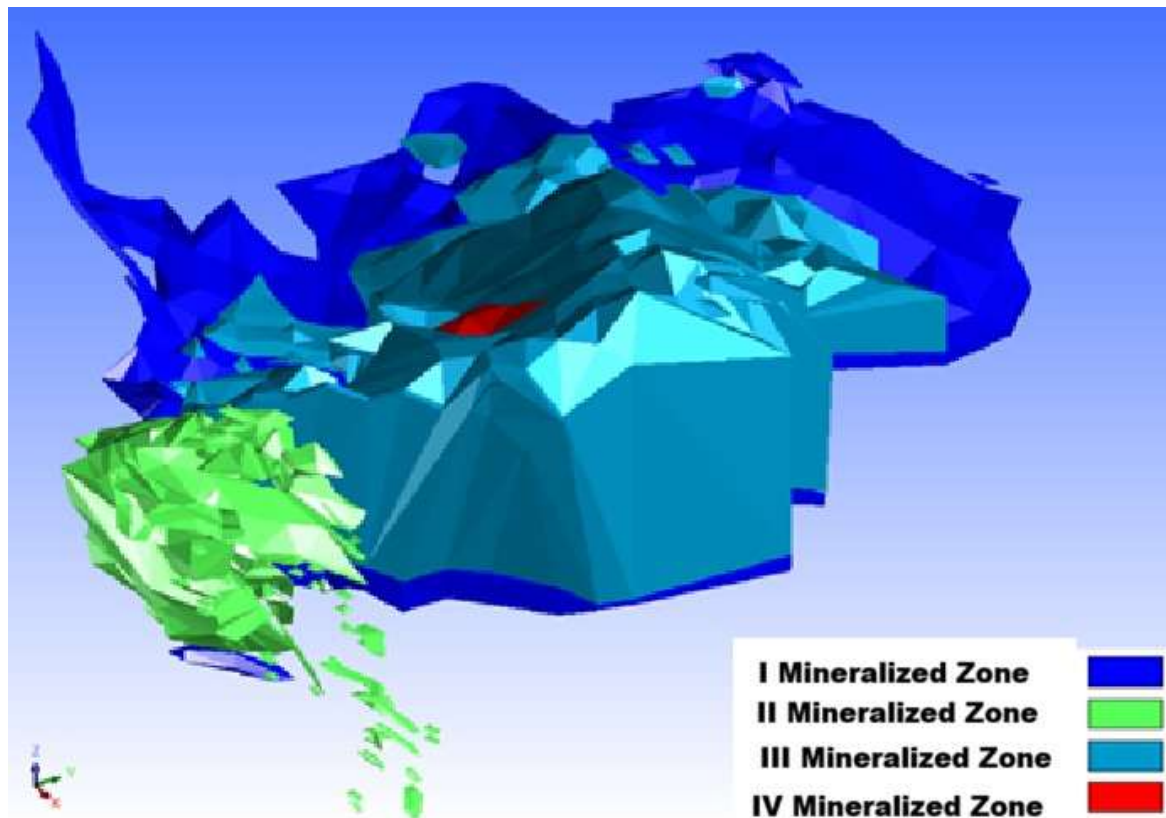


Figure 7. 4 3D Relation of 4 Mineralized Zone at Jiama Mine

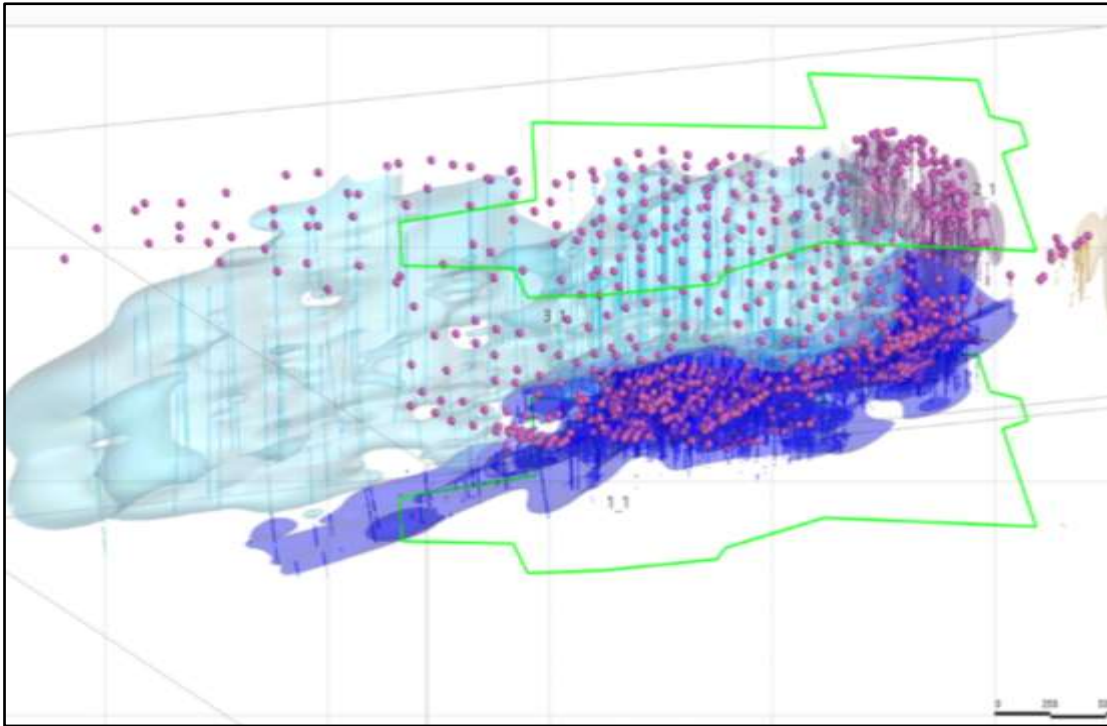


Figure 7.5 Side View of Mineralized Zones at Jiama Mine

7.3.2 Mineralized Body Features

(1) I-1 Skarn mineralized body

The I-1 mineralized body is layer-like and thick plate-like, occurring within the interlayered structural zone of the overlying Linbuzong Formation sandstone, hornfels, and the underlying Duodigou Formation limestone and marble (Figure 7.7). The mineralized body occurs at elevations of 4975~4085m, controlled by 254 surface drilling, 69 in-pit drilling and 3 tunnels. The mineralized body strikes NW-SE (about 300~120°), distributed between Grid Line 47 and Line 40, extending about 2260m; The mineralized body dips to NE (30°), with a down deep exceeding 2770m. The I-1 mineralized body is closely related to porphyry mineralization, extending from the near-porphyry contact zone to the outer zone (perimeter). The mineralized body thickness changes from thick to thin, ranging from 2.0~392.24m, with an average thickness of 54.32 m and a thickness variation coefficient of 81.77%, indicating a relatively stable type of mineralization. The mineralized body is still open, and the deeper parts require further drill exploration.

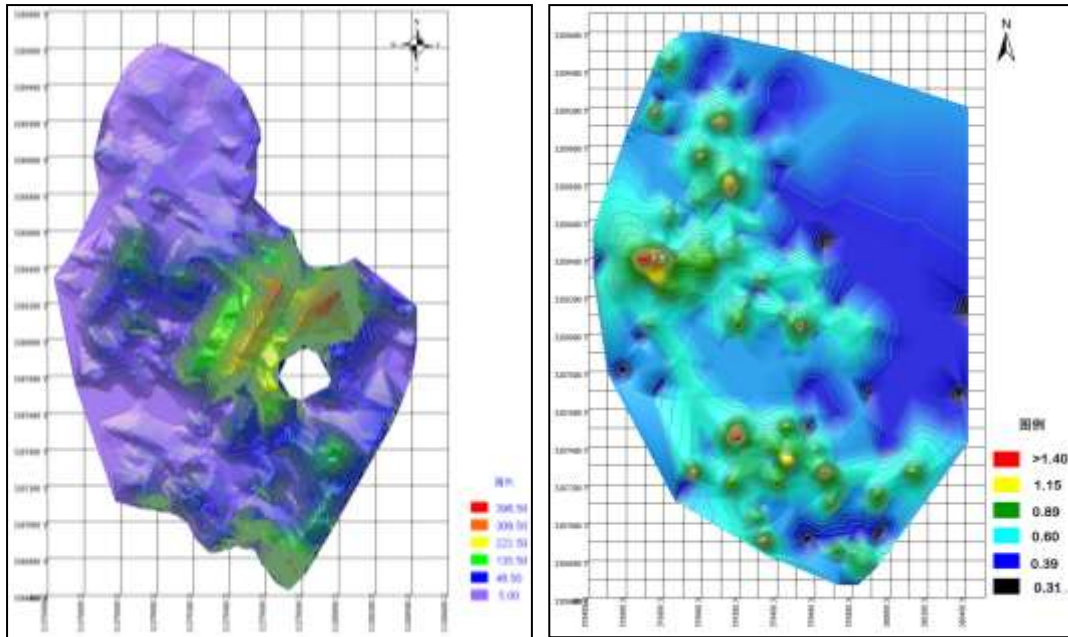


Figure 7. 6 I-1 Mineralized Body Thickness and Iso-Contour Lines of Average Grades

The I-1 mineralized body is controlled by the thrust fault and exhibits a distinct steep → gentle -steep gradient on dip. The upper steep mineralized body generally has dip angles between 50~70°; The central gentle angle mineralized body is the main part of the I-1 mineralized body, with a dip angle generally less than 20°; The dip angle of deep steep mineralized bodies is generally 30~40°.

The metallogenic elements in the I-1 mineralized body show distinct spatial variation patterns: the southern Qianshan Mountain area is dominated by lead-zinc, while the northern Cegulang area is dominated by copper-molybdenum. Both types of mineralization are associated with gold and silver. The copper grade in the mineralized body ranges from 0.30~49.28%, averaging 0.77%, with a grade variation coefficient of 126.71%, indicating a relatively uniform type; Molybdenum grade ranges from 0.03~5.13%, with an average of 0.074%, and a grade variation coefficient of 135.82%, indicating a relatively uniform type; Lead grade ranges from 0.30~39.93%, averaging 1.92%, with a grade variation coefficient of 175.36%, indicating a relatively uniform type; Zinc grade ranges from 0.50~14.28%, with an average of 1.13%, and a grade variation coefficient of 106.10%, indicating a relatively uniform type. The associated gold grade in the mineralized body ranges from 0.10~98.70g/t, with an average of 0.36g/t, and a grade variation coefficient of 303.45%, indicating a non-uniform type. The associated silver grade ranges from 1.0~1041g/t, averaging 13.78g/t, with a grade variation coefficient of 171.08%, indicating a non-uniform type.

(2) II-1 Skarn Mineralized body

The II-1 mineralized body is a skarn mineralized body within the slip fault zone, with an irregular shape, generally in a lens-shaped at the front edge of the slipping structure (Figure 7.8); The elevation is 5113~4322 m, controlled by 60 surface drill

holes, 14 in-pit drilling holes and 7 tunnels. Oriented NWW-SEE, distributed between Grid Line 42 and Line 64, extending 600 m; Dipping toward NNE (about 30°), reaching a depth of 760m; The inclination is generally steep angle, often greater than 50°. The mineralized body is still open to the depth, and the deeper parts need further drilling.

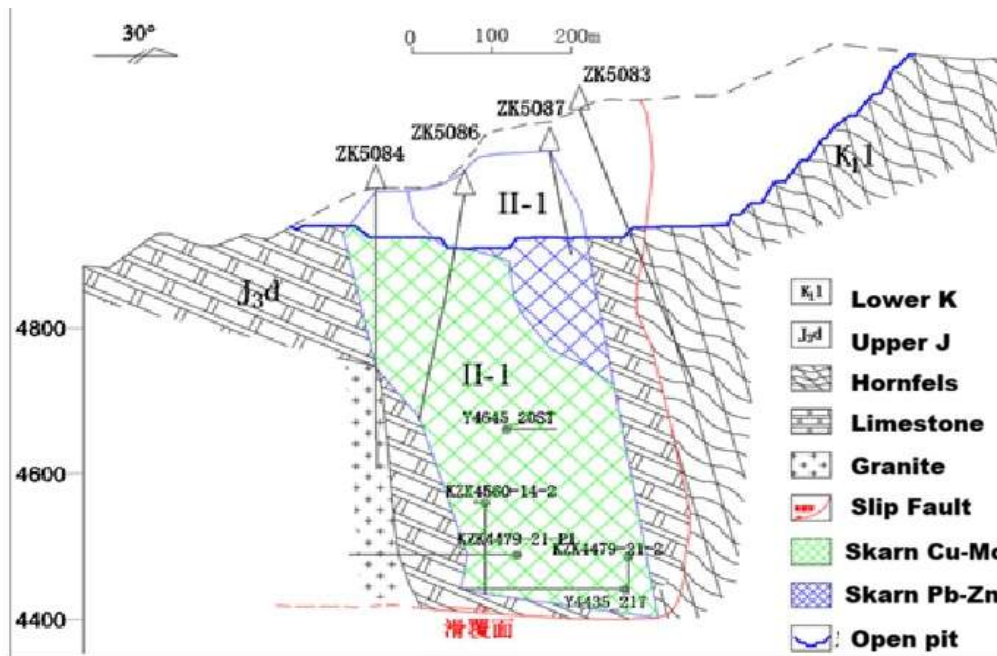


Figure 7.7 Profile Map of Grid Line 50 in Jiama Deposit

The II-1 mineralized body shows massive skarn mineralization over 200m thick at grid lines 48-58, gradually thinning to both sides. The mineralized body thickness variation ranges from 7~631m, with an average thickness of 195.28m and a thickness variation coefficient of 79.60%, indicating a relatively stable type.

The II-1 mineralized body exhibits zoning of mineralizing elements with elevation. Generally, above 4700m, the main mineralized composition is lead, zinc, and copper, while below 4700m, it is mostly copper-molybdenum mineralization. The copper grade in the mineralized body ranges from 0.30~36.04%, averaging 0.79%, with a grade variation coefficient of 129.12%, indicating a relatively uniform type; Molybdenum grade ranges from 0.03~1.30%, with an average of 0.061%, and a grade variation coefficient of 142.03%, indicating a relatively uniform type. Lead grade ranges from 0.30~72.97%, with an average of 2.00%, and a grade variation coefficient of 168.16%, indicating a relatively uniform type; Zinc grade ranges from 0.50~36.17%, with an average of 1.46%, and a grade variation coefficient of 125.87%, indicating a relatively uniform type. The associated gold grade ranged from 0.10~13.80g/t, with an average of 0.29g/t, and a grade variation coefficient of 156.21%, indicating a relatively uniform type. The associated silver grade ranges from 1.0~2359g/t, with an average of 22.07g/t, and a grade variation coefficient of 244.75%, indicating a non-uniform type.

(3) III-1 Hornfels Mineralized body

The III-1 mineralized body mainly forms thick layers, occurring above the top of porphyry mineralized body (Figure 7.9); The elevation is 5270~4159m, controlled by 150 surface drill holes, 5 in-pit drill holes and 1 tunnel. Oriented NW~SE, distributed between Grid Line 27 and Line 54, extending 1800m; Dip angle about 0~30°, depth over 1610m. The mineralized body is closed laterally, but still open to depth and need more drilling.

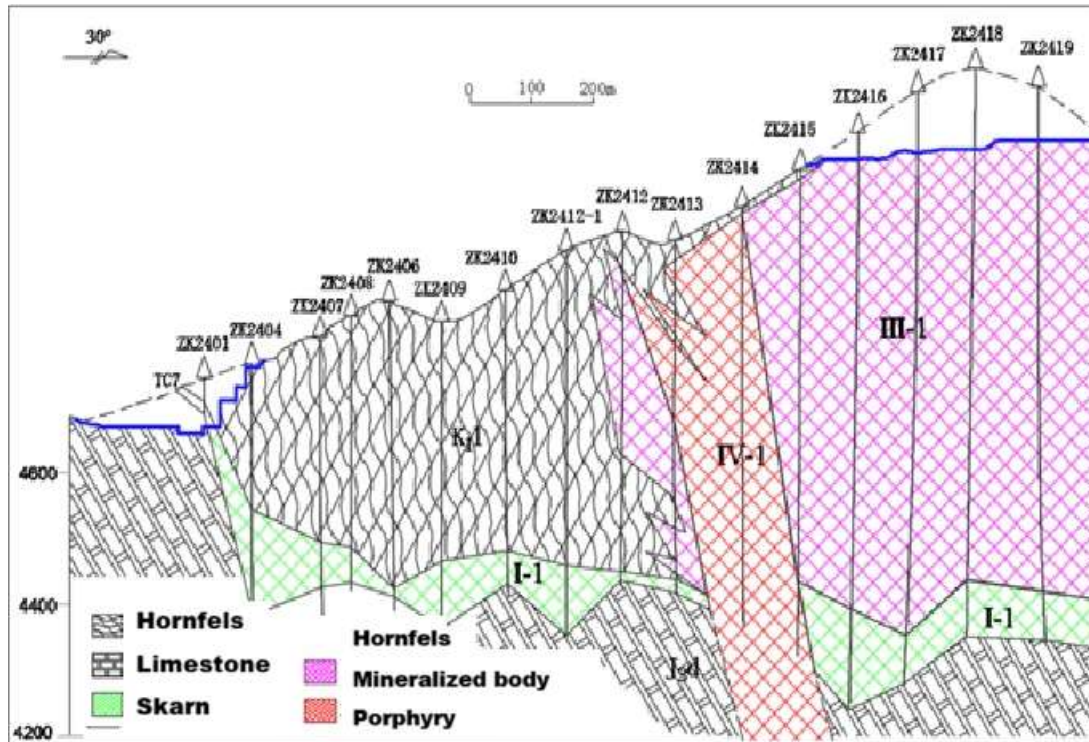


Figure 7.7 Profile Map of the Grid Line 24 at Jiama Deposit (Mineralized body I-1, III-1 and IV-1)

The thickest mineralized body section of III-1 mineralized body appears on grid lines 24 and 32, with thinnest section on line 0 and line 40 on both sides. Mineralized body thickness varies between 4~940m, with an average thickness of 270.30m and a thickness variation coefficient of 90.85%, indicating a relatively stable type.

The metallogenic elements in the III-1 mineralized body exhibit spatial zonation, generally above 4700m elevation, where copper mineralization is predominant with molybdenum as associated mineral; below 4700m, molybdenum mineralization dominates and copper grades decrease. The copper grade in the mineralized body ranges from 0.20~5.27%, averaging 0.44%, with a grade variation coefficient of 51.40%, indicating uniformity; Molybdenum grade ranges from 0.03~1.54%, with an average of 0.077%, and a grade variation coefficient of 108.85%, indicating a relatively uniform type. The associated gold grade ranged from 0.10~9.56g/t, with an average of 0.34g/t, and a grade variation coefficient of 194.99%, indicating a non-uniform type.

The associated silver grade ranges from 1.0~92.6g/t, with an average of 1.52g/t, and a grade change coefficient of 135.09%, indicating a relatively uniform type.

(4) IV-1 Porphyry Mineralized body

The IV-1 mineralized body is mainly pipe-like in the central part of the mining area, with the mineralized porphyry body generally showing intrusive branch emplacement (Figure 7.9). The elevation is 5089~4209m, controlled by 12 holes, with an NW-SE strike, distributed between Line 16 and Line 28, extending 400m long; dip is about 30°NE, dip angle around 80°, and vertical extension depth reaches 740m. The mineralized body is still open and needs more drilling.

IV-1 mineralized body thickness variation ranges between 28~607m, with an average thickness of 227.43m and a thickness variation coefficient of 62.42%, indicating a relatively stable type. Overall, the mineralized body is dominated by molybdenum mineralization, with copper as associated metal. The copper grade ranges from 0.20~1.01%, with an average of 0.44%, and a grade variation coefficient of 39.52%, indicating uniformity. Molybdenum grade ranges from 0.03~2.04%, with an average of 0.086%, and a grade variation coefficient of 131.82%, indicating a relatively uniform type. The associated gold grade ranges from 0.10~0.66g/t, with an average of 0.13g/t, a grade variation coefficient of 64.56%, indicating uniformity; The associated silver grade ranges from 1.0~14.6g/t, with an average of 1.49g/t, and a grade variation coefficient of 83.82%, indicating uniformity.

7.4 Conclusion

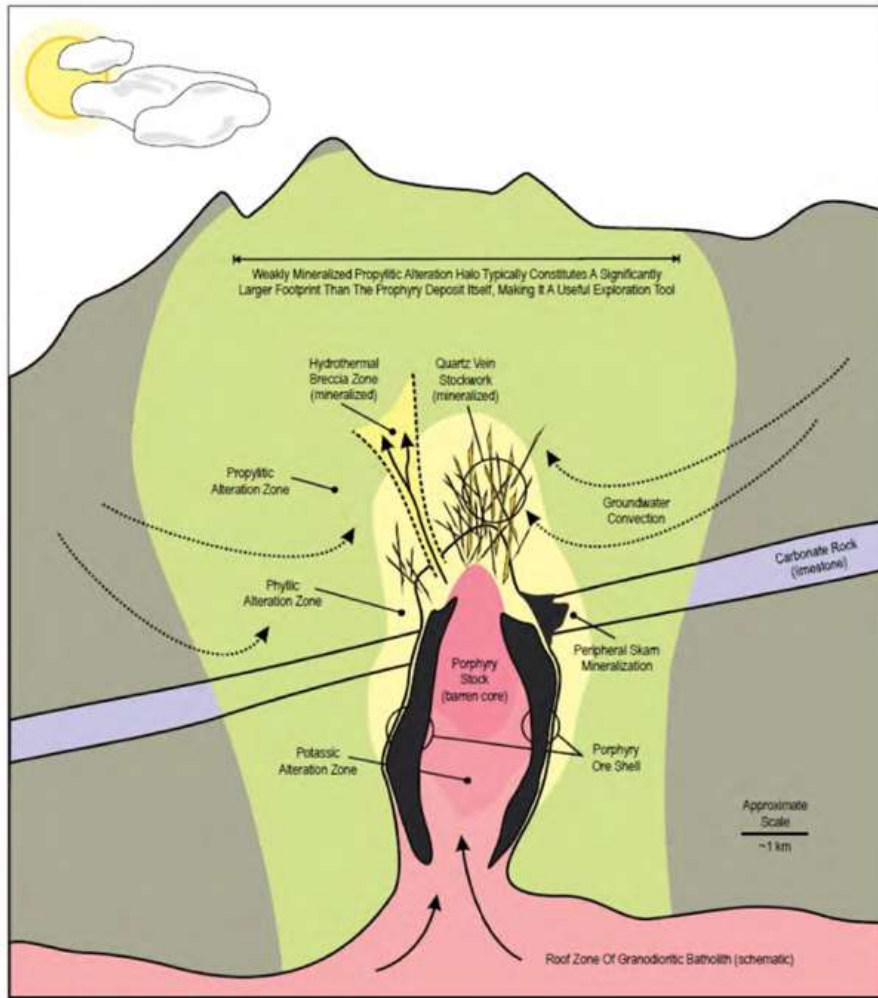
The geological conditions, stratigraphy, lithology, structure, mineral characteristics, alteration, and mineral control patterns of the Jiama deposit have been thoroughly understood and existing data from Jiama deposit are sufficient to support the estimation of mineral resources and reserves.

8 DEPOSIT TYPE

A porphyry-skarn-hornfels metallogenic system represents a large-scale ore-forming environment where ascending magmatic-hydrothermal fluids from a central intrusive stock interact with surrounding rocks. This creates a predictable zoning pattern: low-grade porphyry mineralized at the core, high-grade skarn at the contact, and a wide halo of hornfels.¹ The Porphyry Core Setting: Centered on shallow, multi-phase felsic intrusions (like granodiorite or quartz monzonite). Mineralization Style: Disseminated mineralization and extensive stockwork quartz veining. Typical minerals are copper, molybdenum and gold. Alteration Types are characterized by concentric zones moving outward from the stock: potassic (K-feldspar, biotite), passing into phyllic (quartz-sericite), and finally propylitic (epidote-chlorite).

2. The Skarn Zone (Endoskarn and Exoskarn) Setting: Forms where hydrothermal fluids interact with reactive, carbonate-rich wall rocks (limestone or dolostone). Mineralization Style: Often highly concentrated, strata bound, or massive replacement bodies. The metal suite typically matches the core porphyry (Cu, Au, W, Mo, or Zn-Pb) but grades can be much higher. Alteration & Minerals: Occurs in two distinct stages: Prograde (thermal/metasomatic): High-temperature fluids form anhydrous calc-silicate minerals like andradite garnet and diopsidic pyroxene. Retrograde (cooling): Hydrous alteration involving fluids mixing with meteoric water forms epidote, chlorite, actinolite, tremolite, and concentrated sulfide minerals

3. The Hornfels Halo Setting: Surrounding the intrusion and innermost skarns, this is a zone of thermal (contact) metamorphism developed in pelitic rocks (shales, mudstones). Mineralization Style: typically functions as a broader halo with localized veinlets, brecciation, and silicification. Hornfels itself often acts as a massive cap or structural trap for fluids. Alteration & Minerals: Heat bakes the host rocks into hard, dense, dark rock. Typical minerals include biotite, cordierite, andalusite, and quartz (Figure 8.1).



Source: Cormark Securities Inc.

Figure 8. 1 A Porphyry Deposit System with Porphyry Stock, Skarn and large halo of Propylitic Zone (Hornfels Zone)

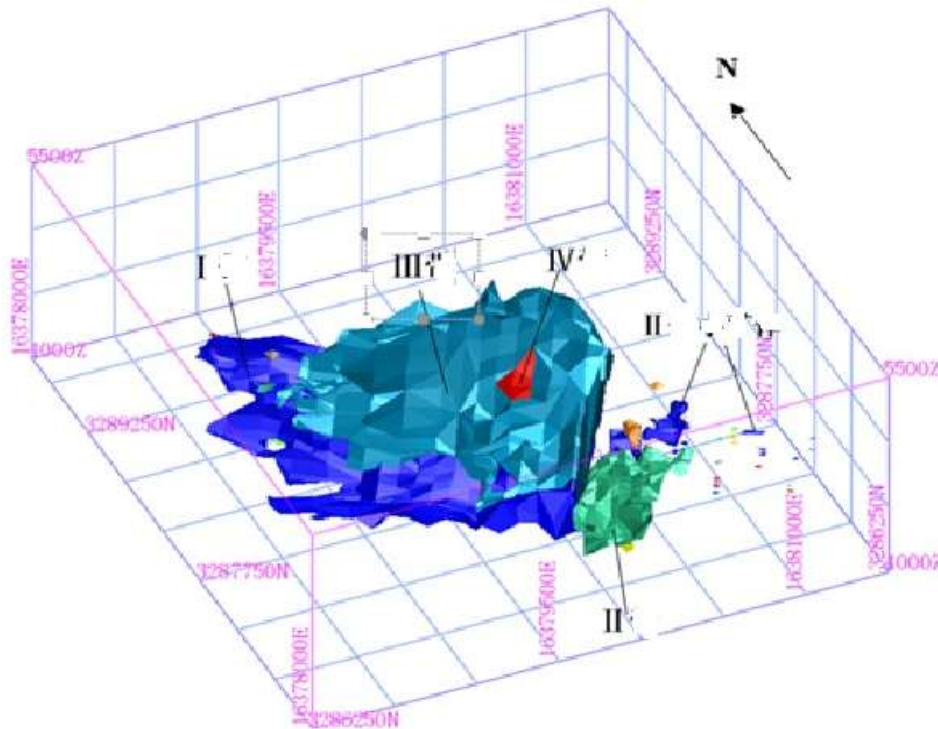
These characteristics correspond closely to the principal features of the Jiama Project as described below.

The Jiama project is considered as a porphyry-style Cu polymetallic deposit consisting of the structurally controlled high grade skarn copper-polymetallic mineralization, medium grade granite porphyry copper-molybdenum polymetallic mineralization and lower grade metamorphosed hornfels copper molybdenum polymetallic mineralization. Most of the high-grade mineralization in Jiama deposit is associated with shear zone contacts between the Duodigou and Linbuzong formations and shear related folding. The zone of mineralization within fault hosted skarn alteration measures kilometers in both strike and dip and remains open at depth to the northeast.

Mineralization is also associated with granite porphyry dykes intruding the

'Duodigou Marble and the overlying hornfels of the Linbuzong Formation (Figure 8.2).

Skarn mineralization is of high grade while both hornfels and porphyry mineralization are of lower grade than that of the skarn. All types of mineralization in Jiama deposit are economically minable.



**Figure 8. 2 Modelled Geological Domains of Jiama Porphyry Deposit
(IV, Porphyry, III-II, Skarn, I, Hornfels)**

9 EXPLORATION

9.1 Exploration Grid and Survey

The mining area's surveying coordinate system is based on the 2000 National Geodetic Coordinate System of China, and its elevation system is based on the 1985 National Elevation Datum of China. The projection uses a Gauss-Krug 3°Zone, with a central meridian at 91°. The mining area has 23 Global Positioning System (GPS) Level E planar control points and national fourth-class elevation control points.

The mining area uses a Global Positioning System (GPS) E-level network to lay the primary plane control network. The elevation control network is constructed by jointly measuring five newly arranged elevation points with six existing elevation points, using elevation surface fitting for elevation calculation.

For many years, the exploration and mining surveying work in the mining area has been conducted by the Surveying Team of Huatailong.

9.2 Geological Mapping

Since the 1950s, a series of geological mapping at four different scales: 1:25000, 1:10000, 1:5000, and 1:2000 have been completed.

9.3 Geochemical Sampling and Studies

Since 1950s, extensive geochemical sampling and studies have been conducted in the Jiama mining area. Types of geochemical sampling include soil sampling and rock sampling.

9.4 Geophysical Exploration

In 1967, the First Geological Brigade of Tibet conducted a preliminary geophysical survey in the mining area, setting up 6,899 geophysical electromagnetic physical points, 1,300 magnetic physical points, and 1,311 combined profile points. They pointed out that polymetallic mineralized bodies also existed in the slate and limestone of the contact zone and believed that the medium-felsic dike intrusion formed after mineralization.

In 2006, the Shanxi Geological Survey conducted 1:10,000 high-precision magnetic surveys covering 19 km² in the Cegulang to Niumatang area, and in 2007, an additional 19 km² of intermediate gradient induced electric detection was added. Through the work, it is believed that there are concealed porphyry-skarn-type mineralized bodies at the depths in the Cegulang-Niumatang area, indicating a huge exploration potential.

In 2024, in the deep hydrogeological condition comparative study of the Jiama copper polymetallic deposit conducted by North China Nonferrous Exploration Institute Co., Ltd., 41 points of surface geophysical exploration (audio geomagnetic) were completed.

9.5 Petrology and mineralogy studies

Over the years, Huatailong has conducted extensive research on the mineralogy for the three main mineralized types in the Jiama mining area, thoroughly identifying the mineral composition and structure, the chemical composition and types, occurrence states and distribution patterns of beneficial and harmful components of the mineralized , as well as the types, scale, intensity, mineral composition, and relationship between the alteration of hosting rock associated with mineralization.

9.6 Exploration Potential

Within the Jiama mining permit area, the I-1, II-1, and IV-1 mineralized bodies are still open, especially the deep parts of the mineralized body on multiple exploration grid line sections such as lines 0~12 and 24~40 have not been closed by the drilling, and the deep part of the mineralized body still has huge potential for exploration.

Based on the porphyry metallogenic system model of the Jiama deposit and scientific study results from 3000m deep drilling, the deep and peripheral areas of the Jiama mining area still have significant resource potential.

9.7 Conclusions

The exploration work carried out so far matches the type of deposit in the Jiama deposit. The deep and peripheral areas of the deposit still hold potential for further mineralized discoveries.

10 DRILLING

10.1 Introduction

Drilling in the Jiama mining area began in the 1990s. From 1990 to 1999, the Sixth Geological Brigade of Tibet completed core drilling over 7,298.75 meters out of 24 holes, and submitted the "Detailed Geological Exploration Report on the Copper Polymetallic Deposit in Jiama, Mozhugongka County, Tibet Autonomous Region" in December 2000. Since 2008, Professor Tang Juxing's team at the Chinese Academy of Geological Sciences, commissioned by Huatailong, has continued to organize and manage surface drilling from 2008 to 2025, completing drilling 282,044.043 meters with 558 holes. Since 2014, Huatailong has organized, designed, and conducted underground drilling in the Jiama mine. As of December 31, 2025, the Jiama mining area has completed surface core drilling totaling 289,342.793 meters with 582 holes, and underground core drilling totaling 20,958.46 meters with 150 holes (Table 10.1).

Table 10.1 Summary of drilling workload in the Jiama mining area

Year	Meters	Hole No (Surface)	Hole No (underground)
before 1999	7298.75	24	
2008	47450.1	145	
2009-2010	73831.88	174	
2011	21254.6	45	
2012	26379.48	58	
2013	3670.7	15	
2014	64.5		1
2016	9176.2	13	
	107.2		1
2017	11071.19	27	
	485.74		5
2018	15548.773	21	
	1829.56		22
2019	21753.81	18	
	2058.08		19
2020	16111.97	11	
	3073.18		25
2021	2811.72	3	
	7077.7		42
2022	17606.5	14	
	3407.2		21
2023	773.5		4
2024	1826.9		9

Year	Meters	Hole No (Surface)	Hole No (underground)
2025	15377.12	14	
	254.9		1
Total Holes		582	150
Total Meters		289342.793	20958.46

At the Jiama mining area, surface core drilling was carried out using a new type of fully hydraulic drill rig (Figure 10.1). The holes are generally started with a 130 mm diameter diamond bit, while a small number of holes use the 110 mm diameter diamond bit. After penetrating the soft overburden layer, the main orebody or rocks are mostly drilled with a 75 mm diameter diamond bit. All core samples are photographed prior to logging and sampling. According to the Geologist's requirements, drilling is terminated within 2–5 m after encountering marble in the hole bottom, and the final hole diameter of all boreholes was no less than 75 mm.

The average core extraction rate within the mineralized zone exceeds 90%. A GPS device with RTK mode (Trimble5800) has been used to survey the hole collar. Borehole inclinometers were surveyed using single-point inclinometers and reflective multi-point inclinometers. Maximum intervals of 50 meters while drilling were surveyed. A CX-6B gyroscope inclinometer is used in surface drilling, while a KXP-2 small-diameter compass inclinometer is used in pit drilling.

Most drilling programs occur in the mining license area at Jiama project and a small number of drill holes in the exploration permit area (Figure 10.2). As of December 31, 2025, Huatailong has completed surface drilling 273,947,483 meters with 484 holes, and 20,557.44 meters of underground drilling with 247 holes, for a total of 294,504,923 meters in the Jiama mining area (Table 10.1).



Figure 10. 1 Drilling Site in the Jijama Mining Area

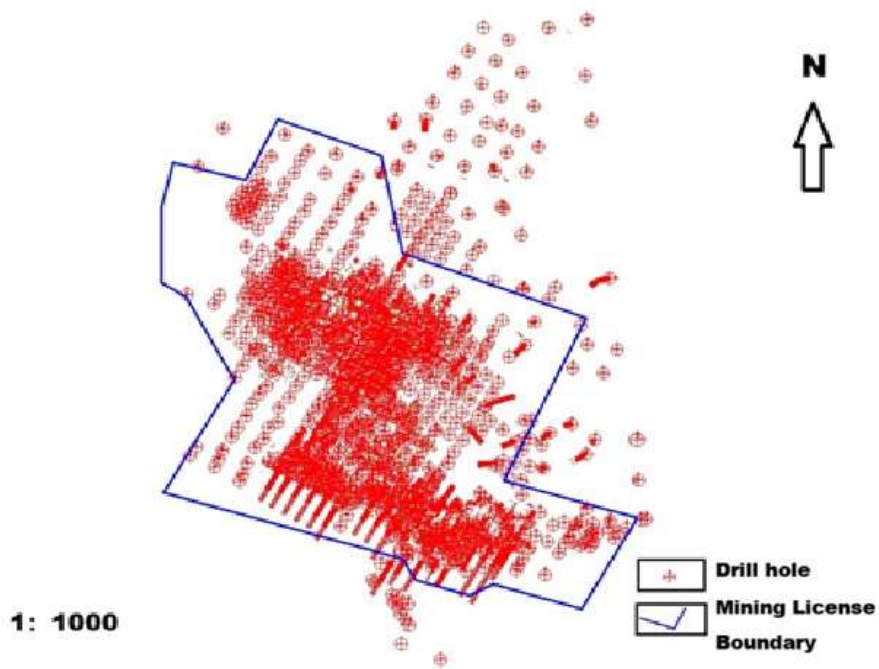


Figure 10. 2 Distribution Map of Drill Holes in the Jijama Mining Area.

10.2 Surface drilling

10.2.1 Collar Survey

Drill hole collar is surveyed using a total station, with direction accuracy down to the second. The variance between the surveyed and the design value is less than ± 0.10 m. After drilling is completed, survey is conducted using GPS-RTK mode (Trimble 5800) to define the final position of the hole collar.

10.2.2 Downhole Survey

A CX-6B gyroscope inclinometer is used for the downhole survey. For vertical hole, the inclination and azimuth are surveyed for every 100 m drilling. For inclined holes, the inclination and azimuth were surveyed for each 50m drilling. The zenith angle of the borehole does not exceed 2° per 100 m. The borehole curvature deviation is within the allowable range, with a 100% pass rate.

After every 100 m drilling and the final hole, a steel tape measure is used to measure and calibrate the drilling tools. If the calibration error rate is less than 1‰, the hole depth is accepted. The depth correction error rate for all boreholes is less than 1‰, meeting the error requirements of the mining industrial code in China.

10.3 Underground Drilling

Underground diamond drilling is a core component of geological exploration, mine development, and mining operations. The entire operation is strictly conducted in compliance with technical specifications to ensure safety, data accuracy, and reliable outcomes. Boreholes are generally started with a 75 mm diamond bit. As per geological requirements, drilling is terminated within 2–5 m after marble or hornfels are encountered at the bottom. All boreholes have a final diameter of no less than 75 mm, and the core diameter (for both rock and mineralization zone) is no less than 45 mm. The average core recovery rate for all rocks from all boreholes is 95.0%, while the average core recovery rate for the mineralized interceptions reaches 92.40%. These figures fully meet the required specifications and provide a high quality and reliability of the drilling work.

10.3.1 Drill Hole Location

A key step in drilling is to ensure the drilling position and dip angle meet the design requirements. All drill work is operated by geological and surveying professionals (Figure 10.3):

On-site positioning: Based on the drill hole design coordinates, surveying technicians use total stations, levels, and other measuring instruments to precisely locate the drill collar at the underground site. Geological personnel mark the site to ensure the positioning deviation does not exceed the specification requirement (generally not exceeding 5m).

Angle Calibration: After the rig is placed in the designated position and adjusted to the design angle, geologists inspect and verify to ensure the borehole direction matches the design, with angle deviation not exceeding $\pm 1^\circ$.



Figure 10. 3 Collar Survey During Underground Drilling

10.3.3 Drilling Rigs

The following drilling rig models are in the Jiama project: Four Diamec PHC4 fully hydraulic core drilling rigs for tunneling; Two Diamec PHC6 DP (deep hole version) tunnel fully hydraulic core drilling rig (Figure 10.4).



Figure 10. 4 Underground Drill Rig

10.3.4 Downhole Survey

The downhole survey is conducted for every 50-100m drilling. If the drilling angle changes significantly, the number of inclinometric survey will be increased (every 30-50m). An anti-magnetic inclinometer (gyroscope XBY-2GW) was used for inclinometer measurement (Figure 10.5).



Figure 10. 5 Underground Downhole Survey

10.4 Drilling summary

The Author believes that the quantity and quality of lithology, geotechnical, and survey data collected from the core drilling in Jiama project are sufficient to support mineral resource estimation. Drilling hole survey and inclination measurement comply with exploration industry standards in China and are performed using industry-standard instruments. Downhole survey results can appropriately represent the trajectory of core holes.

11 SAMPLE PREPARATION, ANALYSIS AND SECURITY

Sample preparation, analysis and security for Jiama project have been summarized from the Behre Dolbear Asia Incorporated report 'Resource Update Report for the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region, Peoples Republic of China', dated March 2012 and the pre-feasibility report undertaken by Minarco-MineConsult (MMC), dated November 12th, 2012, and Mining one, dated 2014 for the work conducted before 2012. The Author has used some of their review summaries in this chapter.

11.1 Sampling Methodology

11.1.1 Brigade 6 Sampling (1990's)

The Tibet Central Laboratory of the Ministry of Geology and Mineral Resources of China conducted sample preparation and analysis for the Brigade 6 samples during the 1990's. Core samples were taken by mechanical splitter, with half the core sent for sample preparation and the remaining half retained for records. Sample intervals were generally 1.0 to 2.0 m. Surface trenches were sampled with the trenches being 5 cm wide and 3 cm deep, orientated as perpendicular as possible to the trend of mineralisation/alteration.

11.1.2 Huatailong Sampling (2008–2011)

Cores were collected, and following logging and photography of the core samples, a Geologist selected the zones of interest within the core length. The Geologist would determine the sample intervals for the purpose of assaying. The core was halved using a diamond rock saw with one half sent for sample preparation and the remaining half retained for records. Occasionally, sample lengths varied in relation to the geological characteristics of the core, however, the interval was commonly determined by the type of mineralisation, with intervals of 1.0 m for skarn-type mineralisation and 2.0 m for hornfels hosted mineralisation. The entire zone of mineralisation was sampled continuously and host rock either side of the mineralisation sampled every 2.0 m.

11.1.3 Huatailong Sampling (2012-2025)

The 2012 sampling methodology was conducted in a similar manner as that for 2011, with standard interval sizes at the discretion of the geologist, but more commonly dependent on the style of mineralisation. The entire zone of mineralisation was sampled continuously and host rock either side of the mineralisation sampled every 2.0 m.

After measuring and photographing the drilled core, the Geologist examined the core and determined the sampling interval. Using a core cutter to cut the core in half, one half was sent for sample preparation and analysis and the other half kept for record-keeping. Occasionally, sample length varied according to the geological characteristics of the core, but intervals were usually determined by mineralization type: skarn-type mineralization intervals were 1.0 m, hornfels mineralized 2.0 m, and

porphyry 1 m. The entire mineralized zone was continuously sampled, with hosting rock on both sides sampling 2.0 m.

11.2 Sample Preparation and Analysis

11.2.1 Bridge Brigade 6 (1990's)

Sample preparation and analysis was conducted by the Tibet Central Laboratory of the Ministry of Geology and Mineral Resources of China, in accordance with regulations of the time. Although no detailed information was available concerning preparation and analysis, Behre Dolbear and MMC believe the assay results to be acceptable based on similar results in samples from subsequent drilling programs.

11.2.2 Huatailong (2008–2011)

Between 2008 and 2011, sample preparation and analysis for the Huatailong core samples were undertaken by the Southwestern Metallurgic Geology Analytical Center (Southwest Center) in Chengdu, Sichuan Province, which is accredited by the Chinese National Accreditation Board for Laboratories. A two-stage crushing and grinding procedure to achieve a particle size to minus 200 mesh (0.074 mm). Sample splitting was not performed until the particle size was reduced to approximately 1 mm. A ground sample of approximately 400 grams was sent for analysis; a duplicate ground sample of approximately 500 grams as well as the coarse rejects was kept in the core storage warehouse.

Gold grades were determined using an aqua-regia/fluoride digestion, reactivated carbon concentrating and atomic absorption spectrometry procedure (AAS). Copper, lead, zinc molybdenum, and silver grades were determined using an aqua regia/hydrofluoric acid perchloric acid digestion and Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) or Ass procedure. Standard analytical methods adhere to the former Ministry of Geology and Mineral Resources of China's official publication 'The Quality Administration Standards for Analysis in Geological and Mineral Resource Laboratories' (DZ0130-94).

No Huatailong employees, offices, directors or associates were involved in the sample preparation.

11.2.3 Huatailong (2012-2016)

The sample preparation and analysis were conducted in a similar manner as that for 2011 and again undertaken by the Southwest Metallurgical Geology Analytical Centre (Southwest Centre) in Chengdu, Sichuan Province. The laboratory is accredited by the Chinese National Accreditation Board for laboratories (CNAL).

Gold grades were determined using an aqua-regia/fluoride digestion, reactivated carbon concentrating, and atomic absorption spectrometry procedure

(AAS). Copper, lead, zinc molybdenum, and silver grades were determined using an aqua regia/hydrofluoric acid perchloric acid digestion and Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) or AES procedure. Standard analytical methods adhere to the former Ministry of Geology and Mineral Resources of China's official publication 'The Quality Administration Standards for Analysis in Geological and Mineral Resource Laboratories' (DZ0130-94).

No Huatailong employees, offices, directors, or associates were involved in the sample preparation. During the June site visit Mining One was able to confirm that appropriate sample and quality control procedures were in place to minimise sample bias.

11.2.4 Huatailong (2017-2025)

The sample preparation method from 2017 to 2025 was previously similar to previous, but analyzed by Huatailong Analysis Laboratory, which has obtained China National Analytical Laboratory certification (registration number #: CNAS L9450). Huatailong Laboratory is qualified to test gold, copper, molybdenum, lead, and zinc elements.

The following analysis procedures have been followed:

Sample preparation: The sample is processed by a clamp crusher (GM/EP150×125) to a diameter of 8 millimeters, and the sample is reduced according to the original sample weight $Q=kd^2$ ($k=0.4$), with a reduction of no less than 1.6kilograms. The samples enter the roller press (2PG-φ 200×125), process to a diameter of 1 millimeter, and then enter an environmentally friendly automatic shrink machine (GM/2S-A) for reduction, with a reduction ratio of 1:4. Two sample storage boxes are placed below the machine. Samples inside the boxes are manually stirred and mixed. A 200g sample is taken from the box. The sample volume is smaller, and a 500g secondary sample is taken from the larger sample box and a second sample is stored. The samples are placed in an electric heated constant temperature drying oven (RK-DRK-4) and maintained at $105\pm 5^{\circ}\text{C}$ for 90 minutes. The dried samples are sequentially dried from front to back by an environmentally friendly rod mill (GM/F2000-B2) and then dried in a -200 mesh oven, mixing evenly. Afterwards, they are sent to the laboratory for analysis.

Basic assay: Gold dissolved in aqua regia to enrich polyurethane foam, remove thiourea, and use AAS atomic absorption graphite furnace method (0.01ppm–0.05ppm) and AAS atomic absorption flame method (>0.05ppm); When the copper content in the sample exceeds 4.5% or the lead and zinc content is greater than 12, copper, molybdenum, lead, zinc, and silver are analyzed using sheet fluorescence (i.e., X-ray fluorescence spectrometry). According to GB/T14353-2010 Methods for Chemical Analysis of Copper Ore, Lead Ore, and Zinc Ore: Part One: Determination of Copper Content; Part Two: Determination of Lead Content; Part Three: Determination of Zinc Content. Dissolve in aqua regia and measure by flame atomic absorption photometry.

11.3 QAQC and Security

(1) The total loss rate during sample processing according to the $Q=Kd^2$ formula must not exceed 5%. Each batch should be tested at 30% to confirm whether the samples are qualified.

(2) The distribution coefficients of sampling reduction error are 0.4, 0.2, and 0.1.

(3) If three-quarters of the results out of a total of 30 samples are systematically higher or lower, or there is systematic error, or if 30% of the results in each batch of samples exceed the allowable accidental error, the cause should be identified and appropriately addressed. If no cause can be found, the basic analysis sample and inspection parts should be reworked by a third party. The entire batch of system error samples is below the cutoff level, but the error does not exceed 50%, and must be reprocessed.

(4) The internal and external sample analysis and inspection system should be implemented according to relevant standards. Sample quantities should be checked and analyzed in batches. Sample quantity should be inspected at 40%, low-grade samples at less than 20%, and abnormal samples at 100%. External test samples are extracted by password, and 3~5% of samples are sent to provincial laboratories for testing.

(5) For samples used to calculate reserves, if three-quarters of the results out of a total of 30 samples are systematically high or low, or systematic errors exist, or if 30% of the results in each batch of samples exceed the allowable unexpected error, the cause should be identified and appropriately addressed. The entire batch of system error samples is below the cutoff level, but the error does not exceed 50%, and must be reprocessed.

The internal and external inspection system for sample analysis is implemented according to relevant standards. Sample quantities should be checked and analyzed in batches, with an internal sample inspection rate of 40%, low-grade samples less than 20%, and abnormal samples 100% inspected. External inspection samples extract codes from internal test samples, and 3~5% of samples are sent to provincial laboratories for testing.

According to international standard 43-101, the sample analysis process requires real-time tracking and testing. This is mainly achieved by inserting blank, standard, and duplicate samples into every 50 samples during the analysis process.

11.3.1 Standards

The analysis results of the three standards in 2012 are shown in Figures 11.1-11.2. Figure 4 also shows the expected set value (green), ± 2 standard deviation QC warning limits (red), and ± 3 standard deviation QC failure limits (red).

Standard sample analysis generally yielded acceptable results, but there is still room for improvement, especially the silver composition of standard GBW07294, with

average results significantly higher than expected, and 26% of samples exceeding the failure limit.

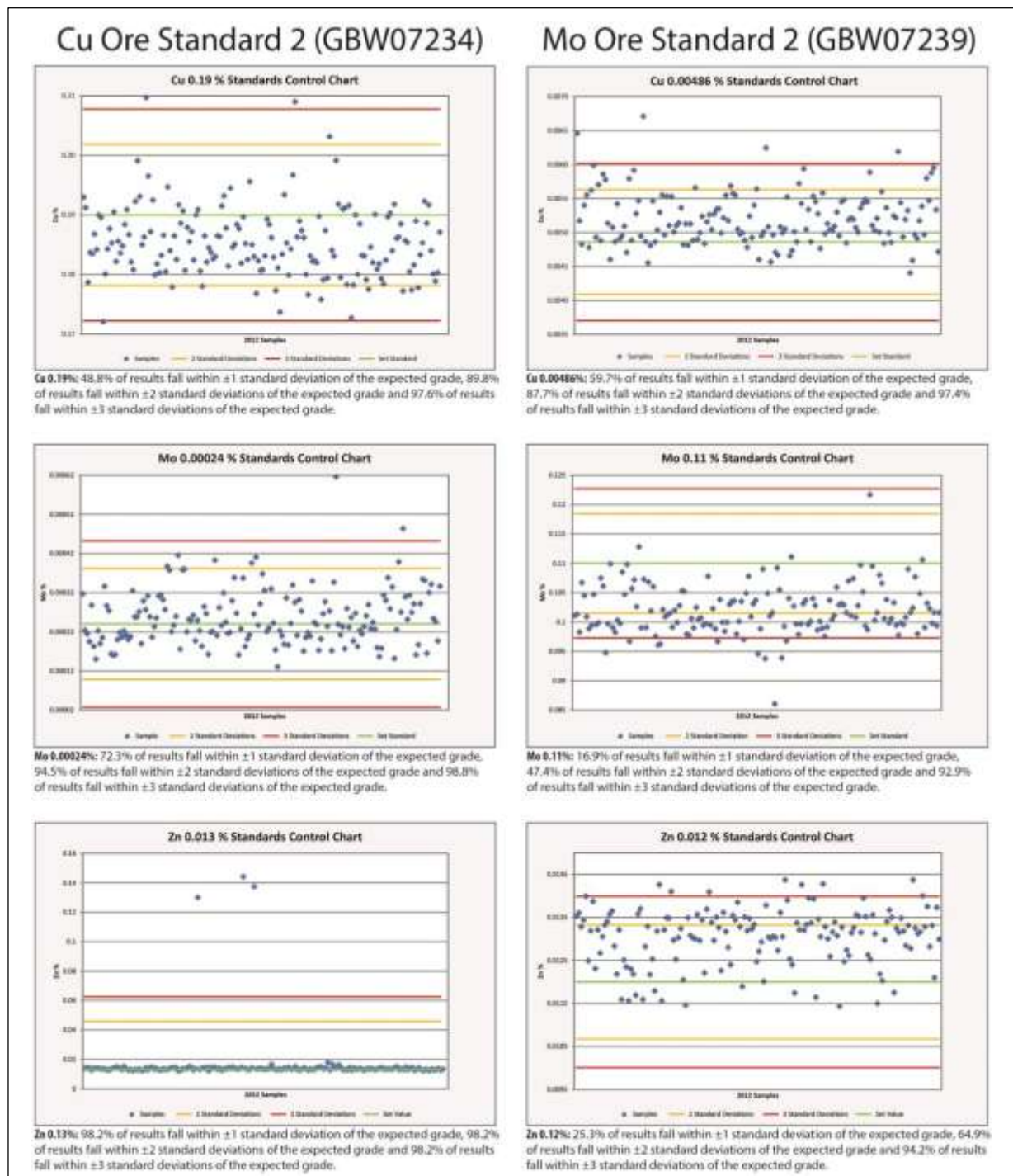


Figure 11.1 Variation of Reported Values for Analytical Standards (from Mining one, 2012)

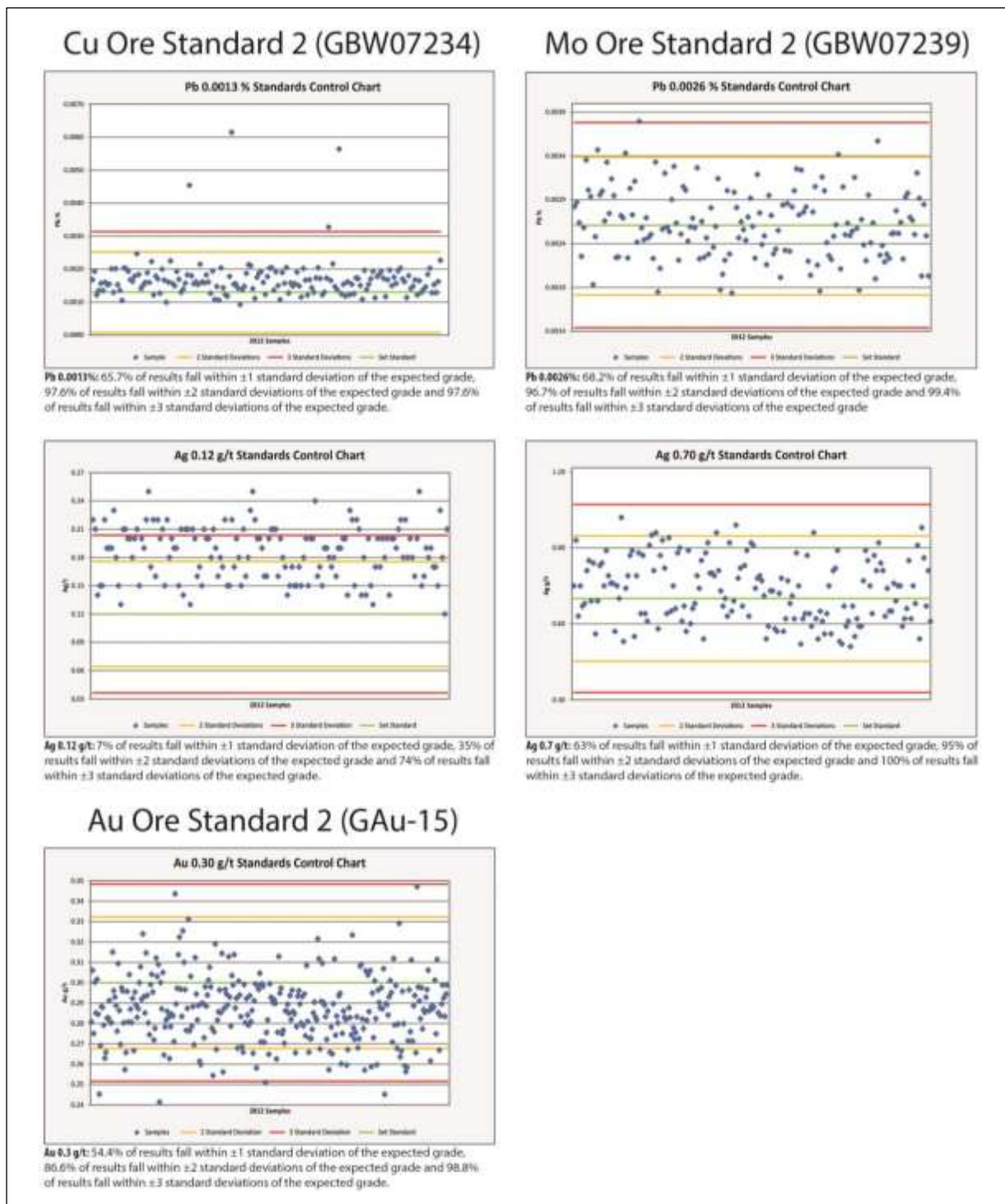


Figure 11. 2 Variation of Reported Values for Analytical Standards (from Mining one, continued)

11.3.2 Duplicates

In 2012, a total of 299 duplicate samples were sampled, with an average of one

duplicate inserted out of every 50 samples. A review of the data scatter plot provided to Mining One (Figure 11.3) shows a strong correlation between the original samples and the replica samples of all tested elements. Slight differences were observed in the data, but reviews of these data consider these variations to be natural phenomena rather than biases related to sample preparation or analysis techniques.

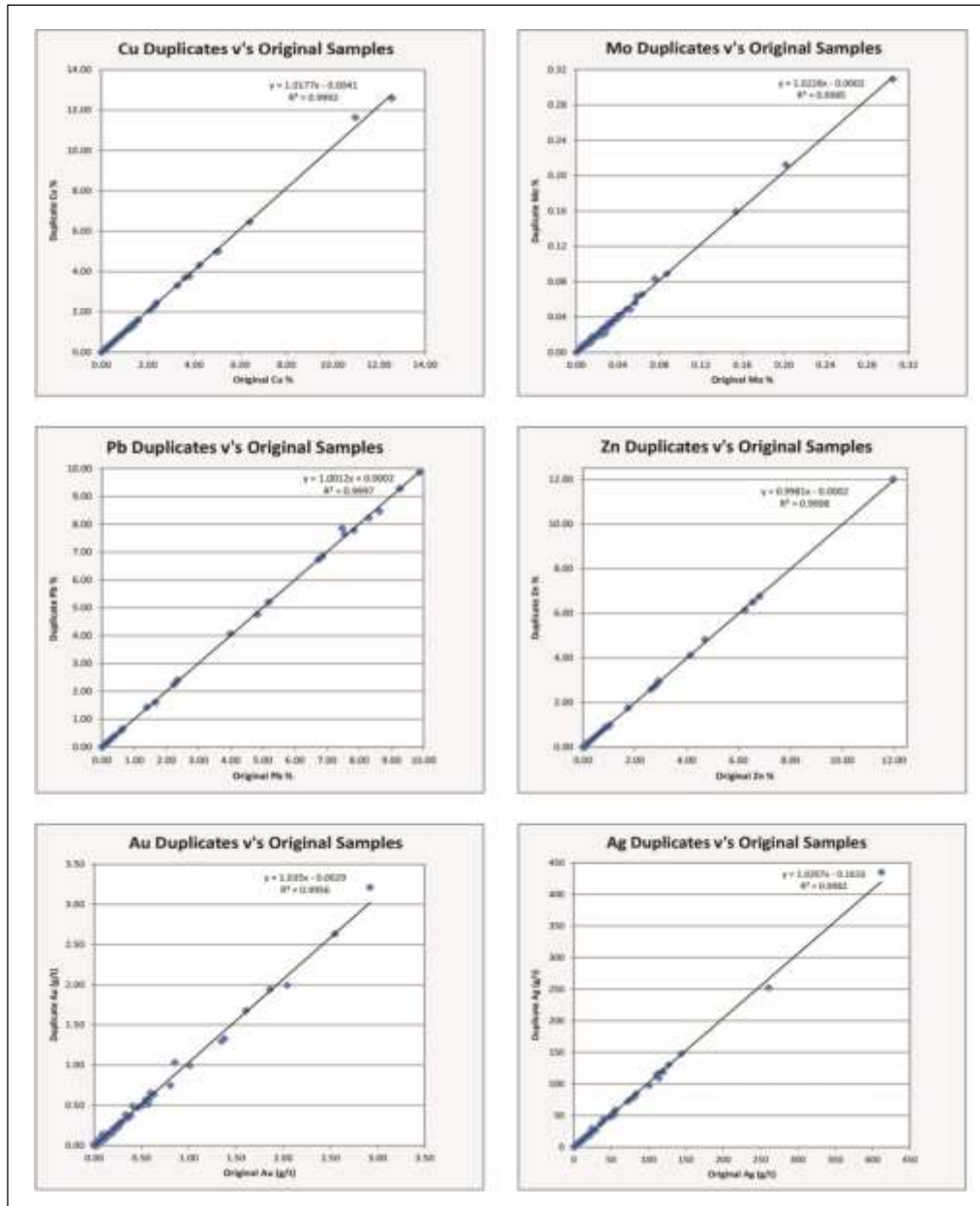


Figure 11. 3 Correlation Plots of Analytical Results for 2012 Duplicate Samples (from Mining one, 2012)

From 2022 to 2025, the average ratio of 1 out of every 50 samples is inserted into the sample series. A review of the data scatter plot provided to C2 Mining (Figure 11.4) shows a strong correlation between the original and duplicate samples of all test elements. Slight differences were observed in the data, but reviews of these data

consider these variations to be natural phenomena rather than biases related to sample preparation or analysis techniques.

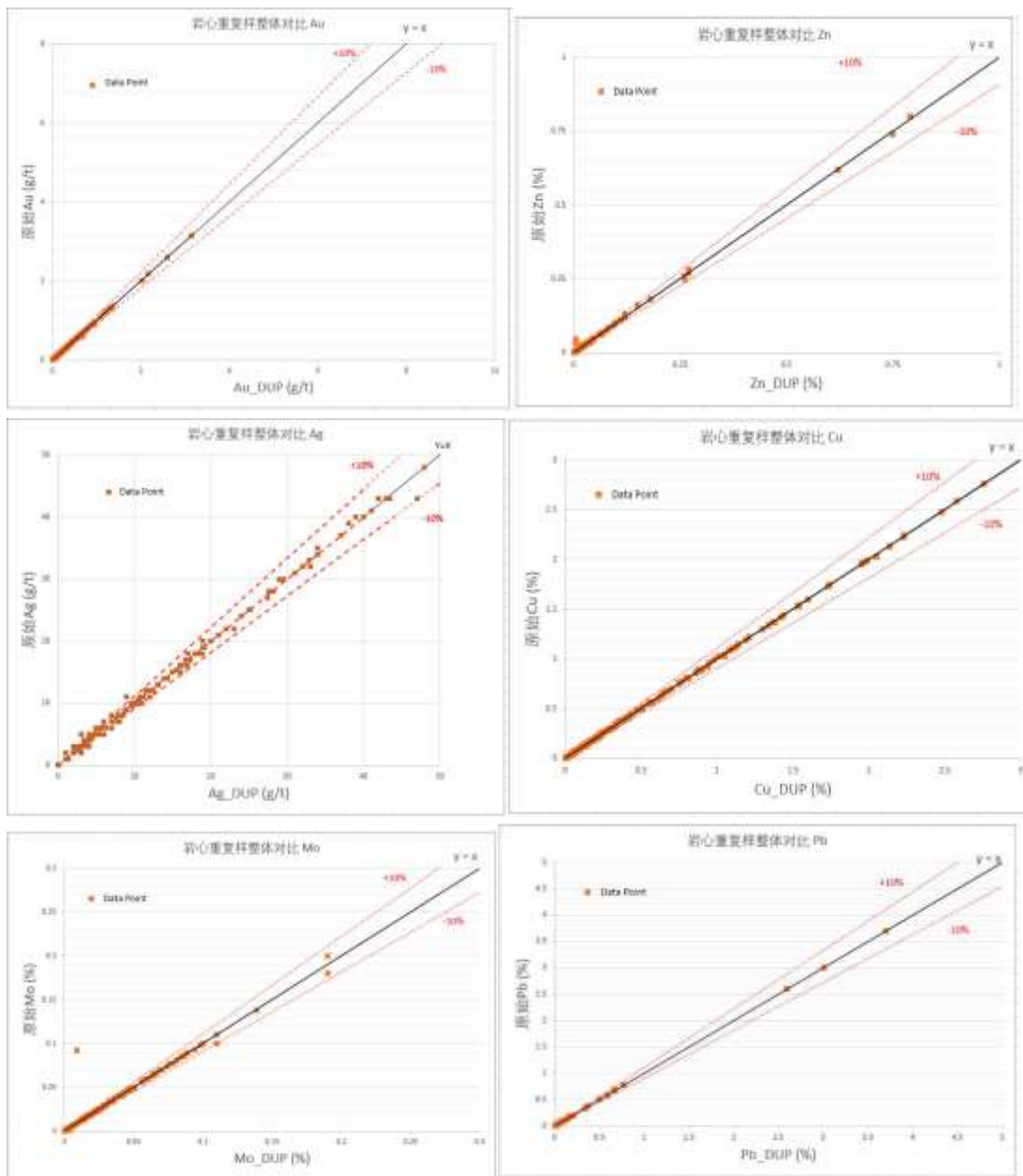


Figure 11. 4 Correlation Plots of Analytical Results for duplicate Samples from 2022-2025

11.3.3 Blank sample

In 2012, 319 blank questions were analyzed. Compared to the set standard values, Mining One believes the test values for blank material reports (Figure 11.5) are within an acceptable range.

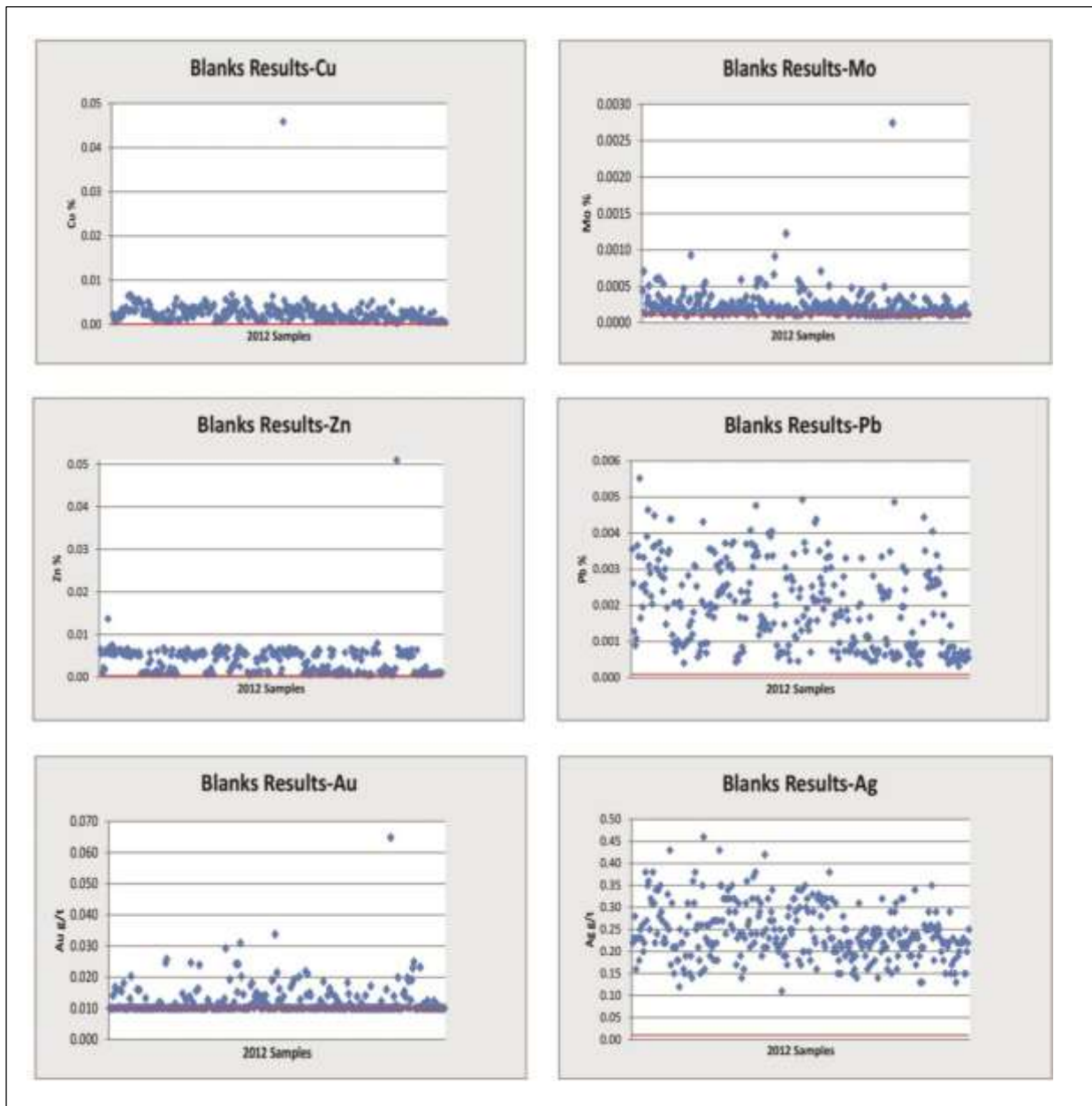


Figure 11.5 . Blank Analysis; Detection is Limited to Red labels.

(Gold and silver detection limit is 0.01 g/ton. Copper, potassium, zinc, and lead detection limits are 0.0001%).

Between 2017 and 2019, 486 blank samples were analyzed. Compared to the set standard values, all are qualified, and the analysis results indicate that the material is considered blank (Table 11.1).

Table 11.1 Analysis results of 486 blank samples

Au g/t	Ag g/t	Cu %	Mo %	Pb %	Zn %
<0.01	<0.1	<0.0001	<0.0001	<0.0002	<0.0001

11.4 Conclusion

Based on reviews of drilling, sampling, sampling preparation, analysis, and quality assurance/quality control data, the Author believes that sample preparation, analysis and quality monitoring for the Jiama project meet industry standards and are suitable for mineral resource estimation.

12 DATA VERIFICATION

12.1 On-site Inspection by QPs

From 2010 to 2024, one of the report's QP, Dr. Tony Guo , conducted multiple field visits and reviewed and evaluated data used for mineral resource estimation and mining operations (Figure 12.1).



Figure 12.1 QP, Dr. Tony Guo Inspected the Underground Mining Operation in November 2024 in Jiama Mine

During the report period, professionals from Changchun Institute reviewed the Jiama project materials, including drilling coordinates, elevation and borehole orientation, angles, underground survey data, geological and mineralization characteristics, measurements, and orebody specific gravity (SG) data. These reviews did not find significant errors that could affect mineral resource and reserve estimates.

From April 22 to 26, 2026, two QPs, Mr. Zhang Guangpian and Dr. Tony Guo, along with their team members, conducted an on-site inspection of Jiama (Figure 12.2-12.3), covering underground mine field investigations, core review, sampling procedures, surface drilling, geological surveys, validation sample collection, open-pit and underground mining operations, tailings dams, processing plants, and more. Sample testing, preparation, and mapping data were reviewed, and compared and validated with the mine's own mineral resources and reserves model.



Figure 12. 2 QP, Mr. Zhang Guangpian Inspected the Hornfels Open Pit in April 2026



Figure 12. 3 The Changchun Institute Team Collected Verification Samples on Site in April 24, 2026

12.2 2011 Historical data verification

Data validation from drilling projects in 1990, 2008–2009, and 2010 was previously summarized in the March 2012 report by Bell titled "Resource Update Report for the Kajama Copper Polymetallic Project at Mozhugong Copper and Polymetallic Project, Tibet Autonomous Region, People's Republic of China." Longe Consulting validated and reviewed the 2011 drilling data for Jiama in its 2012 report. In June 2022, China National Gold Group Zhongjin Geological Exploration Company also reviewed and verified exploration data from 2017 to 2019 in the resource verification report for copper polymetallic deposits in the Jiama mining area of Mozhugongka County, Tibet Autonomous Region, released by China National Gold Group Zhongjin Geological Exploration Company.

The above review and verification did not find any issues that could have a material impact on resource estimation.

12.3 2017-2025 Internal and external inspection of sample analysis

Internal inspection of basic analytical samples was conducted at the Jiama Mine laboratory, where crude secondary samples containing 0.2% copper \geq 3,541 samples with 0.2% copper content were extracted for internal inspection and analysis. Based on internal inspection samples, both positive and residual samples are collected and renumbered, and sent to Standard Technical Service (Tianjin) Co., Ltd. for external analysis. The external testing laboratory holds international and Chinese national metrology certification qualifications (Certificate No.: 160200340127). From 2017 to 2025, the Jiama project sampled a total of 823 samples for internal inspection, with a sampling rate of 23.24%. The qualification assessment of internal and external inspection and analysis results of samples should be based on the "Good Practice for Geological and Mineral Laboratory Testing" (DZ/T 0130-2006), and the relative deviation between internal and external inspection and analysis results and basic analysis results should be within the allowable range. According to internal inspection pass rates of relevant grades and above, copper passes 98.11%, molybdenum 98.35%, lead 97.79%, zinc 97.85%, and gold. The rates were 98.11% and 97.19%, with silver passing rates of 96.00% (see Table 12.1). 368 items were extracted during external inspections, with a sampling rate of 10.39%. According to statistics on external qualification inspection rates above relevant grades, copper qualification rate is 93.21%, molybdenum 98.72%, lead 92.59%, zinc 92.68%, gold 96.05%, and silver 94.94% (Table 12.4).

Table 12. 4 Summary of internal and external sample analysis results in the Jiama mining area

Element	Result	2017	2018	2019	2020	2021	Total
Cu	Pass No	12	3	3	6	1	25
	Pass ratio %	92.68	95.83	90.91	90.16	97.37	93.21
Mo	Pass No	0	1	1	1	0	3
	Pass ratio %	100.00	98.25	96.67	97.67	100.00	98.72
Pb	Pass No	5	0	1	0	0	6
	Pass ratio %	90.74	100.00	90.00	100.00	100.00	92.59
Zn	Pass No	3	0	0	0	0	3
	Pass ratio %	91.18	100.00	100.00	100.00	0.00	92.68
Au	Pass No	3	2	2	3	2	12
	Pass ratio %	97.39	97.01	93.75	94.92	93.55	96.05
Ag	Pass No	9	2	2	4	1	18
	Pass ratio %	94.12	97.22	93.44	93.33	97.37	94.94

12.4 2026 on-site sampling and verification

During the 2026 field survey, six samples were collected from open-pit and underground mining shafts and open-pit drilling cores, which were sent to SGS Laboratory in Tianjin, China, for testing of copper, gold, ore, agriculture, lead, and zinc. Verification sample information (Table 12.5) and analysis results and comparison with mine production plan data (Table 12.6) are listed below:

Table 12. 5 Sample Verification Information

ID	location	Sample	Coordinates (China, 1954)			
			area	X (m)	Y (m)	Z (m)
HJL-J1	Hornfels open pit	rock	Mining	380281	3286595	5032
HJL-J2		rock	Edge of mining area	380210	3288128	5045
HJL-J3		rock	Mining area	380207	3287712	5015
HJL-J4	South open pit	rock	stope	380129	3285232	4880
HNL-J1		rock	stope	380163	3285262	4878
HD-J1	Underground stope	rock	4460-1-1-4	379325	3288412	4460
HW-J1	ZK003, 133.7m	core	Exploration area	378891	3287198	4792

Table 12. 6 Comparisons with Verification samples to mining production data

ID	Assay data from mining production					
	Cu (%)	Pb (%)	Zn (%)	Au(g/t)	Ag (g/t)	Mo (%)
HJL-J1	0.32	-	-	0.10	4.37	0.02
HJL-J2	0.33	-	-	0.05	1.77	0.01
HJL-J3	0.48	-	-	0.06	1.73	0.03
HJL-J4	0.81	1.59	0.99	0.21	30.95	0.01
HNL-J1	0.63	1.52	1.01	0.18	29.01	0.01
HD-J1	0.98	-	-	0.49	24	0.06
HW-J1	0.004	0	0.007	0.02	0.52	0.002
Verifying sample assay results from SGS Tian in 2026						
HJL-J1	0.66	0.01	0.004	0.07	1.8	0.016
HJL-J2	0.316	0	0.001	0.03	1.3	0.0069
HJL-J3	0.606	0	0.002	0.03	1.4	0.015
HJL-J4	2.14	0.04	0.021	0.59	46.5	0.0047
HNL-J1	2.7	0.02	0.153	1.21	56	0.0025
HD-J1	1.34	0	0.007	0.88	28.8	0.013
HW-J1	0.073	0.01	0.01	0.03	2.2	0.014
Comparisons results of two sets of analysis results						
HJL-J1	0.34			-0.0254	-2.5713	-4E-04
HJL-J2	-0.01			-0.02	-0.47	-0.003
HJL-J3	0.126			-0.03	-0.33	-0.012
HJL-J4	1.33	-1.6	-0.97	0.38	15.55	-0.005
HNL-J1	2.07	-1.5	-0.86	1.03	26.99	-0.008
HD-J1	0.36			0.39	4.8	-0.047
HW-J1	0.069	0.01	0.003	0.01	1.68	0.012
note	Positive (+) if verifying sample grade higher, negative if it is lower (-)					

The comparison results show that among the seven validation samples, 7 copper samples showed positive changes, and a validated Cu grade of sample HNL-J1 sample is 2% higher than that estimated grade from Jiama mine. For Gold and silver samples, each had four verified grades above mine's estimated grade, while there are six molybdenum samples with higher grades than those estimated in the Jiama mine.

12.5 Conclusion

Based on review of drilling, sampling, sample preparation, analysis, quality assurance/quality control data, and on-site sampling verification, the Author believes that the samples from the Jiama project meet industry standards and are suitable for mineral resource estimation.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Overview of Test work

Currently the main mineable ore types in the Jiama mining area are skarn-type copper-lead-zinc ore, skarn-type copper-molybdenum ore, and hornfels-type copper-molybdenum ore.

Over the years, Huatailong has conducted multiple mineral processing test studies on the three main ore types in the Jiama mining area. During actual production, the company has also continuously optimized the beneficiation flowsheet and reagent system. The following provides a summary of typical mineral processing test reports.

13.2 Beneficiation Test of Skarn-Type Copper-Lead-Zinc Polymetallic Ore

In 2008, to reasonably develop the copper-lead-zinc polymetallic resources of the Jiama deposit in Tibet, Huatailong commissioned the Beijing General Research Institute of Mining and Metallurgy to conduct laboratory flowsheet tests on Jiama copper-lead-zinc polymetallic ore. The purpose was to determine the beneficiation process and propose a technical plan for the use of recycled process water.

(1) Ore Type and Process Mineralogical Characteristics

Mineral composition studies show that the ore is a complex polymetallic sulfide ore containing copper, lead, zinc, molybdenum, gold, silver, and other metals. These valuable metals generally occur as independent minerals. Copper mainly occurs as chalcopyrite, followed by bornite and chalcocite, with trace amounts of covellite and oxidized copper in surface layers. Lead, zinc, molybdenum, and antimony occur as galena, sphalerite, molybdenite, and stibnite, respectively. In addition, the ore contains pyrite, marcasite, and very small amounts of arsenopyrite and other metal sulfide minerals that are closely associated with the useful minerals.

In the ore, the metal sulfide minerals are closely intergrown. They often form assemblages of two or more sulfide minerals embedded in gangue minerals mainly composed of garnet-carbonate, feldspar-quartz-carbonate, and tremolite-actinolite. The ore also contains various gangue minerals, mainly garnet, feldspar, quartz, calcite, dolomite, tremolite, and actinolite, with smaller amounts of chlorite, sericite, diopside, wollastonite, and others.

The main chemical composition analysis results are shown in Table 13.1.

Table 13. 1. Major Chemical Composition Analysis of Run-of-Mine Ore (%)

Element	Cu	Pb	Zn	S	Fe	Mn	As	SiO ₂
Content (%)	1.38	2.44	1.1	2.42	10.07	0.3	0.069	39.1
Element	CaO	MgO	Al ₂ O ₃	Mo	WO ₃	Au (g/t)	Ag (g/t)	
Content (%)	28.89	1.21	4.21	0.025	0.054	0.55	61.32	

The tests show that, at a grinding fineness of 70% passing -0.074 mm, a full closed-circuit test using clean water was carried out with the beneficiation flowsheet of “copper-lead bulk flotation followed by separation, then zinc flotation.”

In addition, during the beneficiation tests, studies were also conducted on the effect of recycled water from zinc tailings on copper-lead bulk rougher flotation, closed-circuit tests using different proportions of recycled water throughout the process, and investigative tests on molybdenum recovery from copper concentrate. It is recommended that fresh water be used as much as possible in future beneficiation operations, and that a recycled water treatment workshop with appropriate scale be constructed to allow a scientific and reasonable proportion of process water reuse.

Investigative tests on molybdenum recovery from copper concentrate show that molybdenum recovery is feasible through open-circuit flotation after milling the copper concentrate for the second time. Thioglycolate was used as the depressant for copper-molybdenum separation. The process involved one re-milling stage, one separation roughing stage, and two cleaning stages to recover molybdenum. Preliminary results indicate that recovering molybdenum from copper concentrate is feasible.

13.3 Bulk Flotation Test of Low-Grade Hornfels-Type Copper-Molybdenum Ore

In 2011, for Huatailong Phase II project of 40,000 t/d, which aimed to develop and utilize Jiama low-grade hornfels-type copper-molybdenum ore, the company commissioned the Northwest Research Institute of Mining and Metallurgy to conduct laboratory flowsheet tests on representative core samples from the hornfels ore body. The purpose was to obtain economically reasonable beneficiation process indicators and reagent systems through testing, providing reliable technical support for plant design and industrial production.

(1) Ore Type and Process Mineralogical Characteristics

Analysis of the main chemical components and trace elements of the run of mine ore shows that copper-grade reaches the cutoff grade and is

close to the industrial utilization grade. Molybdenum meets the requirement for associated component recovery and can be comprehensively recovered. Other associated components are relatively low in content and do not reach the cutoff grade for utilization.

Phase analysis and microscopic identification show that the copper and molybdenum minerals are primarily sulfides, with only minor oxide content. The main copper minerals include chalcopyrite, covellite, tetrahedrite, enargite, and small amounts of bornite. The main molybdenum mineral is molybdenite, with very small amounts of oxidized molybdenum minerals. In addition, the ore contains small amounts of pyrite, sphalerite, galena, magnetite, limonite, marcasite, and other metal sulfide minerals. Non-metallic minerals include quartz, sericite, clay minerals, chlorite, feldspar, calcite, pyroxene, amphibole, and others. The elemental analysis is shown in Table 13.2.

Table 13. 2. Multi-Element Analysis of the Feed Ore (%)

Element	Cu	Mo	Pb	Zn	S	Fe	SiO ₂	Al ₂ O ₃
Content (%)	0.38	0.015	<0.01	0.14	1.23	2.15	68.65	13.51
Element	CaO	MgO	K	Na ₂ O	TiO ₂	As	P	
Content (%)	0.56	1.07	4.96	1.13	0.66	<0.05	0.074	

(2) Test Flowsheet and Results

Based on the process flowsheet and reagent conditions determined from full open-circuit tests, closed-circuit tests were conducted. A “copper-molybdenum bulk flotation” flowsheet was selected for the full closed-circuit test. The results show that the copper-molybdenum bulk flotation performance was good.

Investigative copper-molybdenum separation tests show that both the sodium sulfide method with copper depressant T17 and the Knox method can achieve good copper-molybdenum separation results. However, the Knox method is difficult to prepare and store on site and has a higher cost, while the T17 reagent is lower cost and easier to implement on site. Therefore, T17 was selected as the copper-molybdenum separation inhibitor.

The test results show that copper and molybdenum can be separated under suitable reagent types and dosages. However, because the molybdenum grade of the raw ore is very low and the test was limited by laboratory flotation equipment conditions, the process indicators still need to be further verified through detailed copper-molybdenum separation tests using copper concentrate produced on site. Therefore,

these results only qualitatively demonstrate the feasibility of copper-molybdenum separation.

13.4 Beneficiation Test of Skarn-Type Copper-Molybdenum Ore

In 2016, commissioned by Huatailong conducted small-scale laboratory flowsheet tests on Jiama skarn-type copper-molybdenum ore. The purpose was to solve technical difficulties in copper-molybdenum separation and conduct more in-depth research on the flotation characteristics and flowsheet structure of the ore.

The collected copper-molybdenum run of mine ore was tested in a closed-circuit using the optimized production flowsheet and reagent system. Under laboratory conditions, the bulk concentrate produced from copper-molybdenum bulk flotation was tested using a closed-circuit process consisting of one roughing stage, two scavenging stages, nine cleaning stages, re-milling of the fourth cleaner froth, and step-by-step return of middlings.

13.5 Copper-Molybdenum Separation Test of Mixed Skarn and Hornfels Copper-Molybdenum Ore

In 2021, commissioned by Huatailong, Northeastern University conducted laboratory flowsheet tests on mixed skarn and hornfels copper-molybdenum ore from Huatailong Company's No. 2 beneficiation plant. The study focused on the process mineralogy of the bulk concentrate and copper-molybdenum flotation separation, and proposed an efficient separation flotation flowsheet.

Based on a series of conditional tests, a laboratory closed-circuit full flowsheet test was carried out on the bulk concentrate. The process adopted a "one roughing, seven cleaning, and two scavenging" flowsheet. In the process, a combination of sodium hydrosulfide and sodium thioglycolate was used, together with the new reagent AT208. With the combined effects of sodium silicate, kerosene, and concentrate scrubbing, satisfactory indicators were achieved.

13.6 Conclusion

Given the characteristics of the mining area, including multiple ore types, complex components, close mineral intergrowth, and large grade differences, differentiated flotation process test studies were gradually carried out. The tests successively established suitable processes such as staged recovery of copper-lead-zinc polymetallic ore, bulk flotation of low-grade copper-molybdenum ore, refined closed-circuit separation, and multi-reagent combined separation. Reagents and flowsheets were continuously optimized to address the challenges of polymetallic separation.

At present, some issues remain, including the need for industrial verification of low-grade molybdenum recovery indicators and the lack of large-scale recycled water

utilization. The relevant results have effectively guided on-site production and improved resource recovery. Future work can further deepen research on the recovery and utilization of low-grade molybdenum.

14 RESOURCE ESTIMATE

14.1 Introduction

The resource estimation methodology combines lithological and mineralized units to construct a full three-dimensional (3D) solid and block model. Mineralized bodies are defined using an approximate cut-off grade / threshold of 0.3% Cu (locally 0.2% for significant Mo and/or Au and/or Ag and/or Pb and/or Zn).

Collar, survey, assay, lithology, and specific gravity (SG) data were imported from the database as a series of CSV files, into Leapfrog software.

The mineralization bodies (domains) are created with composited Cu grade as well as significant Mo, Au, Ag, Pb, and Zn (if applicable) with the radial basis function interpolants (RBF Interpolants) in Leapfrog.

Domained estimation and blocked model of Cu Mo, other metals and Specific Gravity (SG) are finished with the Ordinary Kriging (OK) and the Local Variable Orientation (Dynamic Anisotropy).

14.2 Domaining

Estimation domains / Mineralization bodies at the Jiama mine were developed by combining geological and mineralization models. Mineralized bodies are defined using an approximate cut-off grade / threshold of 0.3% Cu (locally 0.2% for significant Mo and/or Au and/or Ag and/or Pb and/or Zn) to make sure the created domains include all significant mineralization of Cu, as well as Mo, Au, Ag, Pb, and Zn. The samples within current open-pit are excluded to create all mineralization domains (Figures 14.1-14.3) using current topography (i.e., excluding the samples mined out by current open-pit) as the upper boundary when modelling. Contacts between domains were treated as hard contacts for resource estimation purposes. The mineralization bodies (domains) are created with composited Cu grade as well as significant Mo, Au, Ag, Pb, and Zn (if applicable) with the radial basis function interpolants (RBF Interpolants) in Leapfrog Geo & EDGE.

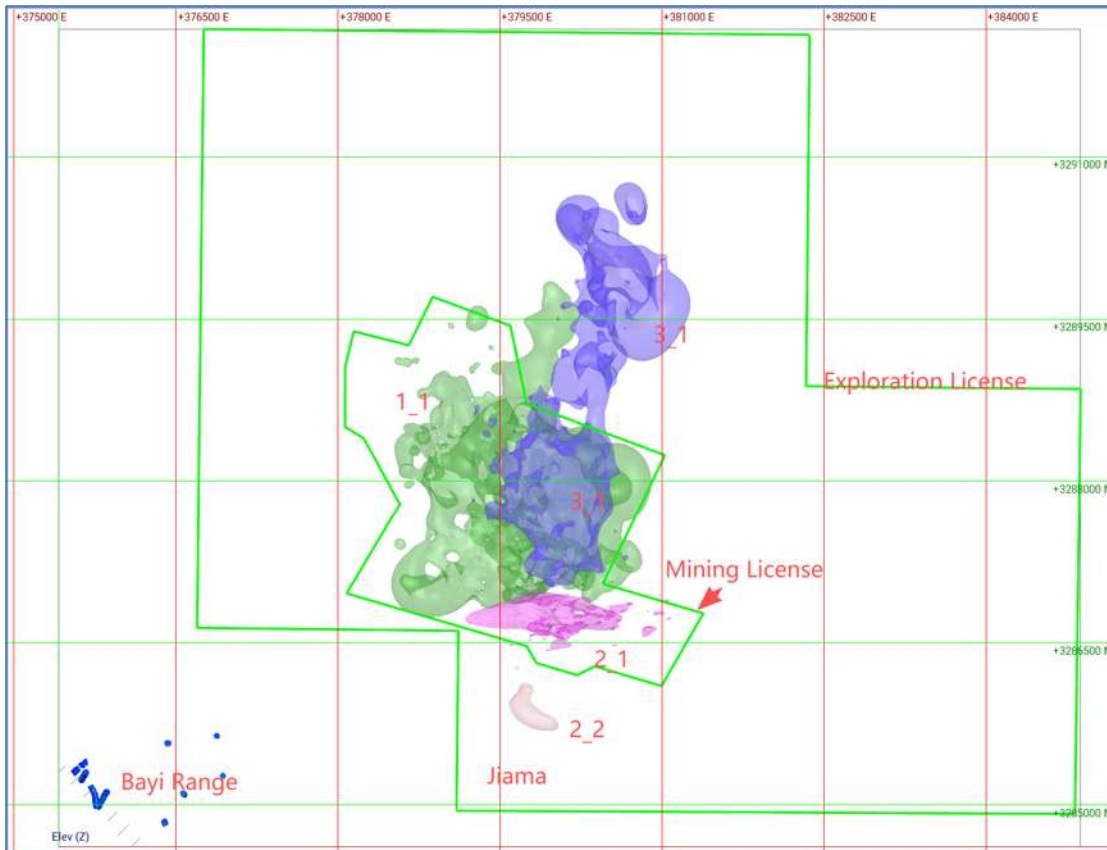


Figure 14. 1 Mineralization Domains in Mining License and Exploration License in Jiama Project

(Coordinate in Beijing 1954 Coordinate System in 3 degree zone # 31. All other maps/figures in Section 14 are in the Beijing 54 Coordinate System unless stated otherwise).

A total of 4 mineralization domains are developed here, including Domain 1_1 mainly hosted by skarn-marble, mainly above porphyry; Domain 3_1 mainly hosted by hornstone and some vein-type porphyry, and; Domains 2_1 and 2_2 hosted mainly by skarn-marble occurring beside porphyry (Figure 14.3). Contacts between domains were treated as hard contacts for resource estimation purposes. Each domain 1_1, 2_1 and 3_1 include many different wireframes (Figure 14.2 & 14.3). Domains 1_1 and 2-1 are hosted by skarn-marble with high Cu Mo and Au.

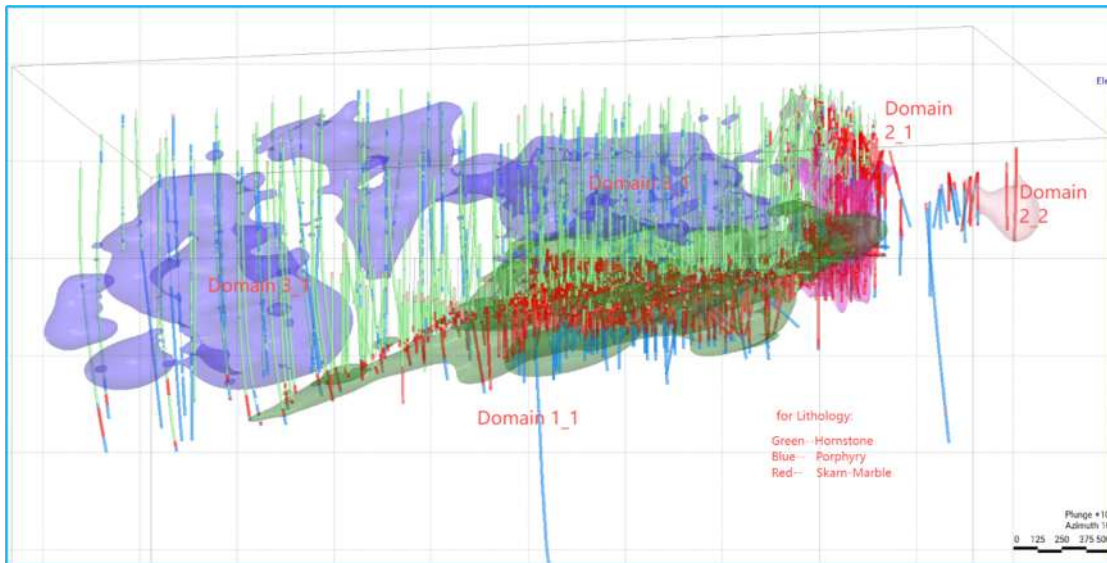


Figure 14. 2 The relationship between Mineralization domain and lithology

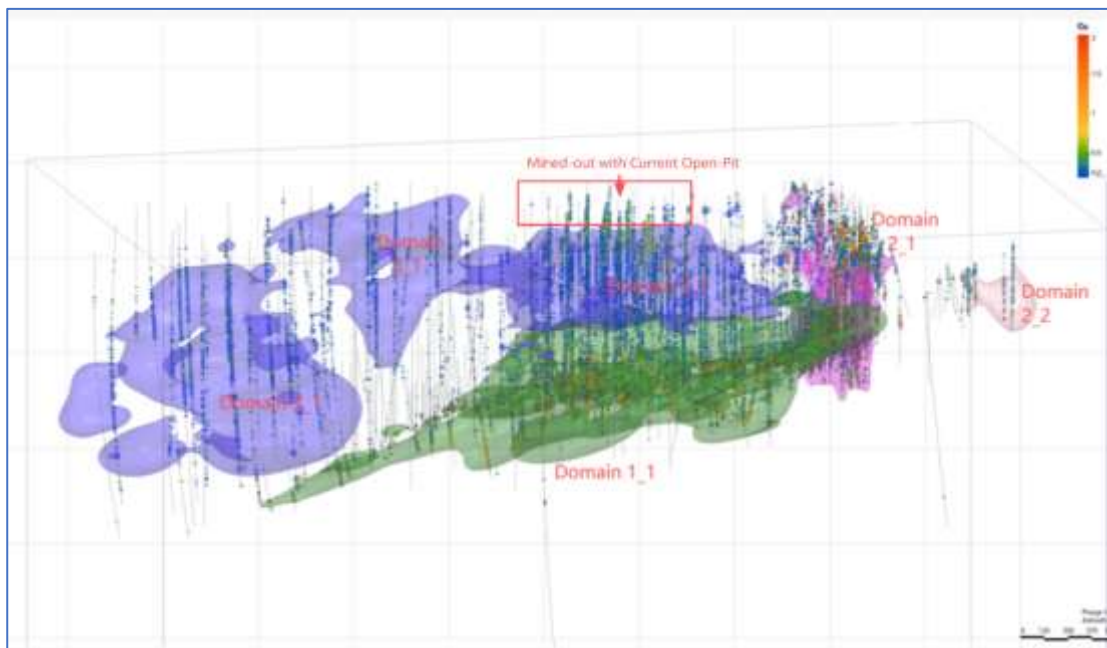


Figure 14. 3 The relationship between Mineralization Domain and Cu Grade

14.3 Structural Model

All domains are shallow in the south (even crop out at the surface) and deep to the north. The domains 2_1 and minor 2_2 are located in the south and shallow. The domain 3_1 is above domain 1_1 occurring along the thick-plate-like skarn with dip 35° to NE 25°. Domain 2_2 with a strike 90° and almost vertical dip is located in the south end of domain 1_1. See Figure 14.1 and 2.

14.4 Top Capping

Drillhole samples were first combined into 1 m composites (except 2m composite for domain 3_1), honoring the domain contacts, and then capped. Capping was based on a combination of histogram and log probability plot analysis, review of coefficients of variation (CV), and spatial analysis of higher-grade samples. A lower capping threshold (as a proportion of the distribution) was applied to domains with limited amounts of data. The highest grades are typically clustered and show good connectivity between drillholes. As a result, they were either not capped, or had a light capping applied. Top capping values were applied per domain, where necessary, prior to estimation (Table 14.1).

The outlier values of Cu grade are obtained from Log Probability of Cu values within corresponding mineralization domain. Detailed outlier values see the following figures (Figure 14.4-14.7). No outlier capping for Domain 2_2 is needed. Only less than 0.1% of samples (Rossi & Deutsch, 2014) are required for Domains 1_1 and 3_1 (Table 14.1).

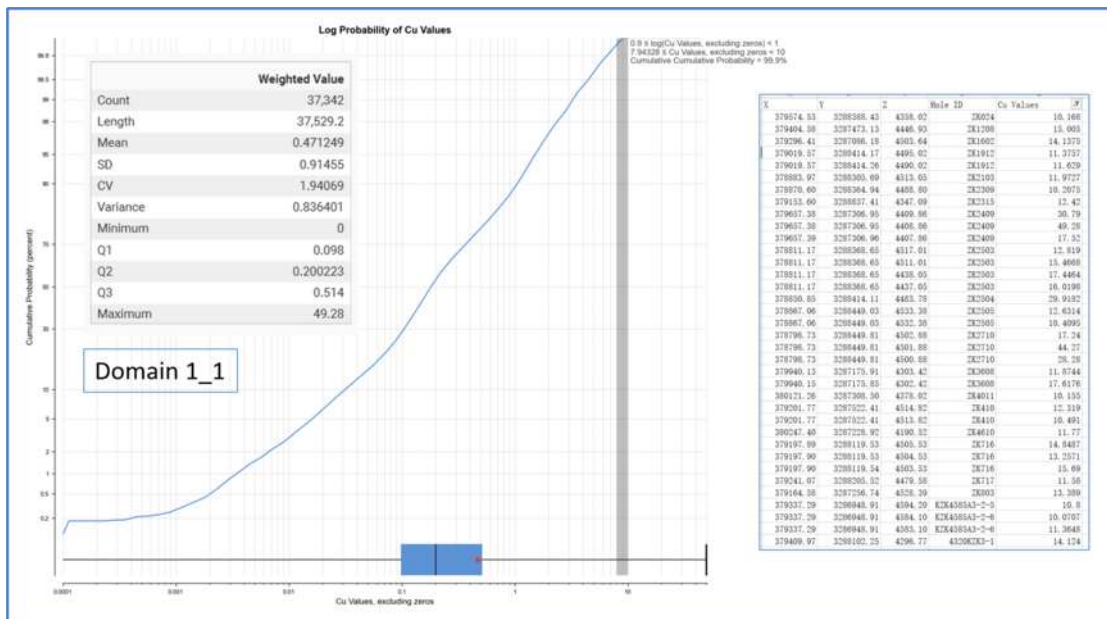


Figure 14.4 Log Probability of Cu grade and sample list with higher top outlier within Domain 1_1

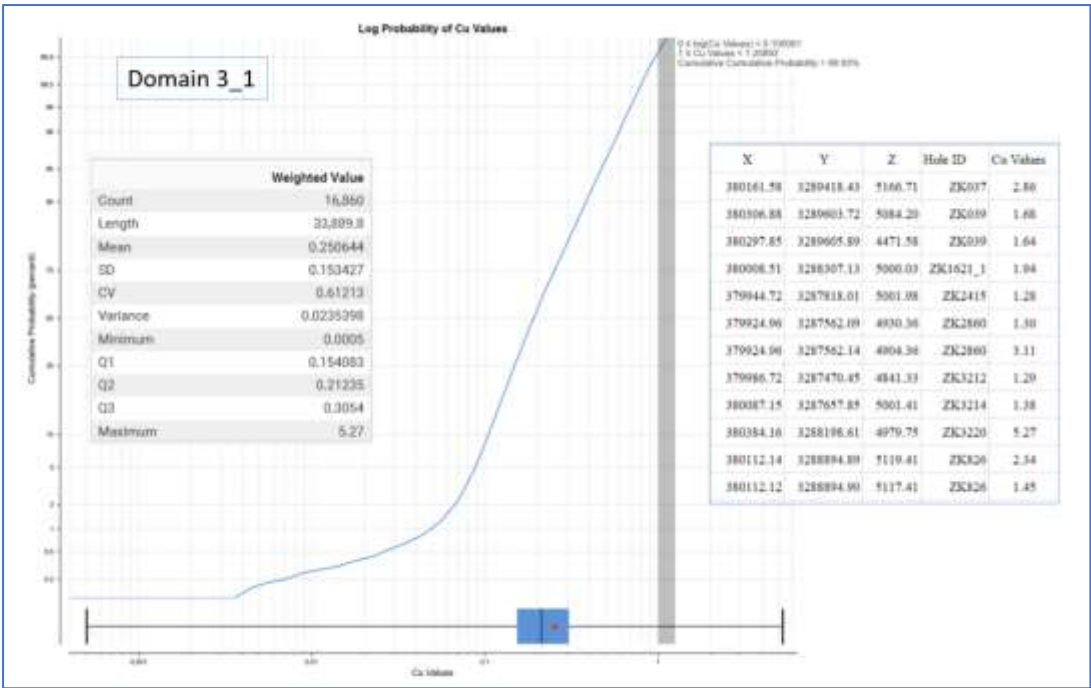


Figure 14. 5 Log Probability of Cu grade and sample list with higher top outlier within Domain 3_1

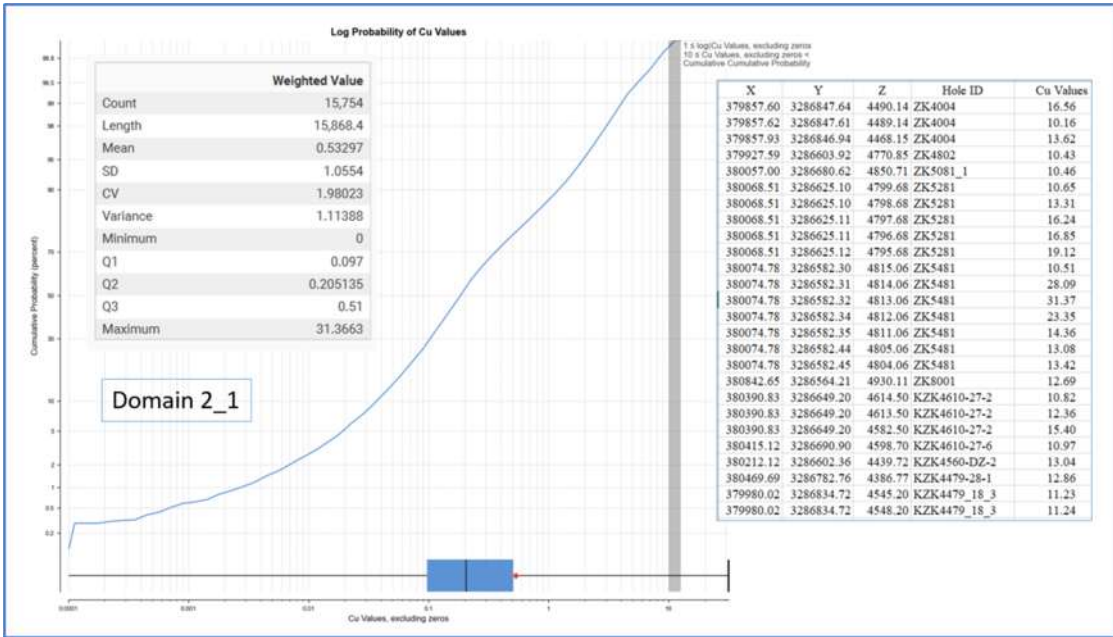


Figure 14. 6 Log Probability of Cu grade and sample list with higher top outlier within Domain 2_1

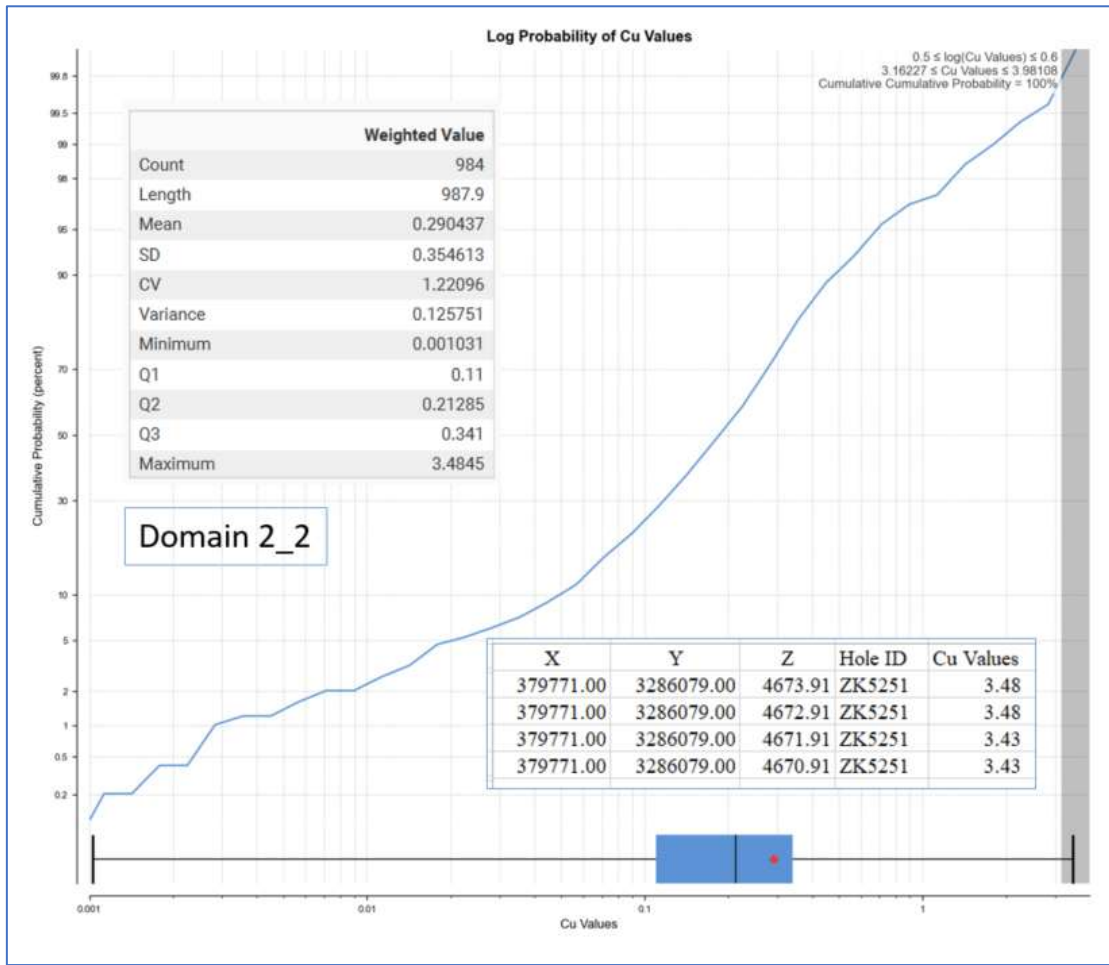


Figure 14. 7 Log Probability of Cu grade and sample list with higher than 3.0% within Domain 2-2

Table 14. 1 Top capping per domain on composited samples

Domain	Outlier values Cu %	Sample capped	Total samples within the domain	Ratio of Capped sample to total sample within the domain
1_1	10	36	37342	0.096%
3_1	1.26	12	16860	0.071%
2_1	10	26	15754	0.165%
2_2	only 4 samples with Cu % higher than 3%	26	984	

14.5 Surface Modelling of Domains

Surface modelling and block model estimation were limited within perimeters

defining the mineralized portions and permit boundaries of the Project. For domains 1_1, 2_1, 3_1 and 2_2, surfaces were generated with basic resolution 50m x 50m and maximum snap distance 12.5m -50m, i.e., more data and higher resolution (See Figure 14.8).

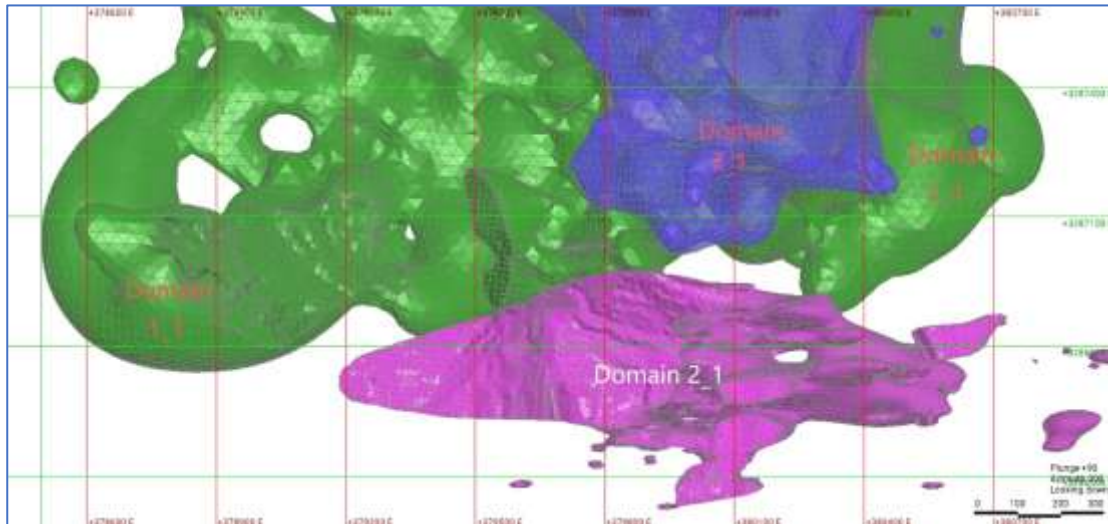


Figure 14. 8 Resolution of surface of Domain 1_1, 2_1, and 3_1 showing by triangle mesh

14.6 Exploratory Data Analysis (EDA)

The distribution of Cu grades within the mineralized zones is positively skewed, but generally well constrained, with few outliers. Higher grades are generally clustered and controlled by lithological types. Histograms and probability plots are displayed in Figure 14.9 and Figures 14.10. The samples from Domain 1_1, 2_1, and 2_2 are composited to 1m and Domain 3_1 to 2m (Figure 14.10).

Hard boundaries are used for domaining for sharp decrease of Cu grade at the outside from the domain boundary (Figure 14.9). Hard boundaries signify that only sampling within the boundary are taken into consideration when modelling.



Figure 14. 9 Domained Estimation of Domains 1_1, 2_1, 2_2, and 3_1

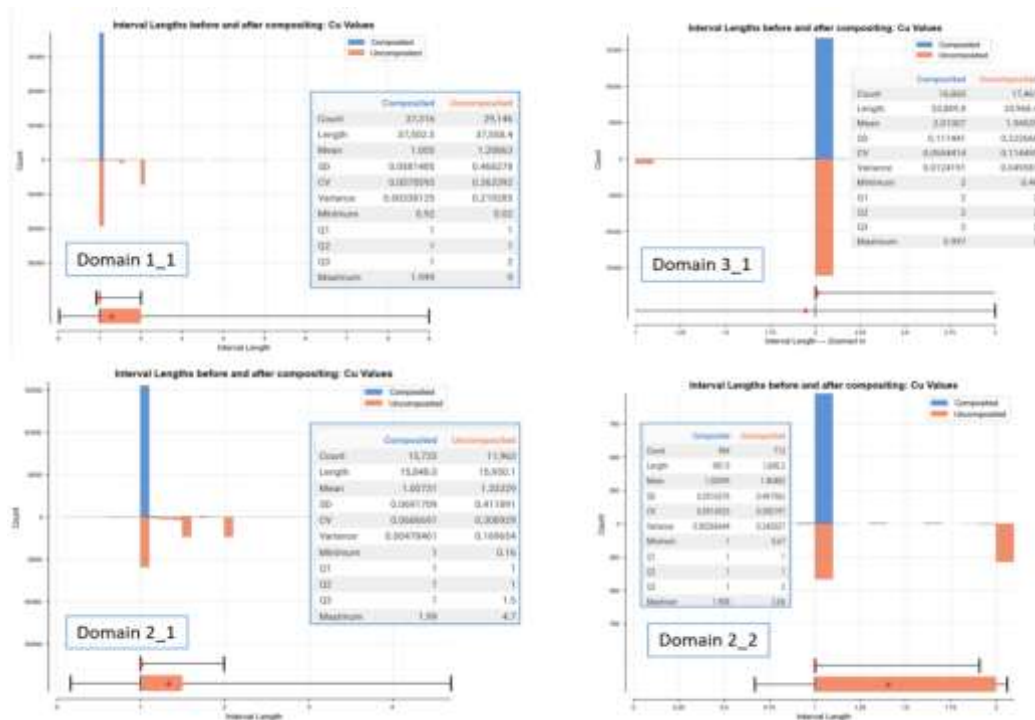


Figure 14. 10 Comparison of sample length before and after compositing

After compositing, the CV of Cu grade for all Domians 1_1, 2_1, 2_2, and 3-1 decrease and keep the basically same grade mean (Figure 14.11):

Domain 1_1, CV from 2.05555 (uncomposited) to 1.93992(composited)

Domain 2_1, CV from 2.09311 (uncomposited) to 1.98063 (composited)

Domain 3_1, CV from 0.639395 (uncomposited) to 0.61213 (composited)
 Domain 2_2, CV from 1.22903 (uncomposited) to 0.914551(composited)

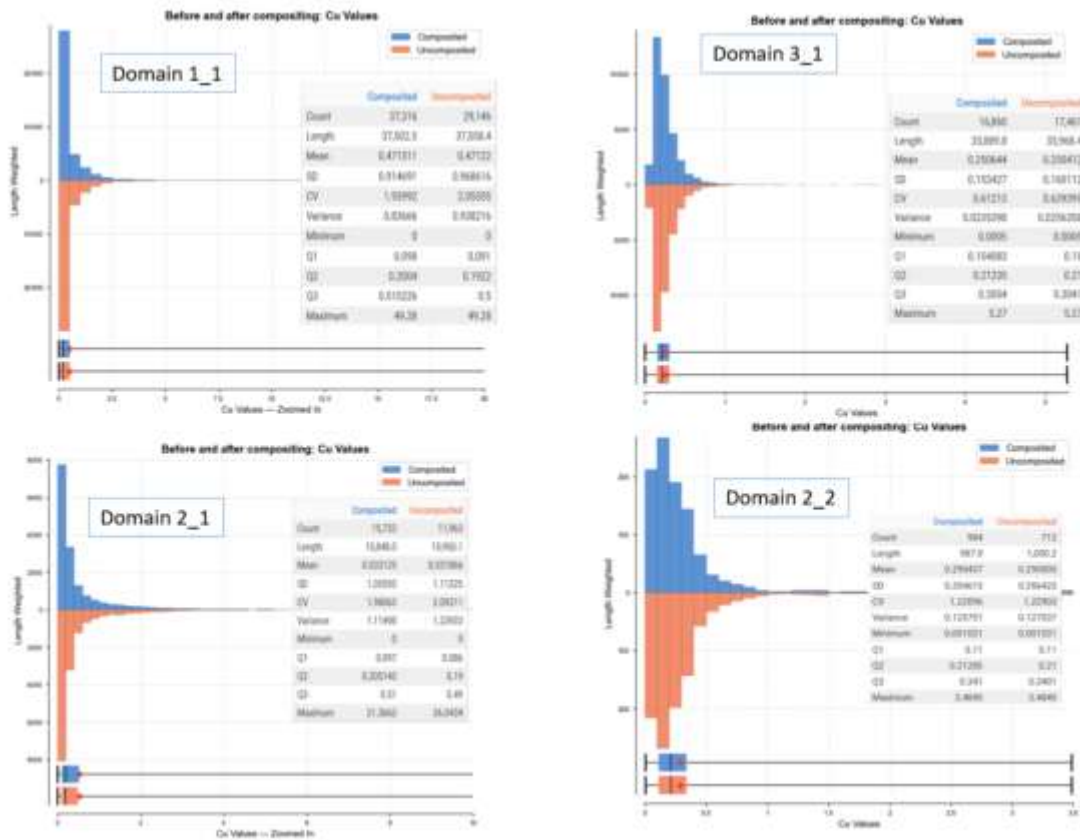


Figure 14. 11 Comparison of grade between before and after compositing in Domain 1_1, 2_1, 2_2, and 3_1

14.7 Grade Estimation

The Ordinary Kriging (OK) method is used to do estimation of Cu, Mo, Au, Ag, Pb, Zn, and SG. Transformed 1 m (for Domains 1_1, 2_1 and 2_2) or 2 m (for Domain 3_1) composites were used for variography. The variogram parameters were first optimized by performing sensitivity studies on the lag, angular tolerance, bandwidth and a normal score transform prior to modelling of the variogram. Variography and estimation were performed after downhole variograms of the transformed 1 m (for Domains 1_1, 2_1 and 2_2) or 2 m (for Domain 3_1) composites were used to determine the nugget effect. The variograms are shown in the following Figure 14.12.

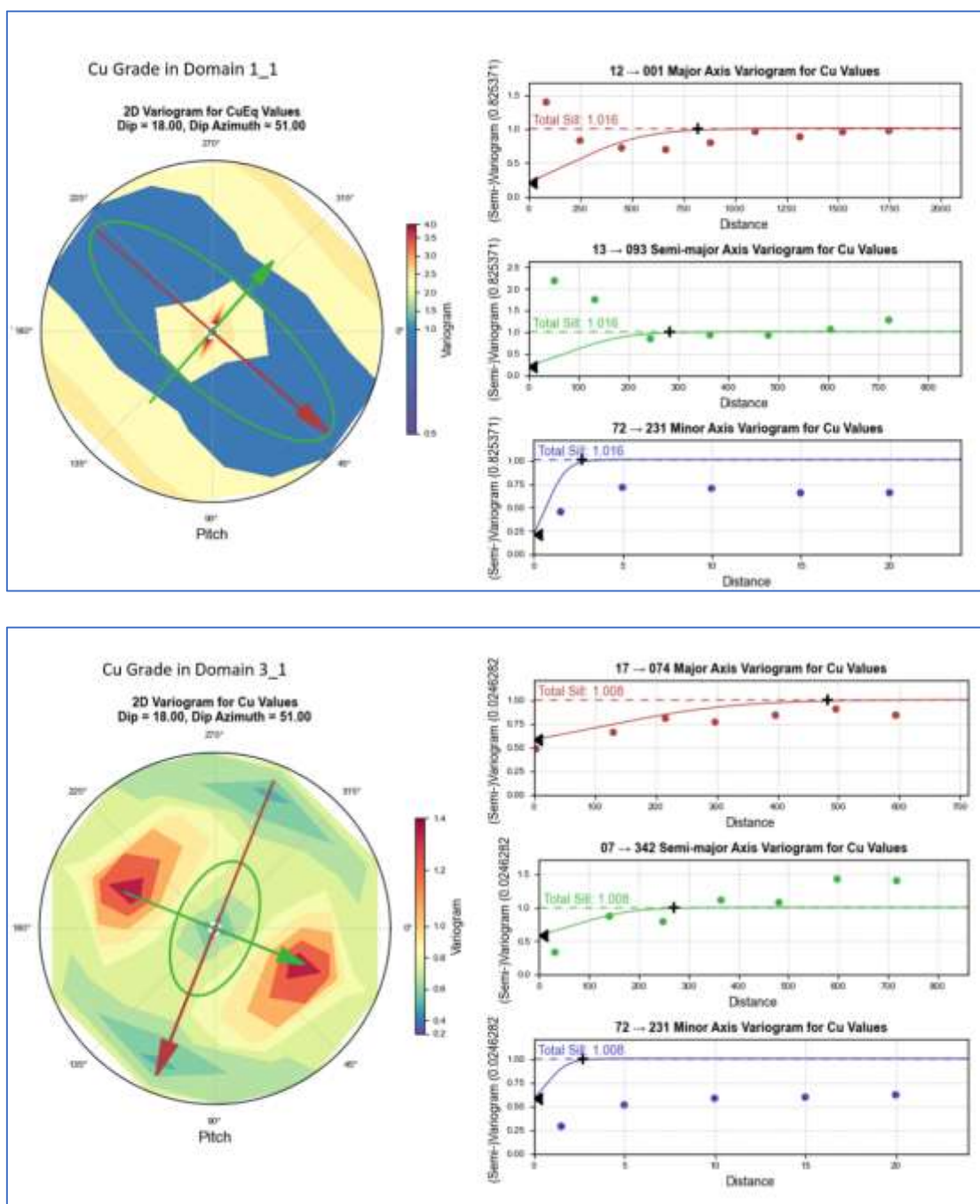


Figure 14. 12 Spatial Variogram model for the largest Domains 1_1 and 3_1

As the shape of domains vary at different locations, a variogram for each domain mentioned above is too rough to perform estimation. We use Variable Orientation (Seequent, 2024) to estimate each block at variable orientation 20m (Easting) x20m (Northing) x10m (Elevation) (See Figure 14.13) whiling estimated with OK method, which (i.e., Dynamic Anisotropy) is much better than using only one variogram in the traditional method.

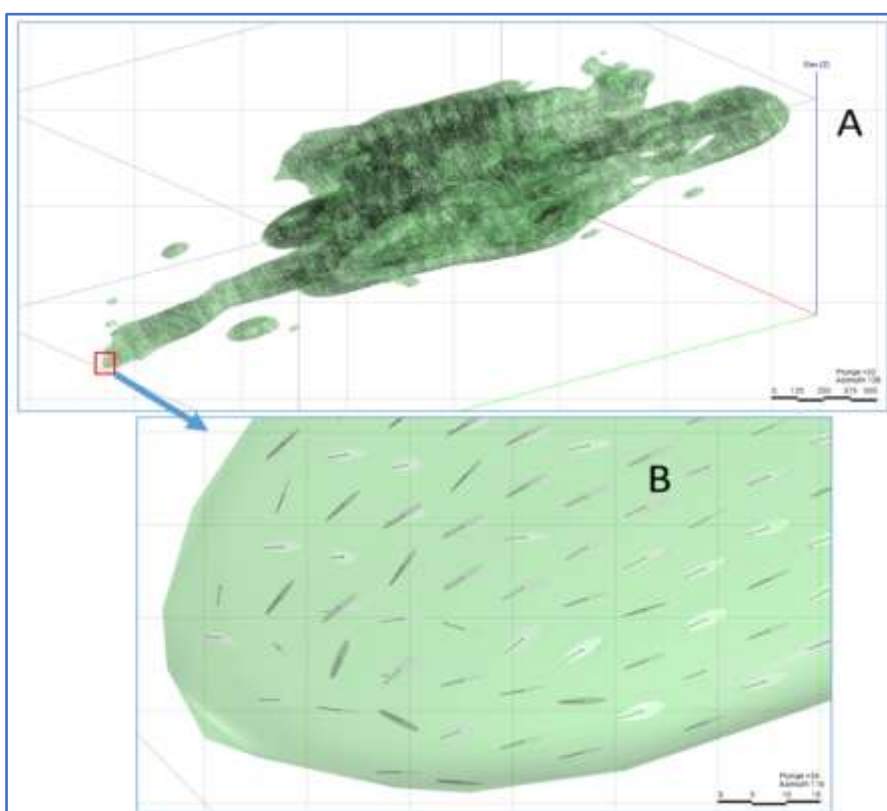
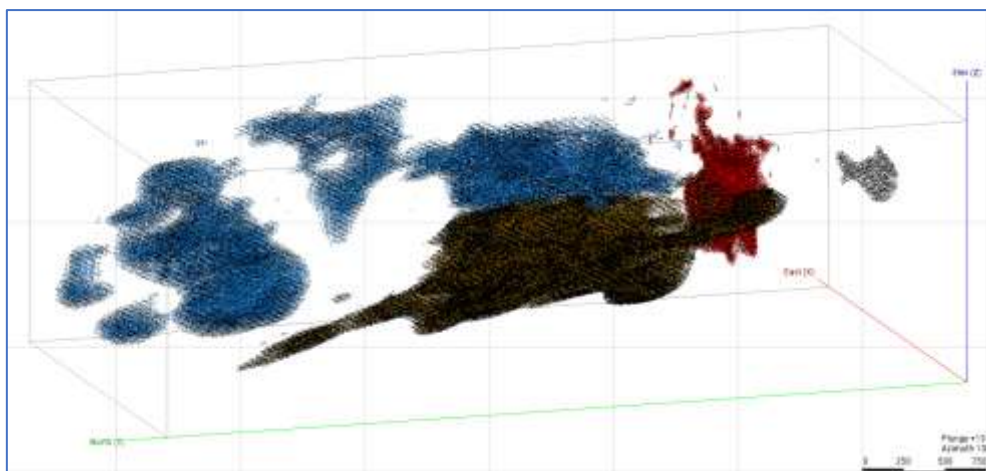


Figure 14. 13 Local variable orientation model for mineralization domains

14.8 Specific Gravity (SG)

We collected 1116 sample SG and only 736 SG with coordinates location, i.e., 496 samples within domain 1_1, 128 SG samples within domain 2_1, and 112 SG samples within domain 3_1 (Figure 14.14).

For domains 1_1, 2_1, and 3_1, SG was estimated with Ordinary Kriging (OK) and its own search and variogram parameters, using only those SG samples that occurred within individual domain wireframes.

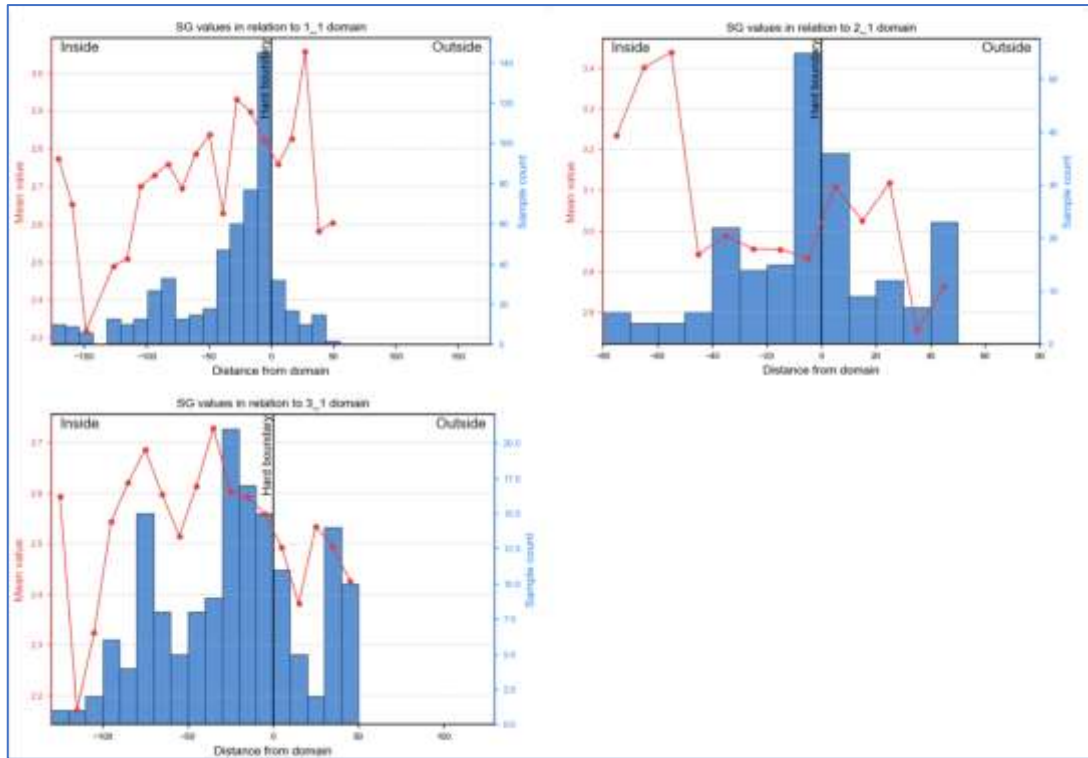


Figure 14. 14 Domained Estimation of SG for 1_1, 2_1, and 3_1.

For domain 2_2 without SG analysis result available, the ore is the skarn-type and 2.982, the average SG of the skarn-type ore here, is used for its SG.

SG estimation---- Visual checks: Estimated block grades and composite grades were compared visually in plan and cross-sectional views and showed good agreement (Figure 14.15).

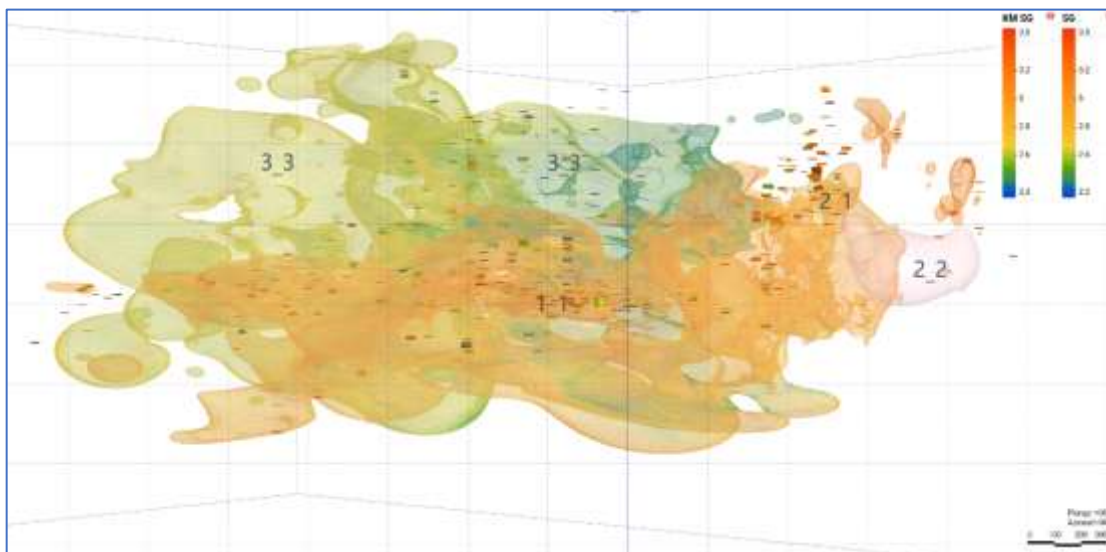


Figure 14. 15 Comparison between the analyzed SG result and SG estimation with OK of different mineralization bodies (domains)

SG validation ----Swath plot check: Good consistence is shown between SG analysis results and domained SG estimation along Easting, Northing and Elevation directions (Figure 14.16, 14.17).

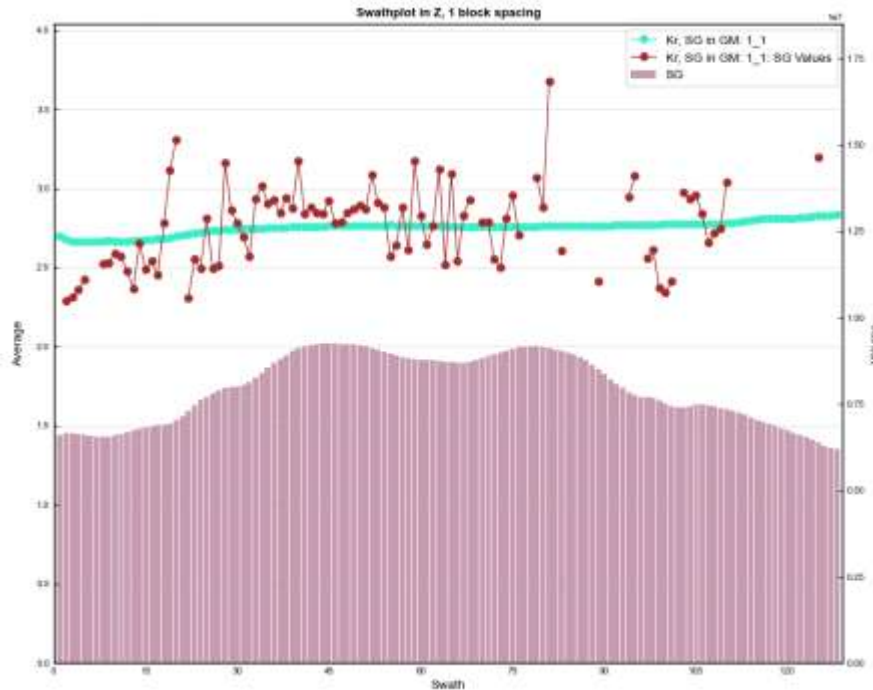


Figure 14. 16 Swath plot of SG along Z (i.e., Elevation) direction Rose Vale Point--SG analysis, Cyan—SG estimation, Bar—Volume of estimation block corresponding SG

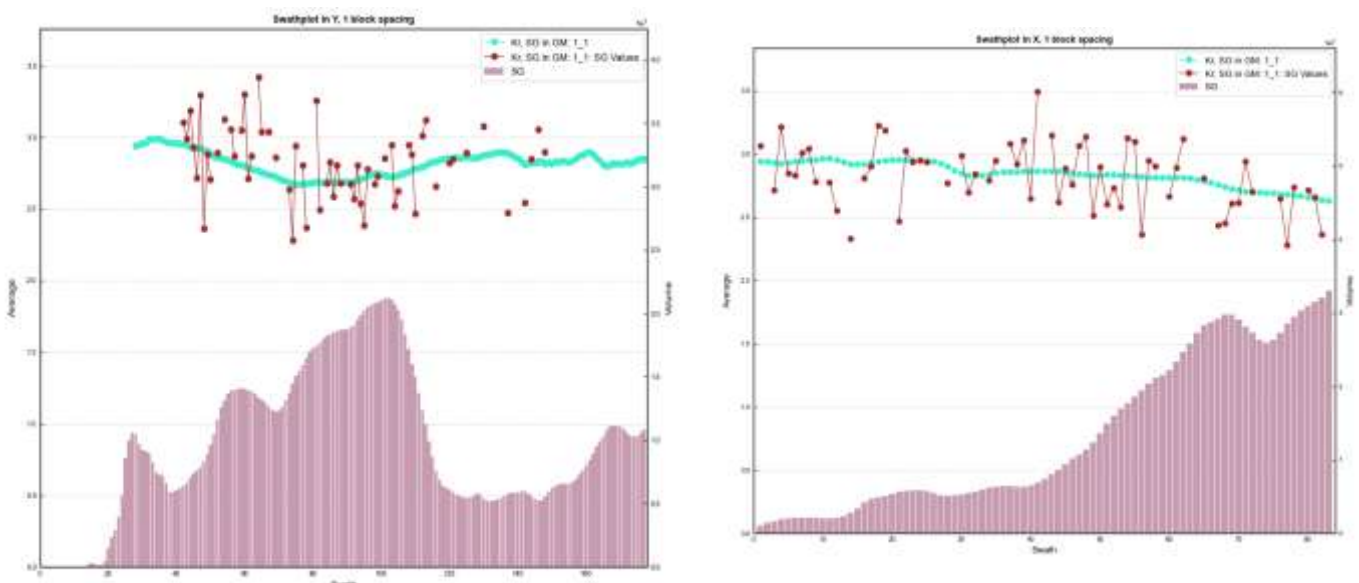


Figure 14. 17 Swath plot of SG along Y (i.e., Northing) direction and along X (i.e., Easting) direction

14.9 Mineral Resources Classification

Several factors were considered in determining the Mineral Resource classification, including:

- Mapping and sampling spacing of underground exposures.
- Drillhole spacing for Inferred Resource, Indicated Resource, and Measured Resource classification between existing drillholes at Open-pit and mined-out area in underground
- Modelled continuity of mineralization and robustness of variograms for different domains; modelled continuity ranges far exceed current drillhole spacings used for classification.
- Comparison of modelled geology units and actual underground/open pit exposure.

Here, the average distance to samples (AvgD) is used as the mineral resource classification criteria for large Domains 1_1 and 3_1, and interpreted by many holes with small drillholes spacing for Domain 2_1:

- Measured category: $\text{AvgD} \leq 60\text{m}$
- Indicated category: $120\text{m} \geq \text{AvgD} > 60\text{m}$
- Inferred category: $250\text{m} \geq \text{AvgD} > 120\text{m}$

For Domain 2_2 intercepted only by limited holes, the mineral resource category classification criteria is used:

- Inferred category: $250\text{m} \geq \text{AvgD}$

The Mineral Resource classification with drillholes is shown in Figure 14.18.

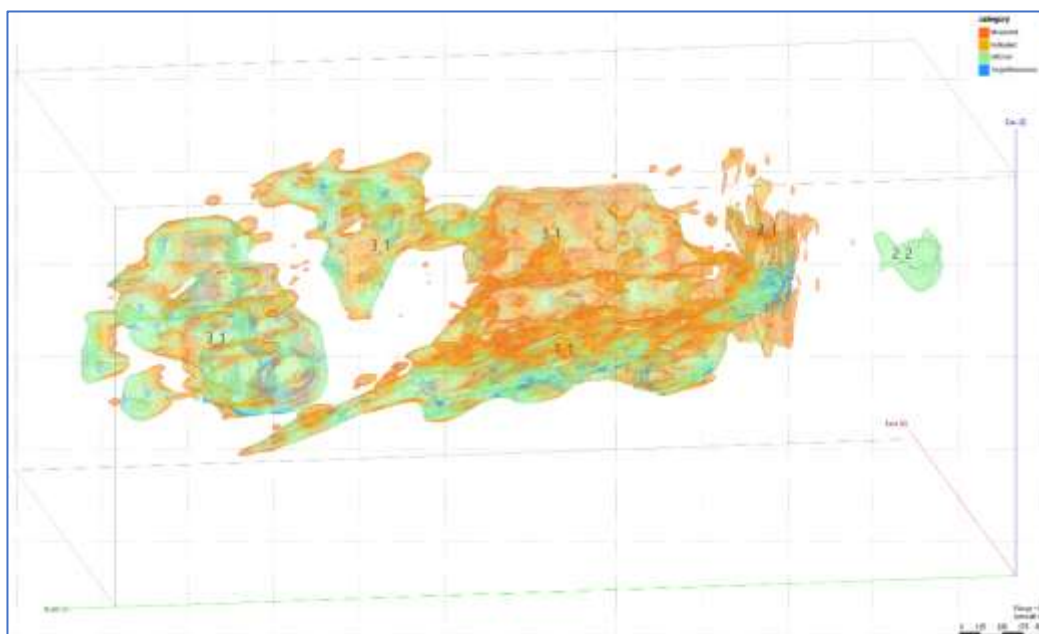


Figure 14. 18 Mineral Resource Classification at Jiama Project

14.10 Model Validation

Author can compare the estimated Cu and other grades with the analyzed grade after top capping (i.e., clipping grade) with visual check and swath plot 2 methods to make sure that grade estimation is reasonable or not

Grade estimation---- Visual checks: Estimated block grades and top-clipped composite grades were compared visually in plan and cross-sectional views and showed good agreement (Figure 14.19-24).

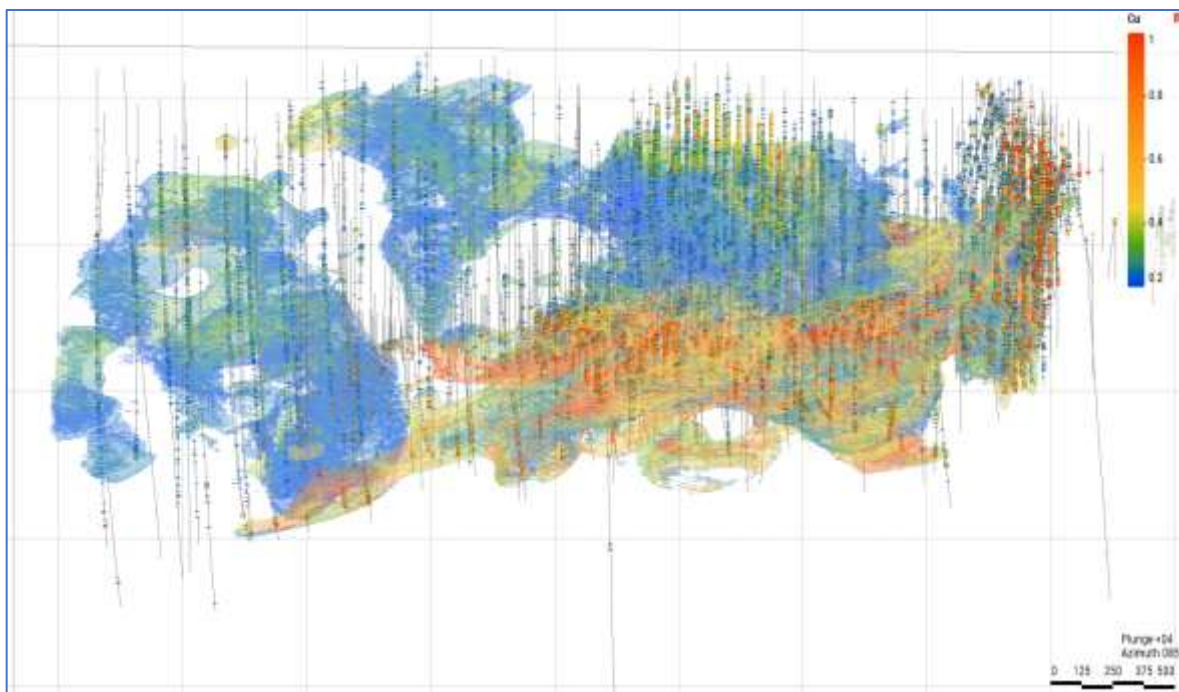


Figure 14. 19 Comparison between clipped Cu grade analysis and estimated Cu grade of domains

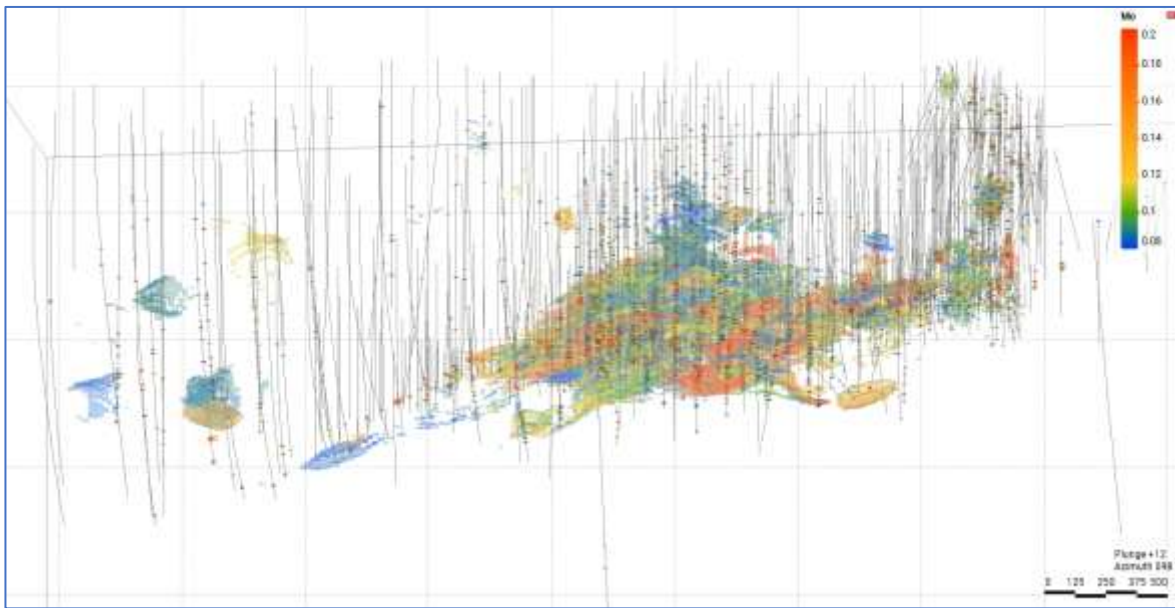


Figure 14. 20. Comparison between clipped Mo grade analysis and estimated Mo grade of domains

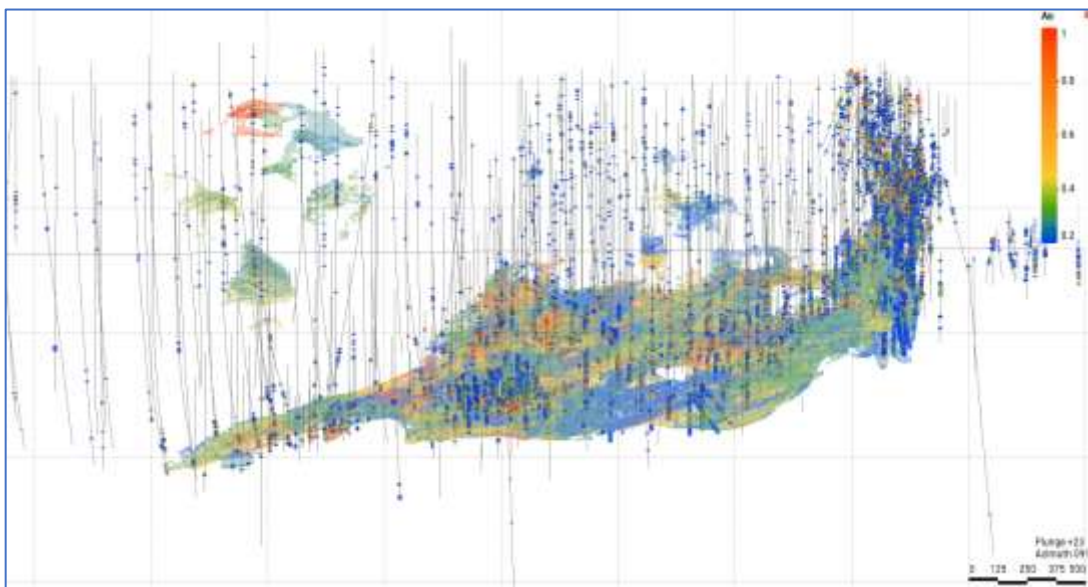


Figure 14. 21 Comparison between clipped Au grade analysis and estimated Au grade of domains

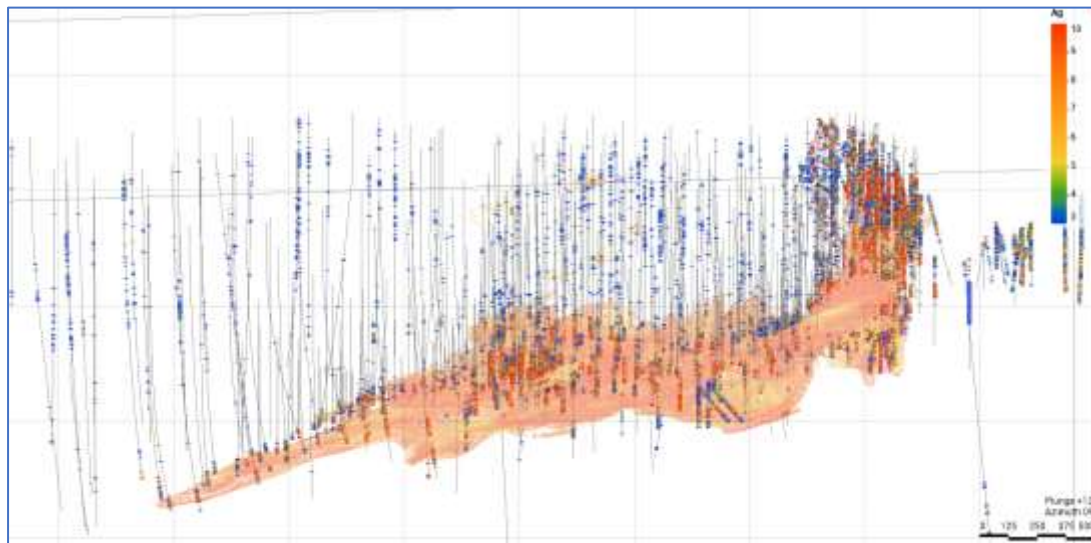


Figure 14. 22 Comparison between clipped Ag grade analysis and estimated Ag grade of domains

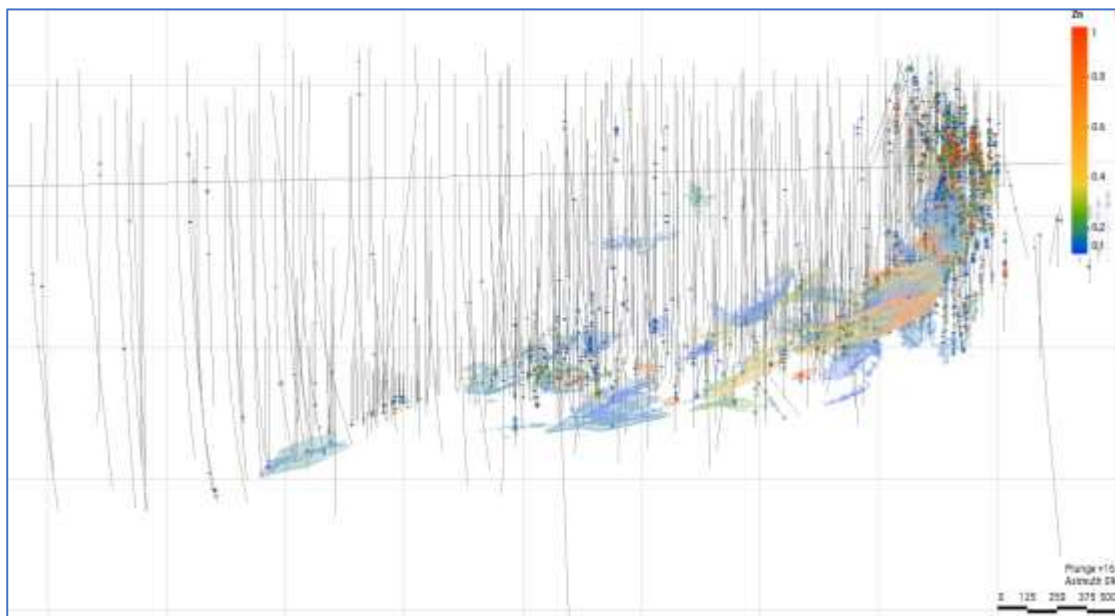


Figure 14. 23 Comparison between clipped Pb grade analysis and estimated Pb grade of domains

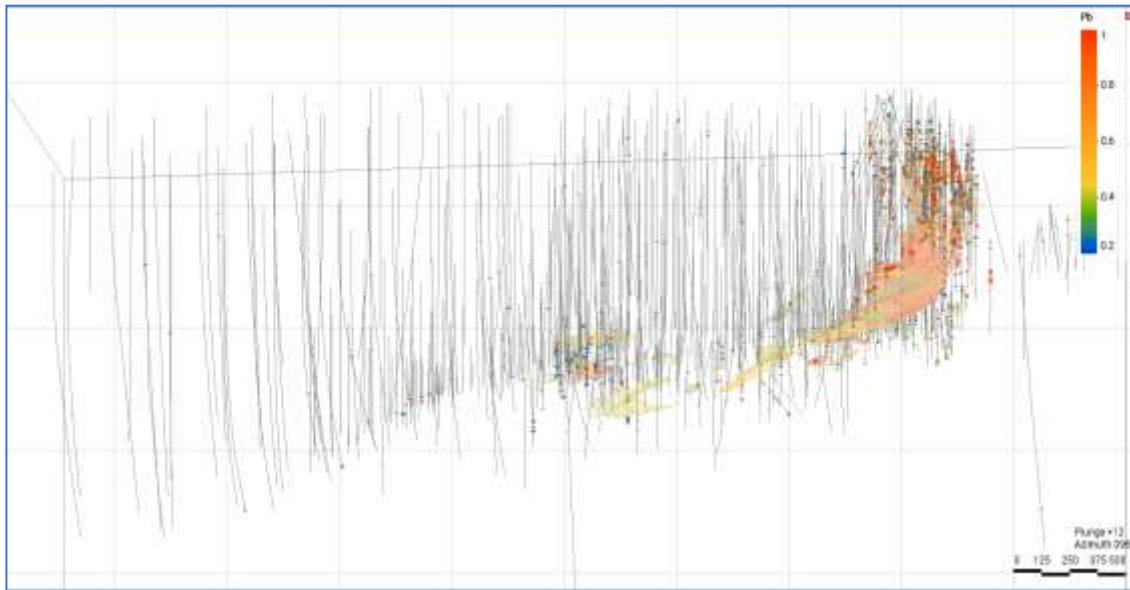


Figure 14. 24 Comparison between clipped Zn grade analysis and estimated Zn grade of domains

Grade estimation---- Swath plot comparison: Swath plots were constructed for Cu, Mo, Au, Ag, Pb, Zn, and Specific Gravity (SG). Swath plots of SG are shown above (Figure 14.19-24). Here only grades of Cu, Mo and Au of domains 1_1, 2_1, and 3_1 are shown here. Good consistency is shown between metal grade analysis results and domained estimation along Easting, Northing and Elevation directions (Figure 14.25-27). There is also good consistency shown between Cu and other metal analysis and domained Cu and other metals estimation along Easting, Northing and Elevation directions (Figure 14.28-31). This supports the domain estimation of these metals to be reasonable.

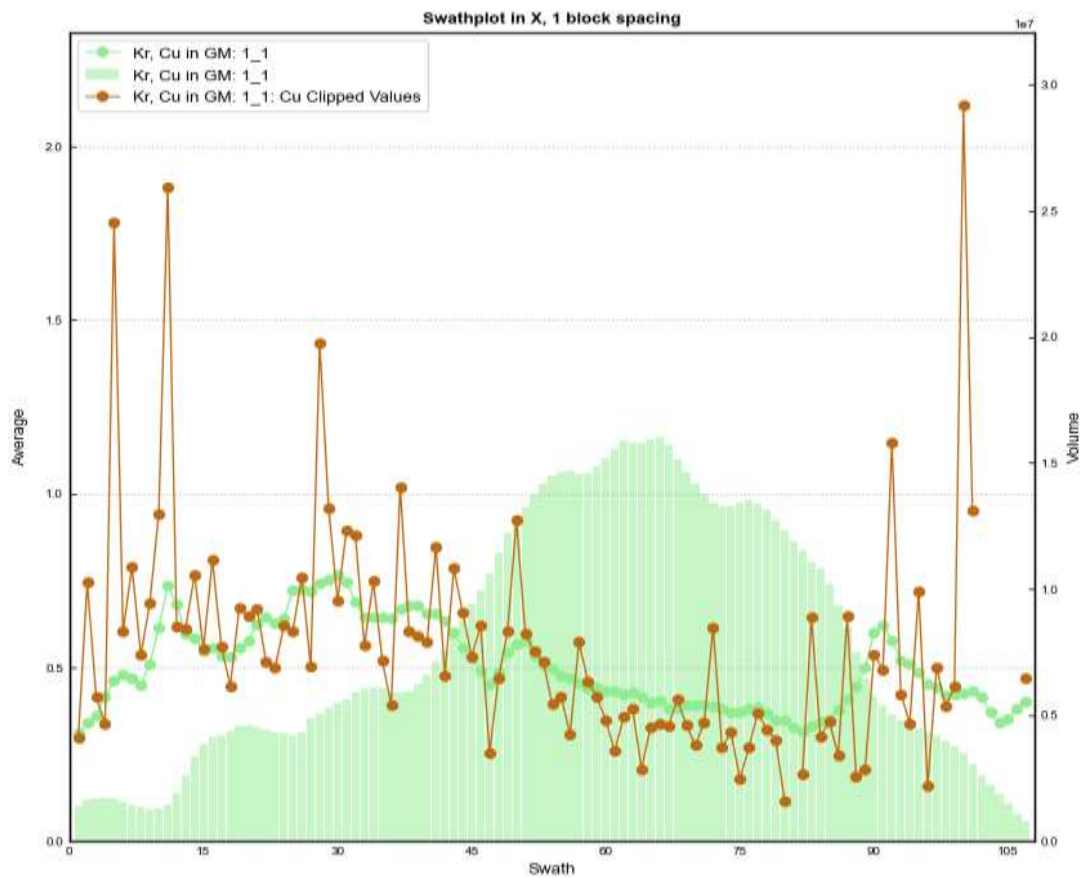


Figure 14. 25 Swath plot of Cu % of Domain 1_1 along X (i.e., Easting) direction

Rose Vale Point—Cu % grade analysis, Cyan—SG estimation, Bar—Volume of estimation block corresponding Cu grade. Explanation is the same for other Swath figures unless noted.

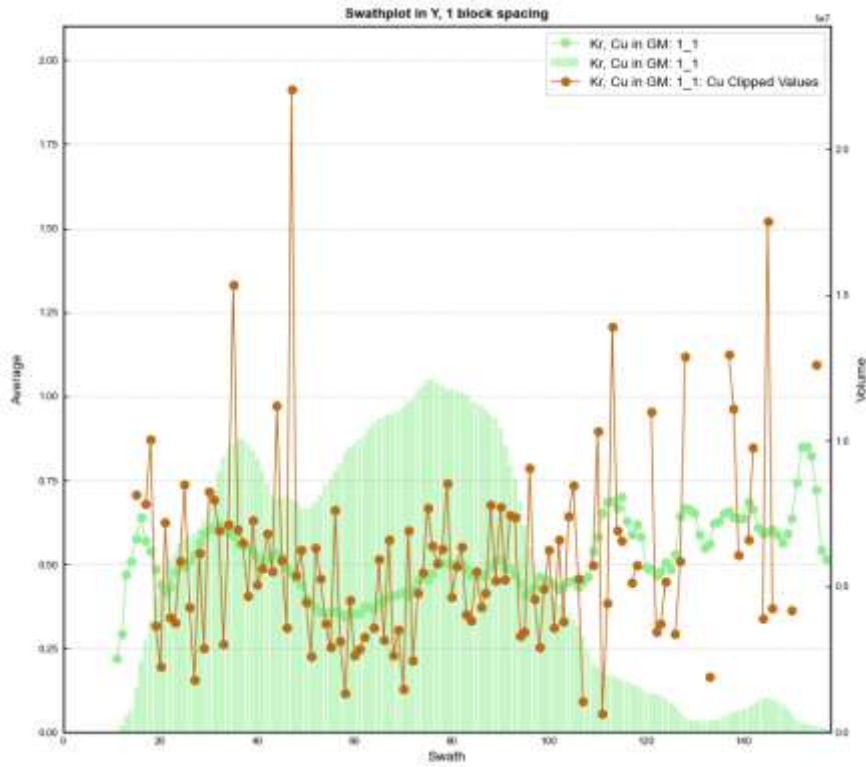


Figure 14. 26 Swath plot of Cu % of Domain 1_1 along Y (i.e., Northing) direction

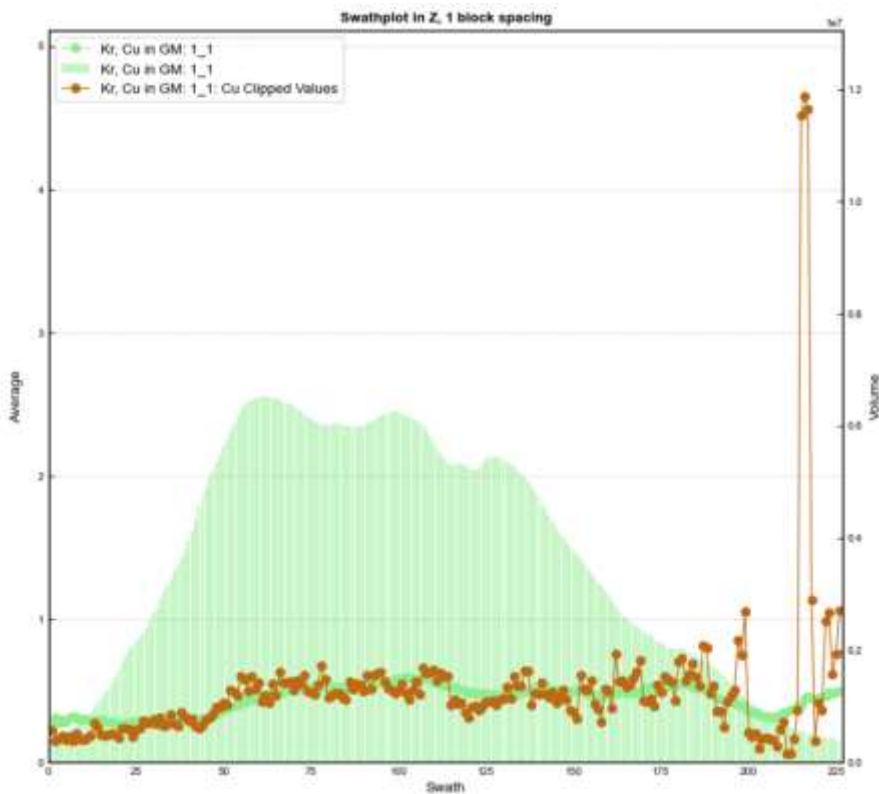
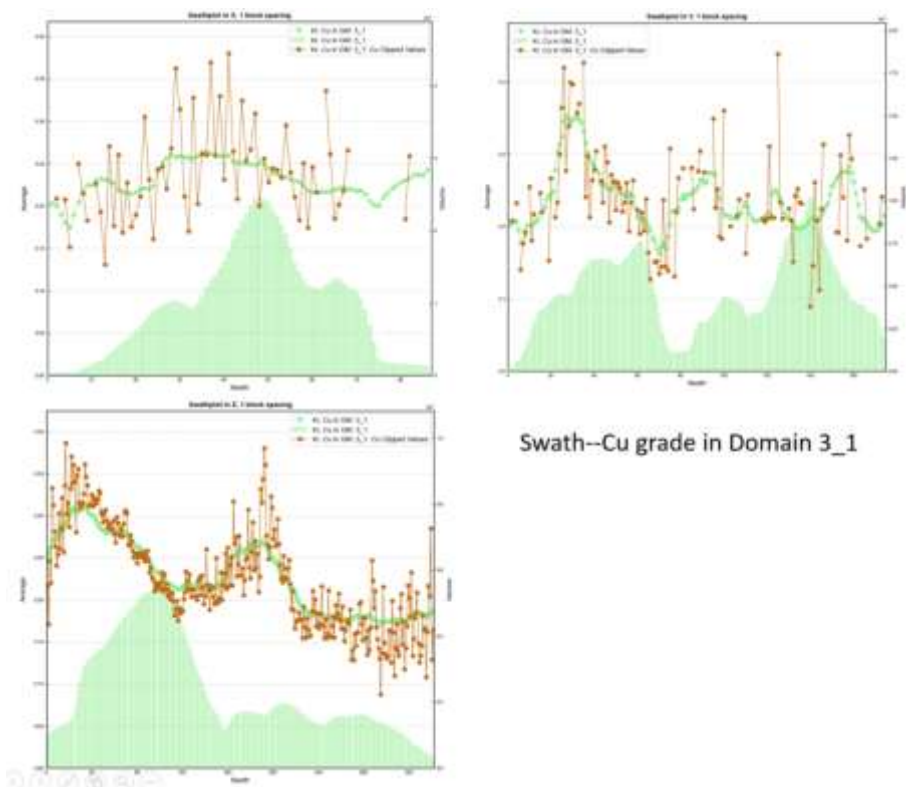
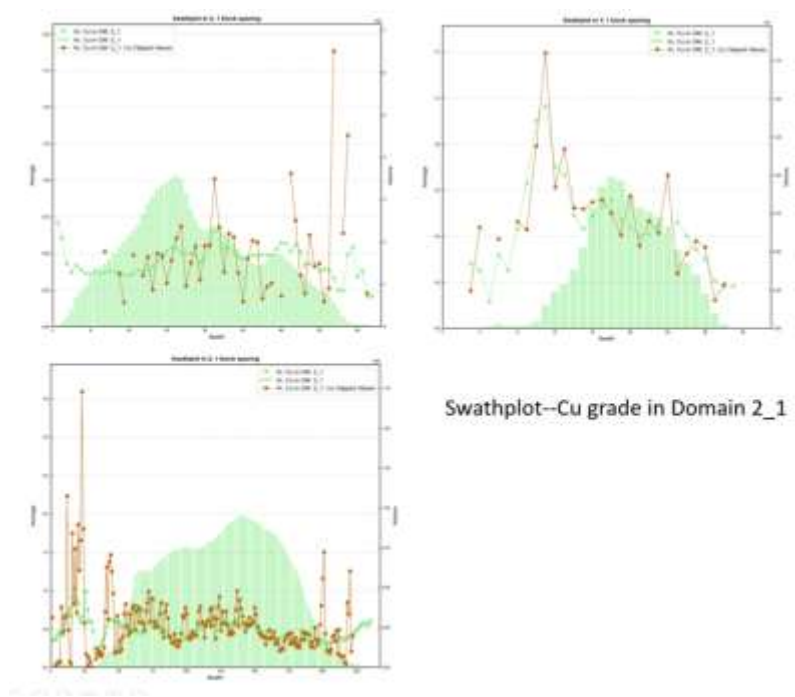


Figure 14. 27 Swathplot of Cu % of Domain 1_1 along Z (i.e., Elevation) direction



Swath-Cu grade in Domain 3_1

Figure 14. 28 Swath plot of Cu % of Domain 3_1 along XYZ directions



Swathplot-Cu grade in Domain 2_1

Figure 14. 29 Swath plot of Cu % of Domain 2_1 along XYZ directions

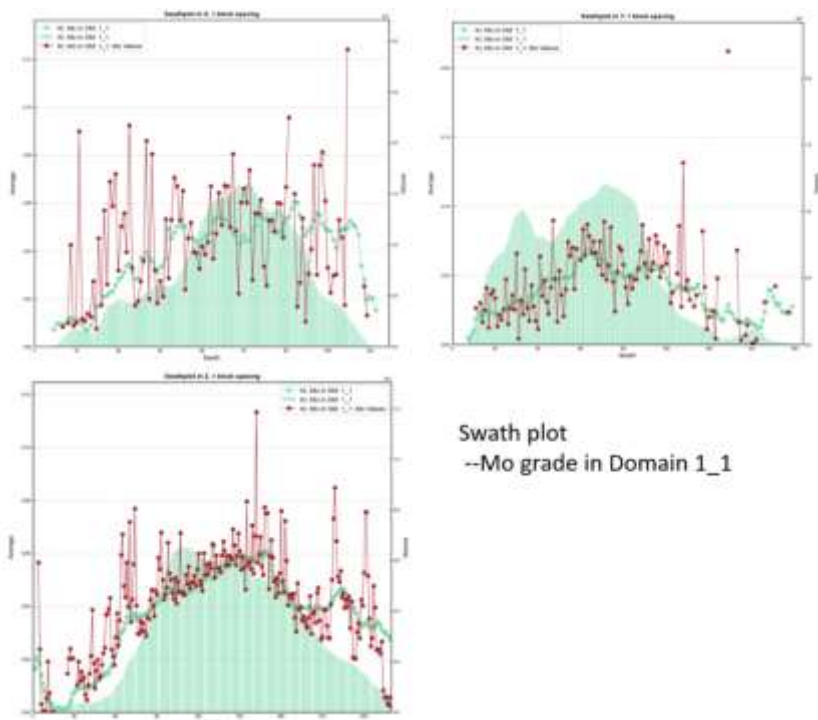


Figure 14. 30 Swath plot of Mo % of Domain 1_1 along XYZ directions

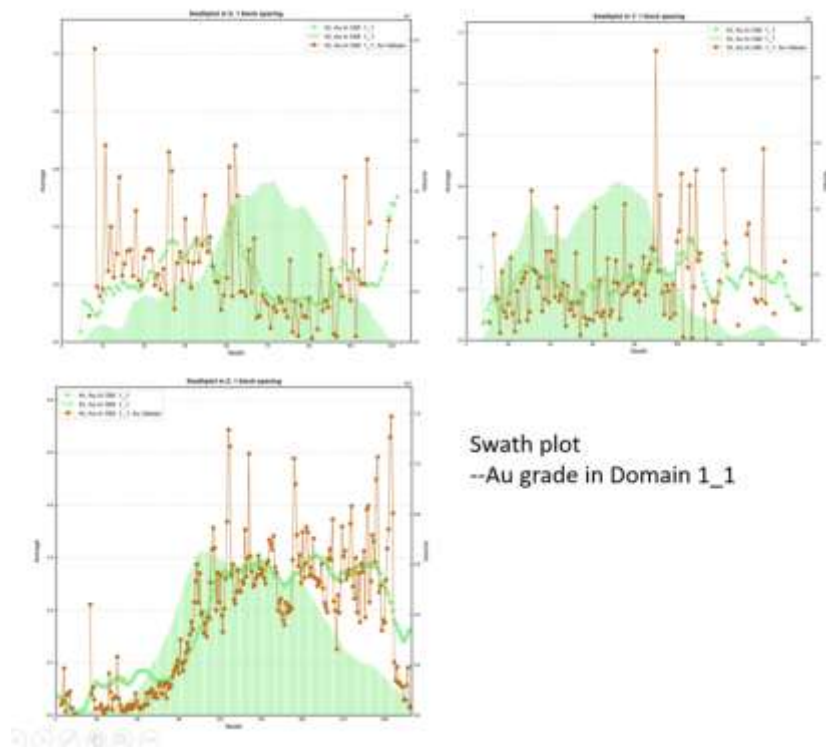


Figure 14. 31 Swath plot of Au % of Domain 1_1 along XYZ directions

14.11 Mineralization Resources Depletion

In Jiama mine, two mining methods, including open-pit and underground mining, are used to mine. For underground mining, the mineral resource depletion is estimated using the same methods and parameters. The depletion by underground mining is shown in Table 14.2 and Figure 14.32.

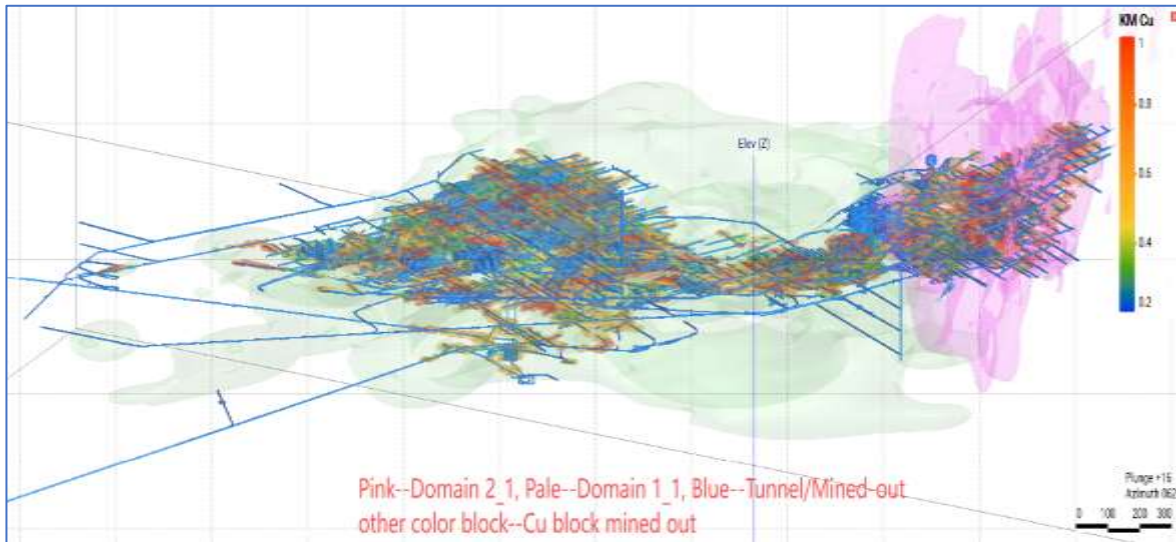


Figure 14. 32 Summaries the Mineral Resource Estimation depletion by underground mining

Table 14. 2 Summaries the Mineral Resource Estimation depletion by Underground mining Using Cut-off Cu Grade 0.3%

The same Notes as Table 14.3, omitted here.

GM	ML vs PL	category	Volume million m ³	Mass Mt	Average Value						Material Content					
					Cu %	Mo %	Ag g/t	Au g/t	Pb %	Zn %	Cu kt	Mo kt	Ag kt	Au t	Pb kt	Zn kt
1_1	ML	Measured	3.54	10.1	0.94	0.05	19.23	0.48	0.05	0.03	94.91	5.2	0.19	4.86	4.57	3.36
		Indicated	2.47	7.0	0.85	0.05	17.26	0.54	0.03	0.02	59.45	3.3	0.12	3.78	2.18	1.36
		ME & ID	6.01	17.1	0.90	0.05	18.42	0.51	0.04	0.03	154.36	8.4	0.31	8.65	6.75	4.72
		Inferred	0.31	0.9	0.71	0.04	13.26	0.41	0.02	0.02	6.24	0.3	0.01	0.36	0.21	0.15
		TargetResources	0.00	0.0	0.84	0.18	17.89	0.49	0.01	0.01	0.08	0.0	0.00	0.00	0.00	0.00
3_1	ML	Measured	0.00	0.0	—	—	—	—	—	—	0.00	0.0	0.00	0.00	0.00	0.00
		Indicated	0.00	0.0	—	—	—	—	—	—	0.00	0.0	0.00	0.00	0.00	0.00
		ME & ID	0.00	0.0	—	—	—	—	—	—	0.00	0.0	0.00	0.00	0.00	0.00
		Inferred	0.00	0.0	—	—	—	—	—	—	0.00	0.0	0.00	0.00	0.00	0.00
		TargetResources	0.00	0.0	—	—	—	—	—	—	0.00	0.0	0.00	0.00	0.00	0.00
2_1	ML	Measured	1.14	3.5	0.92	0.03	24.63	0.40	0.22	0.10	31.91	0.9	0.09	1.37	7.69	3.62
		Indicated	0.34	1.0	0.87	0.03	22.93	0.32	0.24	0.13	8.81	0.3	0.02	0.32	2.44	1.28
		ME & ID	1.48	4.5	0.91	0.03	24.24	0.38	0.23	0.11	40.73	1.1	0.11	1.70	10.13	4.91
		Inferred	0.02	0.1	0.98	0.02	25.62	0.27	0.21	0.15	0.69	0.0	0.00	0.02	0.15	0.10
		TargetResources	0.00	0.0	1.12	0.05	20.90	0.51	0.01	0.01	0.05	0.0	0.00	0.00	0.00	0.00
Total	ML	Measured	4.68	13.6	0.94	0.04	20.60	0.46	0.09	0.05	126.82	6.1	0.28	6.23	12.26	6.99
		Indicated	2.81	8.0	0.86	0.04	17.98	0.52	0.06	0.03	68.27	3.5	0.14	4.11	4.62	2.64
		ME & ID	7.49	21.5	0.91	0.04	19.63	0.48	0.08	0.04	195.09	9.6	0.42	10.34	16.88	9.62
		Inferred	0.34	0.9	0.73	0.03	14.18	0.40	0.04	0.03	6.93	0.3	0.01	0.38	0.35	0.25
		TargetResources	0.00	0.0	0.94	0.14	18.94	0.50	0.01	0.01	0.13	0.0	0.00	0.01	0.00	0.00

Differences may occur in totals due to rounding

14.12 Mineral Resources Estimate Statement and Discussion

The mineral resource estimates data for the Jiama mining area is current to December 31, 2025. The data was provided by Huatailong, verified and refined by the Changchun Institute. Mineral resource estimates are based on 3D geological and mineralization models using the diamond drill hole data.

Mineral resource estimates are based on the Canada CIM Mineral Resources and Reserves Definition Standard, officially adopted on May 10, 2014, and then subsequent MRMR Best Practice Guide updated in 2019, as well as Canada NI43-101 "Mineral Project Standards and Disclosures," (2012). Changchun Institute considers the mineral resource estimate appropriate and meets the reporting standards of Chapter 18 of the Hong Kong Stock Exchange Listing Rules. The mineral resource is estimated by using a cut-off grade of 0.3% copper. The resource model for Jiama project covers the categories of Measured, Indicated and Inferred resources. The Mineral resource estimates for Jiama project as of June 30, 2026, are summarized in Table 14.3.

Table 14. 3 Mineral Resource Estimate Results at cut-off grade Cu 0.3%*.

				Average Grade						Metal Amount					
Type	Category	SG	Mass	Cu	Mo	Au	Ag	Pb	Zn	Cu	Mo	Au	Ag	Pb	Zn
		g/cm ³	Mt	%	%	g/t	g/t	%	%	Mt	Kt	Moz	Moz	Kt	Kt
Mineralized Body 1_1															
ML	Med	2.82	353.56	0.81	0.04	0.39	16.24	0.05	0.03	2.86	155	4.48	184.56	188	116
	Ind	2.81	450.98	0.78	0.04	0.39	15.44	0.06	0.03	3.51	177	5.71	223.88	264	150
	Med+Ind	2.82	804.54	0.79	0.04	0.39	15.79	0.06	0.03	6.36	332	10.19	408.44	451	266
	Inf	2.84	313.5	0.72	0.03	0.35	14.33	0.11	0.05	2.25	102	3.52	144.42	356	167
EL	Med	2.85	17.7	0.75	0.03	0.36	14.35	0.01	0.02	0.13	5	0.21	8.17	1	3
	Ind	2.84	36.69	0.7	0.03	0.33	13.7	0.01	0.02	0.26	10	0.39	16.16	3	6
	Med+Ind	2.84	54.39	0.72	0.03	0.34	13.91	0.01	0.02	0.39	15	0.59	24.33	4	9
	Inf	2.81	29.63	0.75	0.03	0.32	15.73	0.01	0.03	0.22	7	0.3	14.98	3	9
Total	Med	2.82	371.26	0.81	0.04	0.39	16.15	0.05	0.03	2.99	160	4.69	192.72	189	119
	Ind	2.81	487.67	0.77	0.04	0.39	15.31	0.05	0.03	3.76	187	6.1	240.05	267	156
	Med+Ind	2.82	858.93	0.79	0.04	0.39	15.67	0.05	0.03	6.75	347	10.79	432.77	456	275
	Inf	2.83	343.13	0.72	0.03	0.35	14.45	0.1	0.05	2.47	109	3.82	159.4	359	176
Mineralized Body 3—1															
ML	Med	2.49	117.53	0.41	0.02	0.03	1.18	0.01	0.01	0.48	21	0.11	4.46	6	7
	Ind	2.5	99.31	0.4	0.02	0.03	1.17	0.01	0.01	0.39	17	0.1	3.75	5	6
	Med+Ind	2.5	216.84	0.4	0.02	0.03	1.18	0.01	0.01	0.88	38	0.21	8.21	12	12
	Inf	2.53	23.87	0.38	0.01	0.03	1.21	0.01	0.01	0.09	3	0.02	0.93	1	1
EL	Med	2.63	39.35	0.38	0.02	0.04	1.5	0	0	0.15	6	0.05	1.9	2	1

				Average Grade						Metal Amount					
	Ind	2.63	76.79	0.37	0.02	0.04	1.45	0	0	0.29	12	0.09	3.58	3	2
	Med+Ind	2.63	116.13	0.38	0.02	0.04	1.47	0	0	0.44	18	0.14	5.48	5	3
	Inf	2.63	67.53	0.37	0.01	0.04	1.43	0	0	0.25	10	0.09	3.09	2	2
Total	Med	2.52	156.88	0.4	0.02	0.03	1.26	0.01	0	0.64	27	0.16	6.36	8	8
	Ind	2.56	176.1	0.39	0.02	0.03	1.29	0	0	0.68	29	0.19	7.33	8	8
	Med+Ind	2.54	332.97	0.39	0.02	0.03	1.28	0	0	1.32	56	0.35	13.69	16	15
	Inf 的	2.6	91.4	0.37	0.01	0.04	1.37	0	0	0.34	13	0.11	4.02	4	3
Mineralized Body 2_1															
ML	Med	2.99	94.71	0.79	0.02	0.3	21.16	0.3	0.15	0.75	23	0.92	64.44	280	141
	Ind	3.02	48.02	0.69	0.02	0.25	19.2	0.32	0.14	0.33	11	0.38	29.65	151	67
	Med+Ind	3	142.73	0.76	0.02	0.29	20.5	0.3	0.15	1.08	34	1.31	94.09	432	208
	Inf 的	3	20.13	0.61	0.02	0.18	30.56	0.81	0.13	0.12	3	0.11	19.78	163	26
EL	Med	3.09	0.18	0.47	0.01	0.12	11.51	0.85	0.38	0	0	0	0.07	2	1
	Ind	2.94	0	0.62	0	0.3	9.81	0.83	0.12	0	0	0	0	0	0
	Med+Ind	3.08	0.18	0.47	0.01	0.12	11.5	0.85	0.38	0	0	0	0.07	2	1
	Inf	3.14	0.02	0.37	0	0.14	23.64	1.79	1.77	0	0	0	0.02	0	0
Total	Med	2.99	94.89	0.79	0.02	0.3	21.14	0.3	0.15	0.75	23	0.92	64.51	282	142
	Ind	3.02	48.02	0.69	0.02	0.25	19.2	0.32	0.14	0.33	11	0.38	29.65	151	67
	Med+Ind	3	142.91	0.75	0.02	0.28	20.49	0.3	0.15	1.08	34	1.31	94.16	433	208
	Inf	3	20.16	0.61	0.02	0.18	30.55	0.81	0.13	0.12	3	0.11	19.8	163	26
Mineralized Body 2_2															
EL	Med	0	0	—	—	—	—	—	—	0	0	0	0	0	0
	Ind	0	0	—	—	—	—	—	—	0	0	0	0	0	0
	Med+Ind	0	0	—	—	—	—	—	—	0	0	0	0	0	0
	Inf	2.98	14.86	0.43	0.01	0	0	0	0	0.06	1	0	0	0	0
All Mineralized Bodies															
ML	Med	2.77	565.8	0.72	0.04	0.3	13.93	0.08	0.05	4.09	198	5.52	253.46	474	264
	Ind	2.77	598.31	0.71	0.03	0.32	13.37	0.07	0.04	4.23	204	6.19	257.28	420	222
	Med+Ind	2.77	1164.11	0.71	0.03	0.31	13.65	0.08	0.04	8.32	403	11.71	510.74	895	486
	Inf	2.82	357.5	0.69	0.03	0.32	14.37	0.15	0.05	2.46	108	3.65	165.13	520	194
EL	Med	2.69	57.23	0.5	0.02	0.14	5.51	0.01	0.01	0.28	11	0.26	10.13	5	5
	Ind	2.69	113.48	0.48	0.02	0.13	5.41	0.01	0.01	0.54	23	0.48	19.74	6	8
	Med+Ind	2.69	170.7	0.48	0.02	0.13	5.44	0.01	0.01	0.83	34	0.74	29.88	11	13
	Inf	2.72	112.05	0.48	0.02	0.11	5.02	0	0.01	0.53	19	0.39	18.1	6	12
Total	Med	2.76	623.03	0.7	0.03	0.29	13.16	0.08	0.04	4.38	210	5.77	263.59	479	268
	Ind	2.76	711.79	0.67	0.03	0.29	12.11	0.06	0.03	4.77	227	6.67	277.02	426	230
	Med+Ind	2.76	1334.82	0.69	0.03	0.29	12.6	0.07	0.04	9.15	437	12.45	540.61	905	499
	Inf	2.8	469.55	0.64	0.03	0.27	12.14	0.11	0.04	2.99	127	4.04	183.22	526	206

*: (ML, mining license, EL, exploration license, Med, measured resource, Ind, indicated resource, Inf, Inferred resource

1. Mineral Reserves and Mineral Resources have been estimated as of 30 June 2026 in accordance with National Instrument 43-101 - Standards of Disclosure for Mineral Projects (NI 43-101) as required by Canadian securities regulatory authorities.
2. 0.3% copper cut-off grade has been used to report the Mineral Resource Estimate.
3. Reported Mineral Resources contain no allowances for hanging wall or footwall contact boundary loss and

dilution. No mining recovery has been applied.

4. Mineral Resources was depleted to account for UG mining tunnel and mined-out, and current open-pit excluded.

5. Mineral Resources are reported inclusive of Mineral Reserves.

6. All Mineral Resource Estimates of ore tonnes, Cu, Mo, Au, Ag, Pb, and Zn grade and copper tonnes have been rounded to reflect the imprecise nature of the estimates for each classification category, therefore totals may not appear to sum correctly due to rounding.

7. Tony Guo, PhD, PGeo and Chaoxian (Ian) Zhou, MSc estimated the Mineral Resources.

This data for Mineral Resource Estimate was up to 31 December 2025.

8. Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

According to the table 14.3 above, the total measured resources in the Jiama Project include 4.38 million tons of copper metal, with a grade of 0.71%; Molybdenum metal of 0.21 million tons, grade 0.03%; Lead metal of 0.48 million tons, grade 0.08%; Zinc metal amount of 0.27 million tons, grade 0.04%; Associated gold metal of 5.77 million ounces, grade 0.29g/t; Associated silver metal of 263.59 million ounces, with a grade of 13.16g/t. Indicated resource of copper metal is 4.77 million tons, grade 0.68%; Molybdenum metal of 0.23 million tons, grade 0.03%; Lead metal of 0.43 million tons, grade 0.06%; Zinc metal of 0.23 million tons, grade 0.03%; Associated gold metal of 6.67 million ounces, grade 0.29g/t; Associated silver metal of 277.03 million ounces, with a grade of 12.10g/t. The inferred resource contains 2.99 million tonnes of copper metal, with a grade of 0.69%; Molybdenum metal of 0.13 million tons, grade 0.03%; Lead metal amount of 0.53 million tons, grade 0.12%; Zinc metal of 0.21 million tons, grade 0.05%; Associated gold metal of 4.04 million ounces, grade 0.28g/t; Associated silver metal of 183.22 million ounces, with a grade of 12.56g/t.

In December 2012, MINING ONE reported the mineral resource estimate for the Jiama project at a cutoff grade of 0.3% copper equivalent (Table 1.1). MINING ONE reports measured and indicated mineral resources as 1,486 Mt with an average copper grade of 0.41%, molybdenum 0.034%, lead 0.05%, zinc 0.03%, gold 0.11 g/t, silver 6.14 g/t, containing 6.14 Mt of metallic copper, 503,000 tonnes of molybdenum, 794,000 tons of lead, 495,000 tons of zinc, 5.33 million ounces of gold, and 2,934 million ounces of silver. The reported inferred mineral resource as 406 Mt with an average copper grade of 0.31%, molybdenum 0.03%, lead 0.08%, zinc 0.04%, gold 0.10 g/t, silver 5.13 g/t, containing 1.25 Mt metallic copper, 124,000 tons of molybdenum, 312,000 tons of lead, 174,000 tons of zinc, 1.32 million ounces of gold, and 66.9 million ounces of silver.

Comparison of the results of resource and reserve estimate in this report (Table 14.3), The metal resource of Jiama project has increased significantly (Table 14.4).

Altogether it has mined approximately 250 Mt ores, with copper ore 80 Mt, molybdenum ore 63 Mt, lead ore 21.08 Mt, zinc ore 19 Mt, gold ore 57 Mt and silver ore 7,68 Mt. By continuing efforts on the exploration in Jiama mine, the measured and inferred resources have increased significantly. The major metal grades including Cu, Au and Ag have increased by almost 80-over 100%. The copper, gold, and silver metals have also increased by 50-100%.

Using a cutoff grade of 0.3% copper, as of June 30, 2026, the Jiama mining area retains

1.335 billion tons of measured and indicated mineral resources, with copper grades of 0.69%, molybdenum grades of 0.03%, silver grades of 12.6 g/t, gold grades of 0.29 g/t, lead grades of 0.07%, zinc grades of 0.04%, and containing copper metal 9.15 million tons, molybdenum 124,500 tons, lead 905,000 tons, zinc 498,000 tons, gold 12.45 million ounces, and silver 540.62 million ounces.

Compared with resource estimate in 2012, the average grade of copper, gold and silver has increased significantly with copper metal increasing by 3 million tonnes, gold by 7.12 million ounces, silver by 247.23 ounces, molybdenum by 60,000 tons, lead by 110,000 tons, and zinc by 3,000 tonnes. The inferred resources are 454.7 Mt with copper metal increased by 1.74 million tons, gold by 2.72 million ounces, silver by 116.3 million ounces, while molybdenum, lead, and zinc remained largely unchanged.

Table 14. 4 Comparison between resource estimates by Mining one in 2012 and Changchun institute in 2026

Mineral Resource Estimate by Mining One in 2012 using CuEq 0.3% cutoff													
Category	Mass	Cu %	Mo%	Pb%	Zn %	Au g/t	Ag g/t	Cu	Mo	Pb	Zn	Au	Ag
	Mt							Mt	Mt	Mt	Moz	Moz	
Measured	100	0.41	0.035	0.04	0.02	0.11	6.53	0.42	0.04	43	24	0.35	21.04
Indicated	1386	0.41	0.034	0.05	0.03	0.11	6.11	5.72	0.47	751	470	4.99	272.35
M & I	1486	0.41	0.034	0.05	0.03	0.11	6.14	6.14	0.5	794	495	5.33	293.39
Inferred	406	0.31	0.03	0.08	0.04	0.1	5.13	1.25	0.12	312	174	1.32	66.93
Mineral Resource Estimate by Changchun Institute in 2026 using Cu0.3% cutoff													
Measured	623	0.71	0.03	0.08	0.04	0.29	13.16	4.38	0.21	478	268	5.77	263.59
Indicated	712	0.68	0.03	0.06	0.03	0.29	12.1	4.77	0.23	426	230	6.67	277.03
M & I	1335	0.69	0.03	0.07	0.04	0.29	12.6	9.15	0.44	905	499	12.45	540.62
Inferred	455	0.65	0.03	0.12	0.05	0.28	12.53	2.99	0.13	526	206	4.04	183.22

14.13 Sensitivity of Mineral Resources to Cut-off Grade

Table 14.5 summarizes the mineral resource estimation results at various cut-off grades, covering only the Measured and Indicated categories. Since mineralized domain 2_2 contains no Measured or Indicated resources, it is not included here. At a cut-off grade of 0.3% Cu, the corresponding average grade is 0.69% Cu. The break-even grade for underground mining production at the mine is 0.69% (see Chapter 15); therefore, 0.3% Cu was conservatively chosen as the cut-off grade for delineating the orebody. Furthermore, when the 0.3% Cu cut-off grade is used to delineate the mineralized domains, the Cu grade exhibits a sharp drop from inside the mineralized body to outside across the boundary, especially for the two main mineralized bodies, 1-1 and 3-1. This also supports the rationale for selecting 0.3% Cu as the cut-off grade. For clarity, the mineral resource model reported at the 0.3% Cu cut-off is highlighted in yellow.

Table 14.5 Mineral resource estimate at different Cu cut of grade *

			Average Grade						Metal Amount					
Cu%	Resource Estimate	Mass Mt	Cu %	Mo %	Ag g/t	Au g/t	Pb %	Zn %	Cu Mt	Mo kt	Ag kt	Au t	Pb kt	Zn kt
0.1	Med+Ind	3,200.70	0.4	0.03	6.38	0.15	0.04	0.02	12.86	996.8	20.41	466.85	1286	741
0.2	Med+Ind	2,249.40	0.51	0.03	8.42	0.19	0.05	0.03	11.37	668.4	18.93	432.42	1115	626
0.3	Med+Ind	1,334.80	0.69	0.03	12.6	0.29	0.07	0.04	9.15	436.6	16.81	387.11	905	499
0.5	Med+Ind	678.5	0.98	0.04	19.83	0.45	0.09	0.05	6.66	261.2	13.46	307.63	642	345
0.8	Med+Ind	354.2	1.31	0.04	26.96	0.59	0.12	0.06	4.62	145.4	CoG	209.08	442	219
1	Med+Ind	235.5	1.51	0.04	31.14	0.67	0.15	0.07	3.56	92.3	7.34	157.06	351	167
1.5	Med+Ind	82.5	2.07	0.03	42.4	0.85	0.19	0.1	1.70	28.3	3.5	70.44	156	83
2	Med+Ind	35.9	2.54	0.03	52.77	1.04	0.23	0.11	0.91	12.3	1.89	37.35	84	39
2.5	Med+Ind	14.9	2.99	0.04	61.93	1.23	0.22	0.09	0.45	5.5	0.93	18.4	34	14
3	Med+Ind	5.1	3.52	0.03	76.01	1.39	0.19	0.1	0.18	1.6	0.39	7.12	10	5
3.5	Med+Ind	2	4.02	0.03	88.46	1.61	0.14	0.1	0.08	0.6	0.18	3.19	3	2
4	Med+Ind	0.8	4.48	0.03	98.7	1.77	0.07	0.09	0.04	0.2	0.08	1.4	1	1
0.1	Inf	1,158.60	0.37	0.03	6.04	0.13	0.06	0.03	4.34	305.6	7	155.45	730	328
0.2	Inf	820.8	0.46	0.02	7.96	0.18	0.08	0.03	3.81	198.8	6.53	144.08	666	285
0.3	Inf	454.7	0.64	0.03	12.53	0.28	0.12	0.05	2.93	125.9	5.7	125.78	526	206
0.5	Inf	229.4	0.9	0.03	18.65	0.42	0.12	0.05	2.08	77.3	4.28	95.66	287	107
0.8	Inf	112.9	1.19	0.04	23.3	0.53	0.12	0.05	1.35	41.3	2.63	59.52	133	54
1	Inf	67.6	1.39	0.04	27.04	0.59	0.15	0.06	0.94	24.1	1.83	39.55	99	38
1.5	Inf	17.8	1.92	0.04	36.23	0.7	0.16	0.06	0.34	6.5	0.64	12.41	29	11
2	Inf	6.2	2.35	0.04	43.69	0.86	0.17	0.06	0.15	2.6	0.27	5.31	10	4
2.5	Inf	1.6	2.76	0.05	51.72	1.02	0.17	0.05	0.04	0.7	0.08	1.62	3	1
3	Inf	0.3	3.3	0.02	65.92	1.02	0.03	0.03	0.01	0.1	0.02	0.26	0	0
3.5	Inf	0	3.89	0.01	78.1	0.67	0.05	0.04	1.8(kt)	0	0	0.03	0	0
4	Inf	0	4.22	0.01	77.01	0.37	0.04	0.03	0.8(kt)	0	0	0.01	0	0

Table 14.5 demonstrates that different cut-off grades have a considerable effect on resource estimates, particularly when applying cut-off grades in the range of 0.1% Cu to 0.5% Cu. For both Inferred and Measured & Indicated resources, the 0.1% Cu cut-off, relative to the 0.3% Cu cut-off, results in a 140–150% increase in tonnage, a 40–50% increase in copper metal, and a 43% decrease in grade. Conversely, the 0.5% Cu cut-off, compared with the 0.3% Cu cut-off, leads to a 50% reduction in tonnage, a 30% reduction in copper metal, and a 40% increase in grade.

Figure 14.33 shows the sharp increase in ore tonnage and the slow increase in copper metal for Measured and Indicated resources as the average copper grade varies (especially from 0.01% to 0.3%) in mineralized domains 1_1, 2_2, and 3_1.

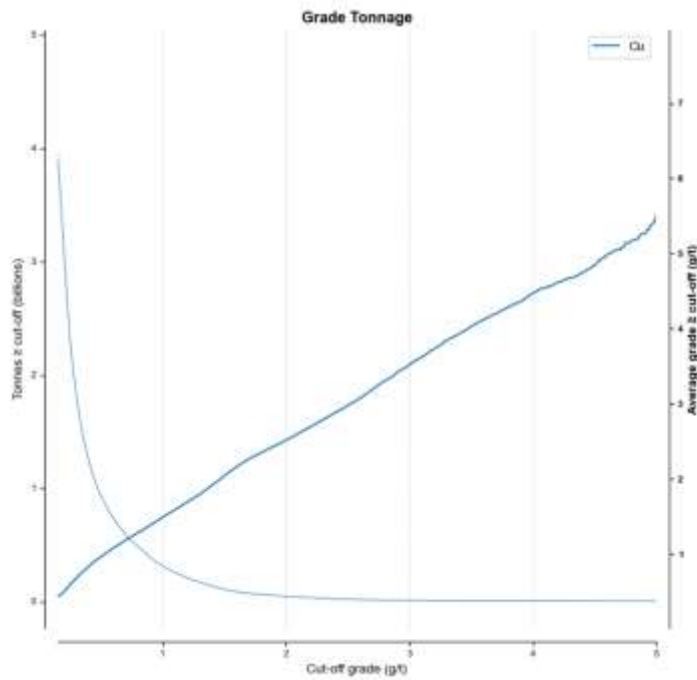


Figure 14.33 Tonnage and average Cu grade of ore at different Cu Cut-off grade of Domains 1_1, 2_1, and 3_1 (Med+Ind).

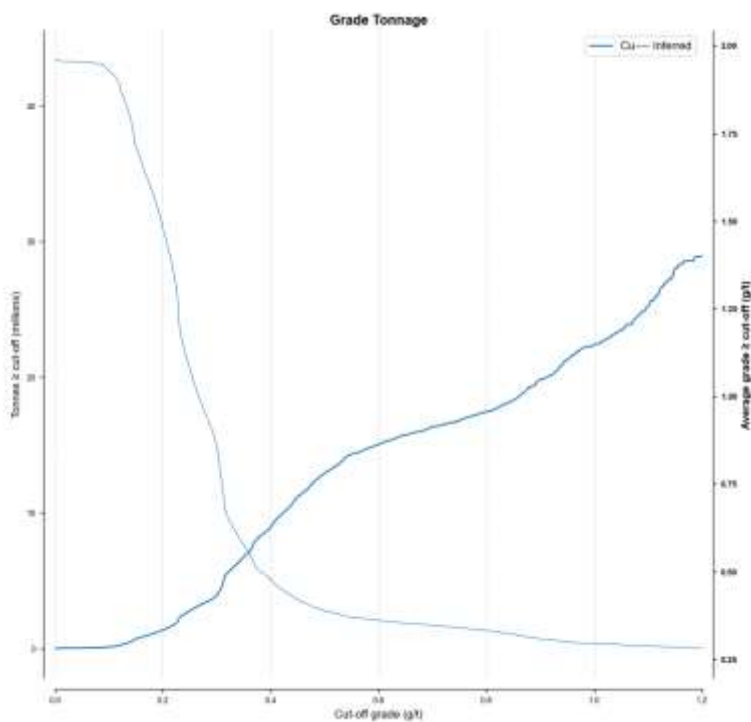


Figure 14.34 Tonnage and average Cu grade of Measured and Indicated categories at different Cu Cut-off grade of Domains 1_1, 2_1, and 3_1

In Figure 14.34, for Inferred resource of Domain 2_2, it is shown that tonnage and average Cu grade changes in the mineralized body from 0.07 to 0.3%.

14.14 Mine Planning Recommendation

In Jiama mine, Open-pit and underground mining methods are both used, which include North Open-Pit, South Open-Pit, Pit Niumatang, and Pit Tongqianshan, and two underground mining districts (Figure 14.35). As mentioned above, the mineral resources in Jiama property is huge. The mineralization bodies are thick and shallow (Figure 14.36). It is an ideal target for large scale open-pit mining.

The current Open pits, i.e., North Open pit and South Open pit are shown in Figures 14.35-37 Mineral Resource Estimation of South and North Open Pits are shown in Table 14.6.

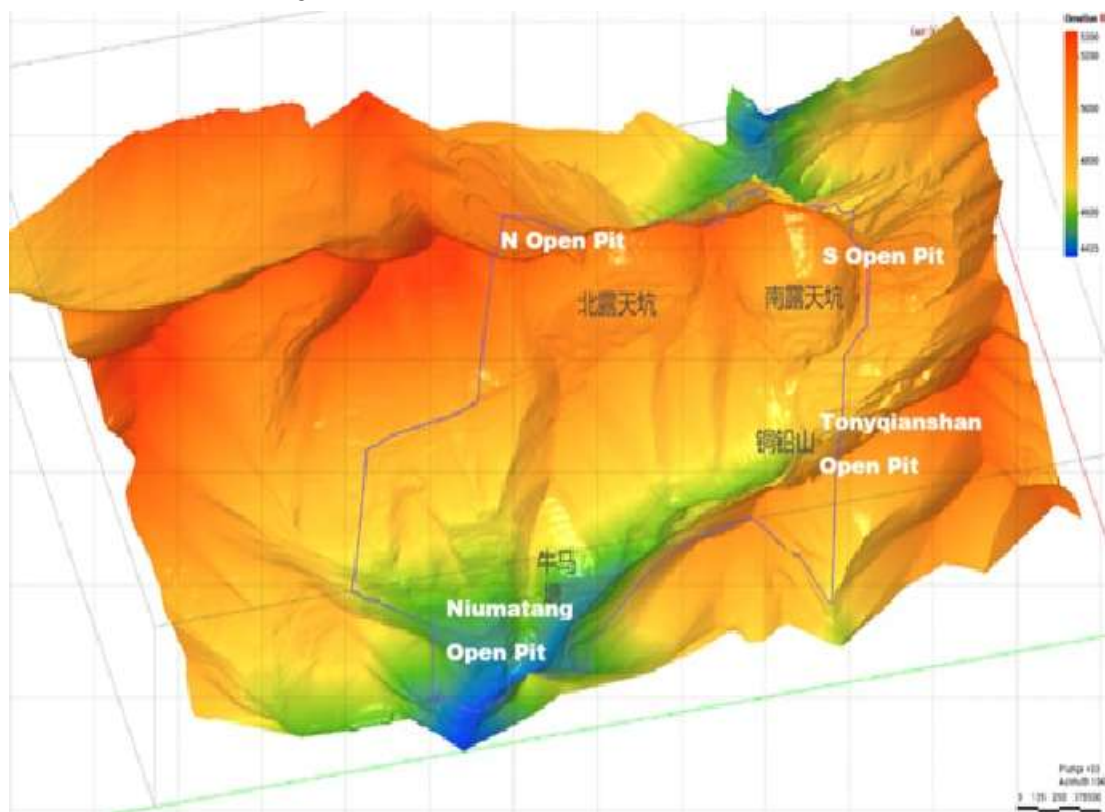


Figure 14. 35 Current open pits location at Jiama mining area

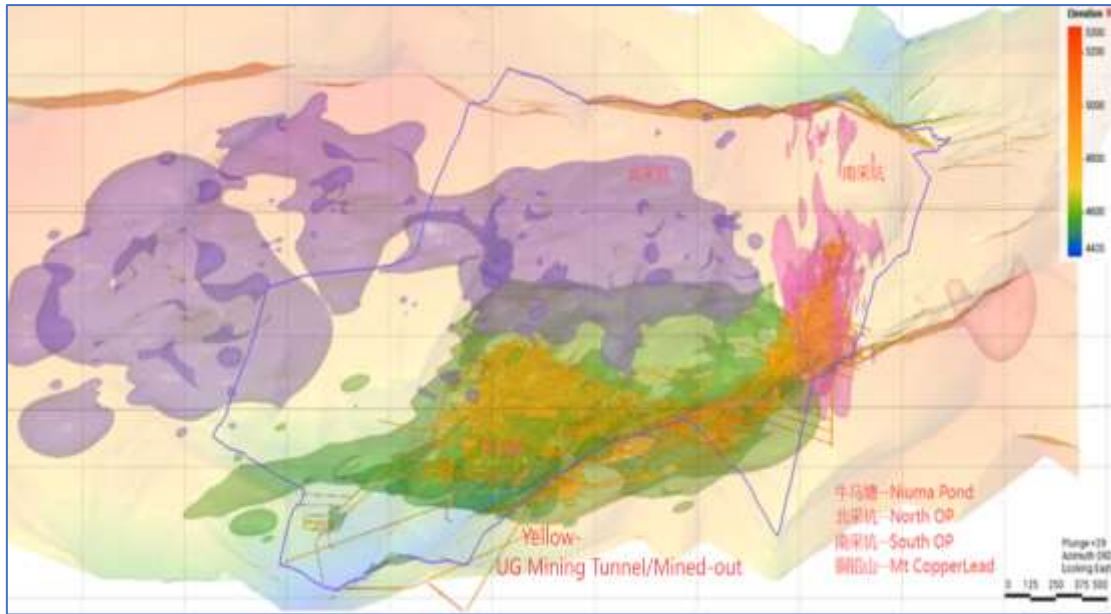


Figure 14. 36 Underground mining tunnel and mined-out area at current open-pit

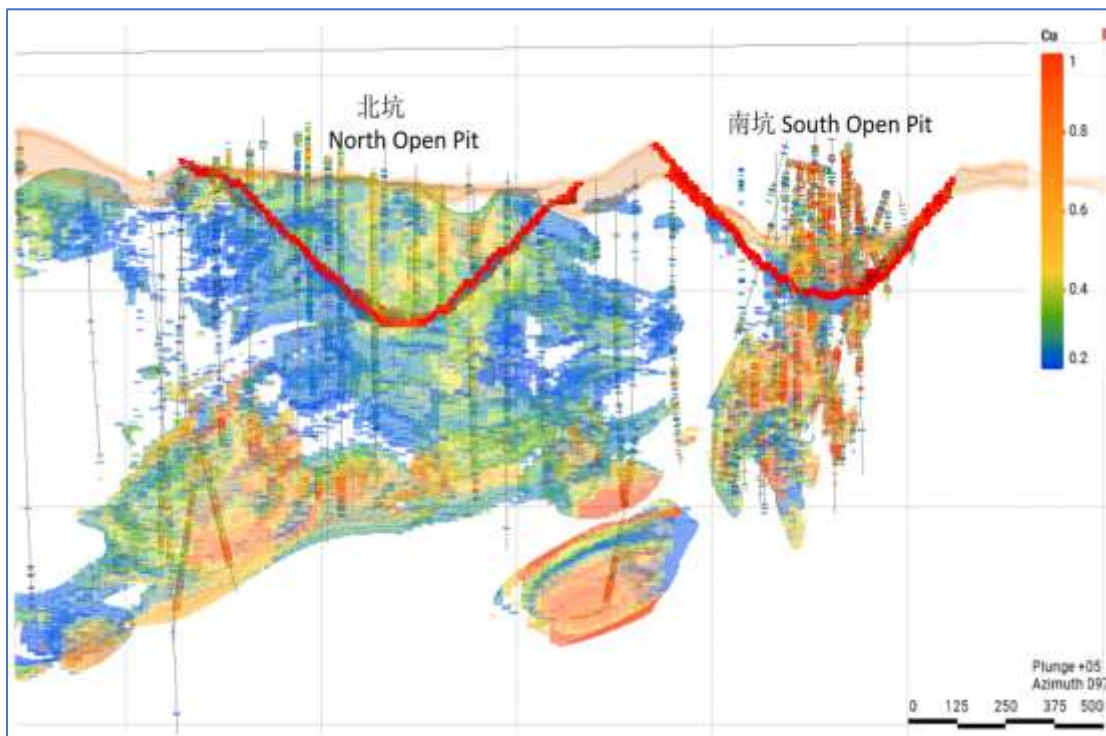


Figure 14. 37 Cross section of South and North Open Pit

Table 14. 6 Mineral Resource Estimation within the North Open Pit and South Open Pit

			Average Grade						Metal amount					
Pit	Category	Mass	Cu	Mo	Au	Ag	Pb	Zn	Cu	Mo	Au	Ag	Pb	Zn
		Mt	%	%	g/t	g/t	%	%	kt	kt	T	kt	kt	kt
North	Measured	65.5	0.44	0.02	0.03	1.16	0.01	0.01	285.67	12.2	1.86	0.08	3.66	3.69
	Indicated	32.7	0.43	0.02	0.03	1.13	0.01	0.01	139.91	6.1	0.95	0.04	1.9	1.94
	Med+Ind	98.2	0.43	0.02	0.03	1.15	0.01	0.01	425.58	18.4	2.81	0.11	5.56	5.64
	Inferred	1.8	0.43	0.02	0.03	1.08	0.01	0.01	7.65	0.4	0.05	0	0.09	0.1
South	Measured	12.2	1	0.03	0.25	28.9	0.57	0.32	121.67	3.1	3.08	0.35	69.58	39.02
	Indicated	2.3	0.78	0.03	0.13	19.34	0.45	0.29	18.12	0.6	0.31	0.04	10.44	6.63
	Med+Ind	14.5	0.96	0.03	0.23	27.37	0.55	0.31	139.79	3.8	3.39	0.4	80.01	45.65
	Inferred	0.1	0.74	0.02	0.25	18.53	0.25	0.2	0.78	0	0.03	0	0.26	0.22
Total	Measured	77.8	0.52	0.02	0.06	5.52	0.09	0.05	407.34	15.4	4.94	0.43	73.23	42.72
	Indicated	35	0.45	0.02	0.04	2.34	0.04	0.02	158.03	6.8	1.26	0.08	12.34	8.57
	Med+Ind	112.8	0.5	0.02	0.05	4.53	0.08	0.05	565.37	22.1	6.2	0.51	85.57	51.29
	Inferred	1.9	0.45	0.02	0.04	2.05	0.02	0.02	8.44	0.4	0.08	0	0.35	0.32

The proposed large Open pit is shown in Figure 14.38. The strip ratio (in volume) is 9.21, or 7.62 if inferred resource is included. i.e., volume of Measured and Indicated resources within proposed pit is 3,703.9 million m³ with mineralized body tonnages of 1.0207 billion. The volume of inferred resources is 68.24 million m³ with the mineralized body and 191 million tonnages. The total volume of large open pit will be 3,784.9 million m³ with mineralized body tonnages of 1.21 billion (Table 14.7).

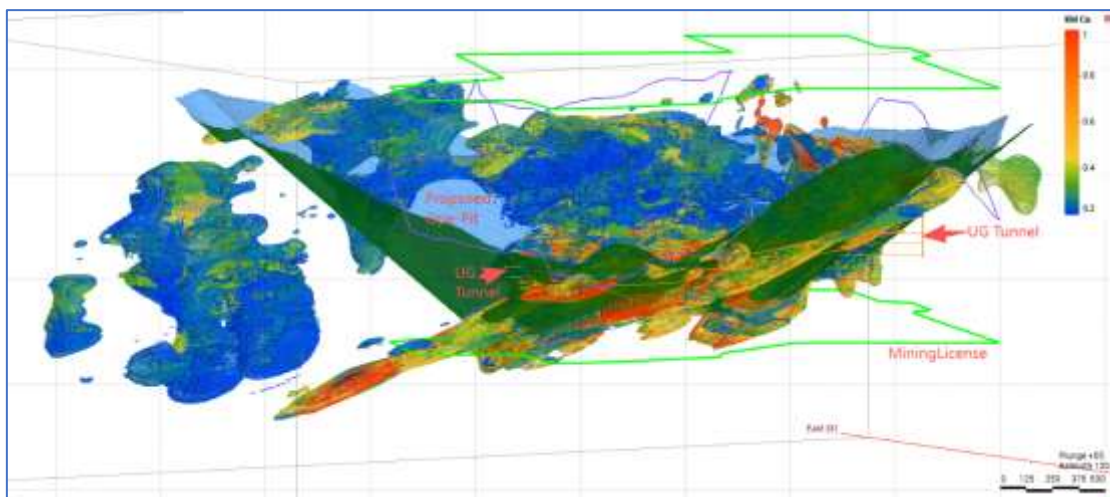


Figure 14. 38 Proposed Open-pit and mineralization block model in 3D view

In fact, it is easy to find some parts of mineralization, especially Domain 3_1, should be included in the proposed Open-Pit and some adjustment should be made for the proposed open-pit (See Figure 14.39).

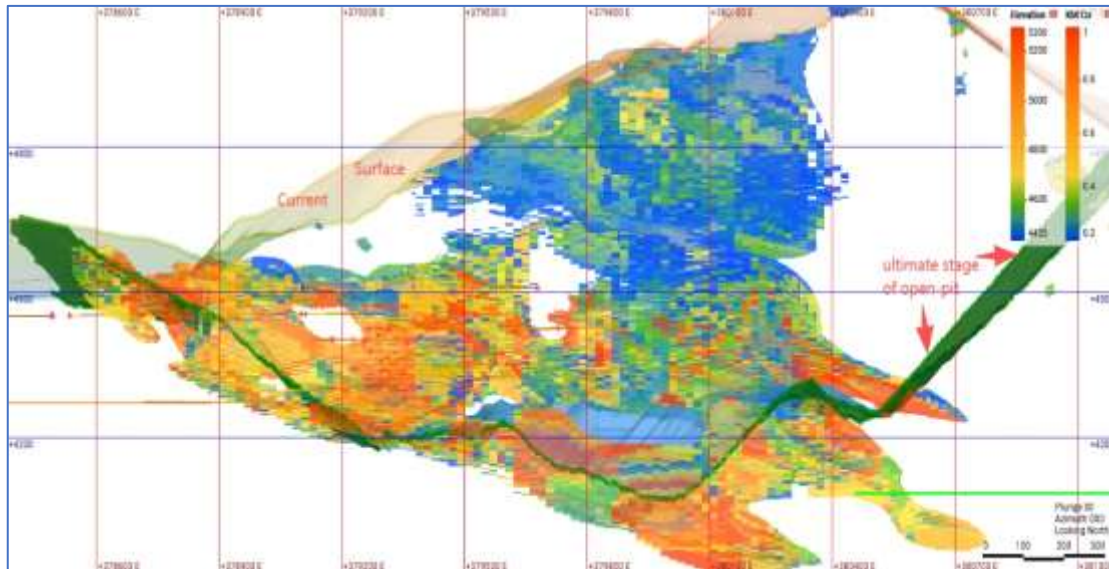


Figure 14. 39 Proposed Open-pit and mineralization block model in 2D view cross section

Table 14. 7 Mineral Resource Estimation within the proposed open pit*

		Resource Category	SG	Mass	Average Grade				Metal Amount			
					Cu	Mo	Ag	Au	Cu	Mo	Ag	Au
			g/cm ³	Mt	%	%	g/t	g/t	Mt	Mt	Moz	Moz
1_1	ML	Measured	2.82	299.2	0.81	0.04	16.22	0.4	2.43	0.13	155.76	3.8
		Indicated	2.81	318.9	0.79	0.04	15.77	0.4	2.51	0.13	161.48	4.09
		Med+Ind	2.82	618.1	0.8	0.04	15.99	0.4	4.94	0.26	317.24	7.89
		Inferred	2.85	128.1	0.76	0.03	14.53	0.37	0.97	0.04	59.77	1.53
	EL	Measured	2.85	3	0.81	0.03	14.22	0.7	0.02	0	1.39	0.07
		Indicated	2.86	4.3	0.74	0.03	14.06	0.61	0.03	0	1.92	0.08
		Med+Ind	2.85	7.3	0.77	0.03	14.13	0.65	0.06	0	3.31	0.15
		Inferred	2.82	1	0.91	0.04	17.87	0.55	0.01	0	0.58	0.02
	total	Measured	2.82	302.2	0.81	0.04	16.2	0.4	2.45	0.13	157.15	3.86
		Indicated	2.81	323.1	0.79	0.04	15.75	0.4	2.54	0.13	163.4	4.17
		Med+Ind	2.82	625.4	0.8	0.04	15.97	0.4	5	0.26	320.55	8.04
		Inferred	2.85	129.1	0.76	0.03	14.56	0.37	0.98	0.04	60.35	1.55
3_1	ML	Measured	2.49	117.4	0.41	0.02	1.18	0.03	0.48	0.02	4.45	0.11
		Indicated	2.5	99.2	0.4	0.02	1.17	0.03	0.39	0.02	3.74	0.1

					Average Grade				Metal Amount				
		Med+Ind	2.5	216.6	0.4	0.02	1.18	0.03	0.88	0.04	8.19	0.21	
		Inferred	2.53	23.9	0.38	0.01	1.21	0.03	0.09	0	0.93	0.02	
	EL	Measured	2.62	16.7	0.4	0.01	1.43	0.06	0.07	0	0.76	0.03	
		Indicated	2.62	26.3	0.4	0.01	1.42	0.06	0.1	0	1.2	0.05	
		Med+Ind	2.62	42.9	0.4	0.01	1.42	0.06	0.17	0.01	1.96	0.08	
		Inferred	2.63	19	0.38	0.01	1.36	0.08	0.07	0	0.83	0.05	
	合计	Measured	2.51	134.1	0.41	0.02	1.21	0.03	0.55	0.02	5.21	0.14	
		Indicated	2.53	125.5	0.4	0.02	1.23	0.04	0.5	0.02	4.94	0.15	
		Med+Ind	2.52	259.5	0.4	0.02	1.22	0.03	1.05	0.04	10.15	0.29	
		Inferred	2.57	42.9	0.38	0.01	1.28	0.05	0.16	0.01	1.76	0.07	
	2_1	ML	Measured	3	90.5	0.8	0.02	21.52	0.31	0.72	0.02	62.53	0.89
			Indicated	3.02	45.1	0.7	0.02	19.61	0.25	0.32	0.01	28.4	0.36
Med+Ind			3	135.6	0.77	0.02	20.88	0.29	1.04	0.03	90.93	1.25	
Inferred			3.01	19	0.63	0.02	31.57	0.17	0.12	0	19.24	0.11	
EL		Measured	3.08	0.2	0.47	0.01	12.37	0.13	0	0	0.06	0	
		Indicated	2.82	0	0.65	0	6.49	0.31	0	0	0	0	
		Med+Ind	3.08	0.2	0.47	0.01	12.34	0.13	0	0	0.06	0	
		Inferred	3.14	0	0.36	0	22.43	0.13	0	0	0.01	0	
Total		Measured	3	90.7	0.8	0.02	21.5	0.3	0.72	0.02	62.6	0.89	
		Indicated	3.02	45.1	0.7	0.02	19.61	0.25	0.32	0.01	28.4	0.36	
		Med+Ind	3	135.8	0.77	0.02	20.87	0.29	1.04	0.03	91	1.25	
		Inferred	3.01	19	0.63	0.01	31.56	0.17	0.12	0	19.25	0.11	
total	ML	Measured	2.76	507.1	0.72	0.03	13.68	0.29	3.64	0.18	222.74	4.79	
		Indicated	2.76	463.2	0.7	0.03	13.02	0.31	3.22	0.15	193.62	4.55	
		Med+Ind	2.76	970.3	0.71	0.03	13.37	0.3	6.86	0.33	416.36	9.34	
		Inferred	2.82	171	0.69	0.03	14.56	0.3	1.18	0.05	79.94	1.66	
	EL	Measured	2.66	19.9	0.46	0.02	3.48	0.16	0.09	0	2.22	0.1	
		Indicated	2.65	30.5	0.45	0.02	3.18	0.14	0.14	0	3.12	0.14	
		Med+Ind	2.66	50.4	0.45	0.02	3.3	0.15	0.23	0.01	5.33	0.24	
		Inferred	2.64	20	0.41	0.02	2.21	0.11	0.08	0	1.42	0.07	
	Total	Measured	2.76	526.9	0.71	0.03	13.3	0.29	3.73	0.18	224.96	4.89	
		Indicated	2.75	493.7	0.68	0.03	12.41	0.3	3.36	0.16	196.74	4.69	
		Med+Ind	2.76	1,020.70	0.69	0.03	12.87	0.29	7.08	0.34	421.7	9.58	
		Inferred	2.8	191	0.66	0.03	13.27	0.28	1.26	0.05	81.36	1.73	

*

Differences may occur in totals due to rounding.

The same Notes as Table 14.3, omitted here.

14.15 Further Exploration Target

Some holes were drilled at Bayi Range where Mo and Au mineralization was discovered; more holes are required to be drilled. In addition, for Jiama mining and exploration license area, there are potential targets for further exploration to the north and west area of the mineralization bodies 1_1 and 3_1 (Figure 14.40-41).

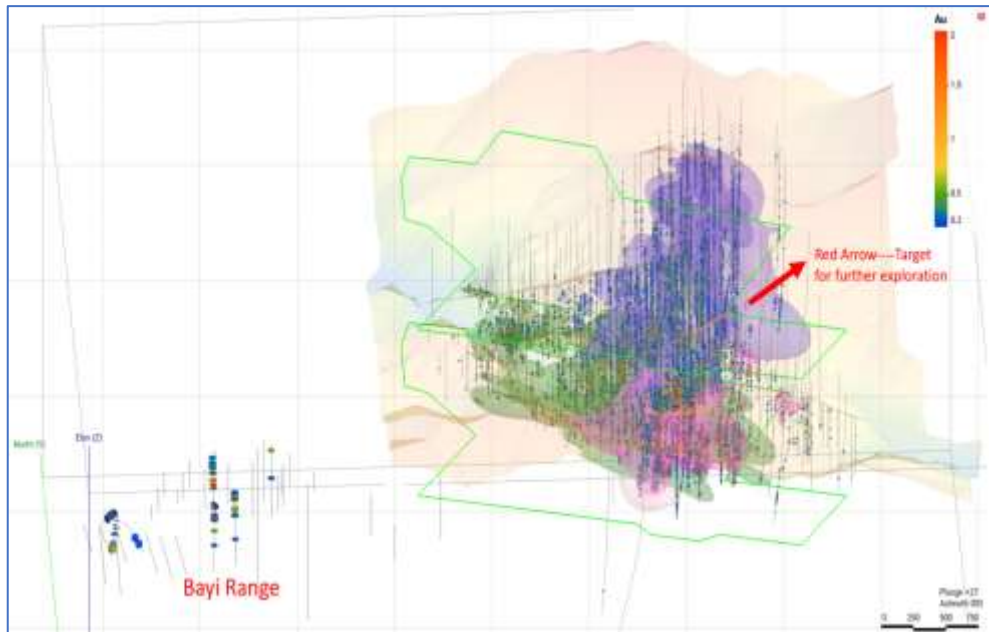


Figure 14. 40 The potential exploration targets at Bayi Range and Jiama mining area

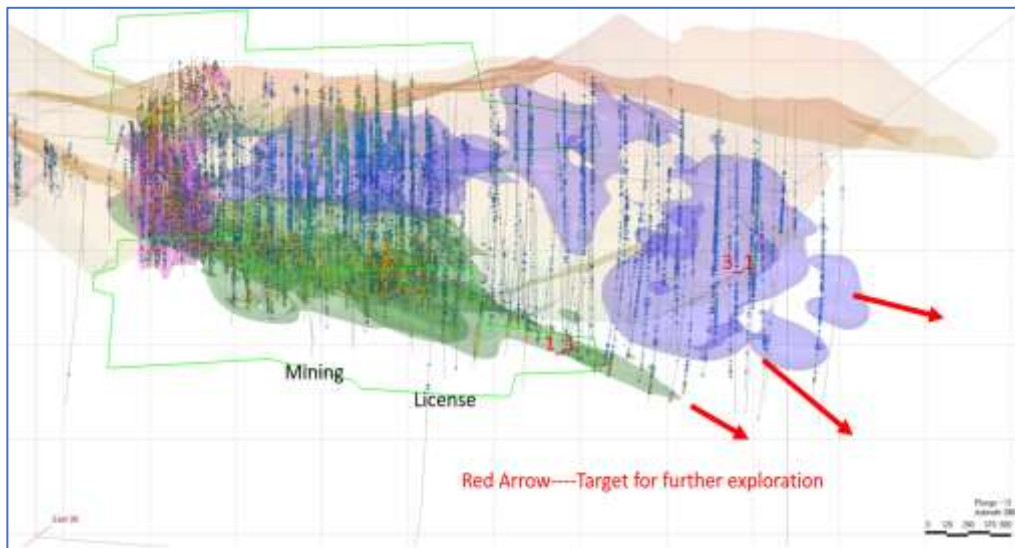


Figure 14. 41 The potential exploration targets at Jiama mining area

14.16 Factors that may Affect the Mineralization Resource Estimation

Mineral Resources for the Jiama Project have been estimated using diamond core drilling data and follow the requirements of CIM Definition Standards (2014). The Author has checked the data and the methodology used to conduct the resource model (Leapfrog EDGE) and has validated the resource model. The resource estimate for Jiama project covers three categories of Measured, Indicated and Inferred.

Areas of uncertainty that may impact the Mineral Resource estimates in Jiama project include:

- No SG data in domain 2_2, and only a few SG data within domain 3_1. Both might affect the SG estimation, but not materials.

15 RESERVE ESTIMATE

15.1 Introduction

This is a combined Open pit and Underground mining project at Jiama. It has extracted over 20Mt ore material or mineable reserve from both open pit and underground since 2009.

Mineral Reserves were estimated in accordance with the CIM Guideline-estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (2019). Only Mineral Resources that were classified as Measured and Indicated were given economic attributes in mine design and demonstrate economic viability. Mineral Reserves for the JIAMA Project incorporate appropriate mining parameters such as mining dilution and recovery for both the open pit and underground mining. This estimation was prepared for the mining plan and economic analysis in the later chapters.

Mineral Reserve is an estimate of the tonnage and average grade of ore that can be economically mined and processed. The average grade is what Aauthorcall head grade for mill processing, while the lowest one (number) of the average grades is referred to as the mining cut-off. For materials to be considered a Mineral Reserve, it must pay for all costs incurred during the mining operation. The following subsections outline the procedures used to estimate the Mineral Reserves.

Material within the optimized pit shell made by Changchun Gold Design Institute Co., Ltd (the “CGDI”) forms the basis for the open-pit reserve estimate, while the remains extending below and around the current pits becomes the target for underground evaluation.

- ✓ The following subsections outline the procedures used to estimate the Mineral Reserves. They are:
 - ✓ Main Parameters for reserve estimation

- ✓ Reserve estimation for the current pits
- ✓ Reserve estimation recommended for underground mining

15.1 Main Parameters for Reserve estimates

15.1.1 Mining factors

In the mineral resource-reserve conversion, no more is important than mining recovery and dilution. The factors based on review of 2025 monthly production report (excel file) at mine and assumption made by CGDI are shown in Table 15.1:

Table 15. 1 Underground & open pit mining factors at Jiama mine

Items	unit	Open pit*	Underground
Mining Recovery	%	98.00	85
Ore dilution	%	2.00	12.00

*_referenced to Table 16.3 and 16.9

The parameters of mining recovery below 98% and ore dilution above 2% are widely accepted as realistic benchmarks in open-pit mining. These two factors for open pit depend, to large extent, on mining bench height, ore-body thickness & dips, as well as blast-hole diameter or drilling and blasting pattern.

It makes sense that more waste is mixed into ore and then ore dilution is estimated at 12% at underground, which includes internal, external dilution and mucking dilution.

15.2 Operational Cost and Break-even cut-off

The reserve estimation on Jiama project covers both open pit and underground. Break-even differs drastically between the two methods. Underground mining is high in break-even due to its higher operational cost and a little bit higher ore dilution, which is shown in the following table (Table 15.2) :

Table 15. 2 Operational cost and Break-even cut off

Items	unit	Open pit	Underground	Note
TOTAL OPERATING COSTS (RMB)	RMB/t	204.01	321.31	from Table 16.9*
TOTAL OPERATING COSTS(US\$)	US\$/t	29.14	45.90	calculated
EXCHANGE RATE US\$:RMB	US\$:RMB	7	7	set up by CGDI
COPPER PRICE	RMB/t	71889	71889	from table 16.9
COPPER PRICE	US\$/LB	4.66	4.66	calculated
GOLD PRICE	US\$/OZ	2890	2890	three-year average.
SILVER PRICE	US\$/OZ	40	40	three-year average.
MO PRICE	US\$/LB	20	20	set up by CGDI

Items	unit	Open pit	Underground	Note
Mining Recovery	%	2	15	production statistics
Ore dilution	%	2	12	production statistics
Jiama BREAK-EVEV point % Cu	%	0.39	0.69	Calculate with 85% Cu Recovery

*_Plus 15% contingency,

The table above indicates a break-even of 0.39 % copper for open pit and 0.69 % Cu for Underground mining. Note that a 15% contingency fee or working Capital was considered in the break-even cut-off calculation. Underground is nearly double the current open pit mining operation (N & S Pits). This is why Engineers at the Jiama Copper-Gold Mine (Tibet, China) is aggressively expanding the open pits to maximize access to newly discovered, deep, and thick ore bodies. Open-pit excavation is the most economical way to extract the ore without expensive tunneling.

15.3 Current Open Pit Reserve Estimates

The focus of CGDI is on reserve estimate for the current open pits including North Open Pit (the “N_OP”) and South Open Pit (the “S_OP”) as shown below:

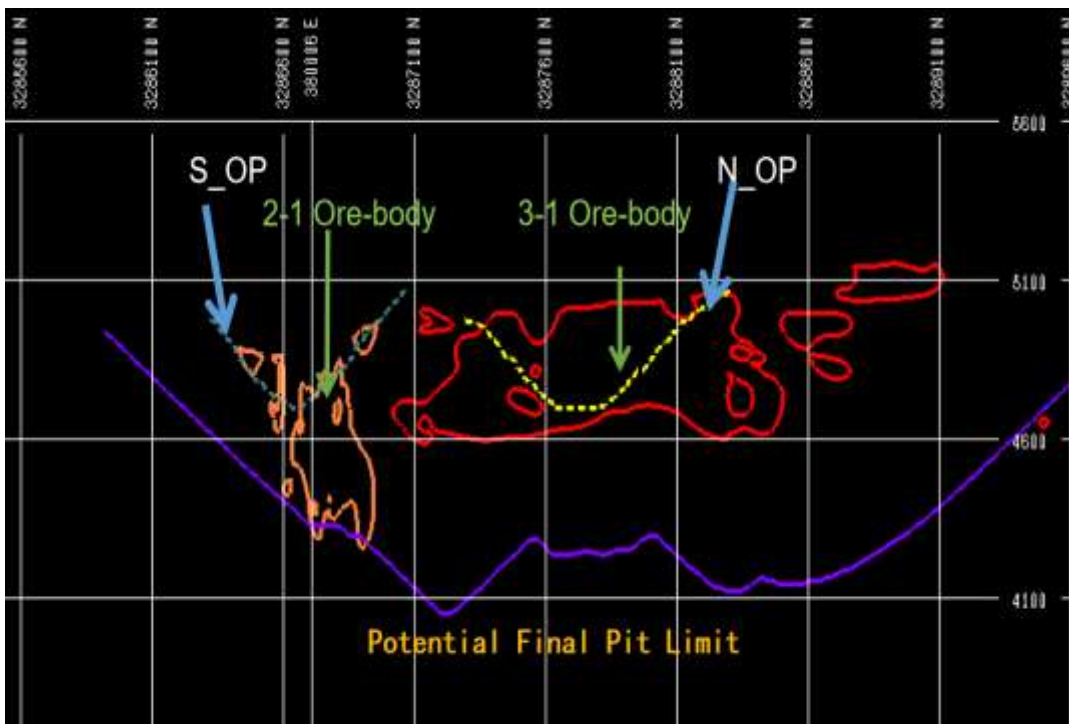


Figure 15. 1 North open pit (N_OP) and South open pit (S_OP) at Jiama mine

Figure 15.1 demonstrates 3-1 and 2-1 mineralized material is extracted from Pit N_OP and S_OP.

Reserve estimate for the two open pits is based on resource estimation with a fixed cut-off grade of 0.3% Cu. In this resource-reserve conversion, the aforementioned factors such as mining recovery & ore dilution are employed. Table 15.3 below shows reserve estimated based on mineral resource in Table 14.3:

Table 15.3 Pit resource-reserve conversion

Open Pit	OB	Category	Mass Mt	Average Grade			
				Cu %	Mo %	Au g/t	Ag g/t
N_OP	3_1	Proven	65.51	0.43	0.02	0.03	1.14
		Probable	32.69	0.42	0.02	0.03	1.11
		P & P	98.20	0.42	0.02	0.03	1.13
S_OP	2_1	Proven	12.21	0.98	0.03	0.25	28.33
		Probable	2.32	0.76	0.03	0.13	18.96
		P & P	14.53	0.94	0.03	0.23	26.83
Total		Proven	77.72	0.51	0.02	0.06	5.41
		Probable	35.02	0.44	0.02	0.04	2.29
		P & P	112.74	0.49	0.02	0.05	4.44

The table above indicated little changes in quantities and grade compared to mineral resources inside these two pits due to site engineers' effort on ore loss and dilution reduction during mining activities. The grades in table 15.3 represents ore head grade for each ore structure. Copper grade varies greatly from 0.42 to 0.98%.

In Summary, based on updated resource model and mining factors, Jiama open pit reserve estimation is summarized in Table 15.4 below.

Table 15.4 Pit reserve estimation summary*

Category	Mass Mt	Average Grade				Metal Contained			
		Cu %	Mo %	Au g/t	Ag g/t	Cu kt	Mo kt	Au kt	Ag kt
Proven	77.72	0.51	0.02	0.06	5.41	399.19	15.07	4.84	0.42
Probable	35.02	0.44	0.02	0.04	2.29	154.87	6.63	1.23	0.08
P & P	112.74	0.49	0.02	0.05	4.44	554.06	.70	6.08	0.50

1 Numbers have been rounded to reflect the precision of the Mineral Reserve estimate.

2 Reserve classification as defined by CIM Definition Standards for Mineral Resources and Mineral Reserves of 10 May 2014.

3 Cut-off of 0.3% Cu used.

The P & P reserve in the table 15.4 is also expressed as:

112.74Mt@0.49% Cu, 0.02% Mo, 0.05g/t Au, 4.4g/t Ag

Or simply reported in Equivalents of the primary copper (CuEq):

112.74Mt@0.61% CuEq

The Copper Equivalents of 0.61% above is calculated from the Equivalent formula and its supported data contained in Table 15.5:

$$\text{CuEq} = \text{Cu} + 0.01 * \text{Ag} + 1.69 * \text{Mo} + 0.79 * \text{Au}$$

Table 15.5 Data for Copper Equivalents (CuEq) Calculation

Metal	Grade	Price	Unit1	Mill Recovery	Value \$	Unit 2	Coefficient
	g/t or %			%	(1gt Or1%)		
Cu	0.49	4.66	\$/lb	85	87.3	\$/g	1
Ag	4.44	40	\$/oz	69.76	0.9	\$/g	0.01
Mo	0.02	20	\$/lb	33.39	147.18	\$/%	1.69
Au	0.05	2890	\$/oz	73.84	68.62	\$/g	0.79

Since it is clear which metals are the primary products (Copper), it is mature to use different recovery rates listed in the table above at this stage, which is from production statistics and CGDI's assumption. Therefore, the recovery rate of 85% is reasonable at present.

The contained metal in term of CuEq can be easily checked as shown in Table 15.6 below:

Table 15.6 Reserve estimation with Copper Equivalent CuEq

Class	Mass	Average Grade				CuEq	Metal Contaned				Contained CuEq
		Cu	Mo	Au	Ag		Cu	Mo	Au	Ag	
	Mt	%	%	g/t	g/t	%	kt	kt	t	kt	kt
Proven	77.7	0.51	0.02	0.06	5.41	0.65	399.2	15.07	4.84	0.42	504.96
Probable	35.0	0.44	0.02	0.04	2.29	0.53	154.8	6.63	1.23	0.08	183.86
P & P	112.7	0.49	0.02	0.05	4.44	0.61	554.1	21.70	6.08	0.50	688.82

The Mineral Reserve Estimate for open pit N_OP and S_OP was reported with an effective date of June 30, 2026.

15.4 Reserve Estimate for Underground Mining

Since it is unclear where an optimized final pit limit is, assuming any pit-underground mining boundary is premature at this stage. As such the aforementioned two pits are justified now, and then the remaining resources out of these pits will be extracted from underground.

Firstly, check mine-able material from the remaining mineral resource for underground mining with a ranged cut-off grade of 0.1% through 0.3%, 0.5%,0.7%,0.8% to 1%Cu (Table 15.7). This conversion is based on:

(1) Assuming mineral resources varies with cut-off grade

(2) Mineral resources inside the pits above keep its quantities and average grade at a cut-off of 0.3%cu

(3) Assuming Mining loss and ore dilution for underground are 15% and 12% respectively (Table 15.7)

Table 15. 7 Underground resource - mineable material conversion*

Item	Resource	Grade						Mineable	Grade					
		Category	Mass	Cu	Mo	Ag	Au		CuEq	Category	Mass	Cu	Mo	Ag
0.1% Cu cut-off		Mt	%	%	g/t	g/t	%		Mt	%	%	g/t	g/t	%
total	ME & ID	3200.7	0.4	0.03	6.38	0.15	0.63	P & P	3128.7	0.35	0.03	5.55	0.13	0.55
in-pit	ME & ID	112.8	0.5	0.02	4.53	0.05	0.62	P & P	110.3	0.43	0.02	3.94	0.04	0.54
remaining for U	ME & ID	3087.9	0.40	0.03	6.45	0.15	0.63	P & P	3018.4	0.34	0.03	5.61	0.13	0.55
0.3% Cu cut-off	ME	623.1	0.71	0.03	13.16	0.29	1.12	Proven	609.1	0.62	0.03	11.44	0.25	0.98
total	ID	711.9	0.68	0.03	12.1	0.29	1.08	Probable	695.9	0.59	0.03	10.52	0.25	0.94
	ME & ID	1335.0	0.69	0.03	12.6	0.29	1.10	P & P	1305.0	0.60	0.03	10.96	0.25	0.95
	ME	77.8	0.52	0.02	5.52	0.06	0.66	Proven	76.0	0.45	0.02	4.80	0.05	0.57
in-pit	ID	35.0	0.45	0.02	2.34	0.04	0.54	Probable	34.2	0.39	0.02	2.03	0.03	0.47
	ME & ID	112.8	0.5	0.02	4.53	0.05	0.62	P & P	110.3	0.43	0.02	3.94	0.04	0.54
	ME	545.3	0.74	0.03	14.25	0.32	1.19	Proven	533.0	0.64	0.03	12.39	0.28	1.03
remaining for U	ID	676.9	0.69	0.03	12.60	0.30	1.11	Probable	661.7	0.60	0.03	10.96	0.26	0.96
	ME & ID	1222.2	0.71	0.03	13.34	0.31	1.14	P & P	1194.7	0.62	0.03	11.60	0.27	0.99
0.5% Cu	ME	322.8	1.00	0.04	20.62	0.45	1.63	Proven	315.5	0.87	0.03	17.93	0.39	1.41

Item	Resource		Grade					Mineable		Grade				
cut-off														
total	ID	355.7	0.96	0.04	19.11	0.46	1.58	Probable	347.7	0.84	0.03	16.62	0.40	1.38
	ME & ID	678.5	0.98	0.04	19.83	0.45	1.60	P & P	663.2	0.85	0.03	17.24	0.39	1.39
	ME	77.8	0.52	0.02	5.52	0.06	0.66	Proven	76.0	0.45	0.02	4.80	0.05	0.57
in-pit	ID	35.0	0.45	0.02	2.34	0.04	0.54	Probable	34.2	0.39	0.02	2.03	0.03	0.47
	ME & ID	112.8	0.5	0.02	4.53	0.05	0.62	P & P	110.3	0.43	0.02	3.94	0.04	0.54
	ME	245.0	1.15	0.04	25.42	0.57	1.93	Proven	239.4	1.00	0.04	22.11	0.50	1.68
Remaining for U	ID	320.7	1.02	0.04	20.94	0.51	1.70	Probable	313.5	0.89	0.04	18.21	0.44	1.47
	ME & ID	565.7	1.08	0.04	22.88	0.53	1.80	P & P	553.0	0.94	0.04	19.90	0.46	1.56
0.7% Cu cut-off	ME	204.6	1.24	0.04	26.31	0.55	2.01	Proven	200.0	1.08	0.04	22.88	0.48	1.75
total	ID	224.8	1.18	0.04	23.66	0.56	1.93	Probable	219.8	1.02	0.04	20.57	0.48	1.67
	ME & ID	429.5	1.21	0.04	24.92	0.55	1.96	P & P	419.8	1.05	0.04	21.67	0.48	1.71
	ME	77.8	0.52	0.02	5.52	0.06	0.66	Proven	76.0	0.45	0.02	4.80	0.05	0.57
in-pit	ID	35.0	0.45	0.02	2.34	0.04	0.54	Probable	34.2	0.39	0.02	2.03	0.03	0.47
	ME & ID	112.8	0.5	0.02	4.53	0.05	0.62	P & P	110.3	0.43	0.02	3.94	0.04	0.54
	ME	126.8	1.68	0.05	39.06	0.85	2.84	Proven	124.0	1.46	0.05	33.97	0.74	2.47
Remaining for U	ID	189.8	1.31	0.05	27.59	0.65	2.18	Probable	185.5	1.14	0.04	23.99	0.57	1.90
	ME & ID	316.7	1.46	0.05	32.18	0.73	2.44	P & P	309.5	1.27	0.04	27.99	0.64	2.13
0.8% Cu cut-off	ME & ID	354.2	1.31	0.04	26.96	0.59	2.11	P & P	346.2	1.14	0.03	23.44	0.51	1.84
In-pit	ME & ID	112.8	0.5	0.02	4.53	0.05	0.62	P & P	110.3	0.43	0.02	3.94	0.04	0.54
remaining for U	ME & ID	241.4	1.69	0.05	37.44	0.84	2.81	P & P	236.0	1.47	0.04	32.56	0.73	2.44
1% Cu	ME & ID	235.5	1.51	0.04	31.14	0.67	2.42	P & P	230.2	1.31	0.03	27.08	0.58	2.10

Item	Resource		Grade						Mineable		Grade				
cut-off															
In-pit	ME & ID	112.8	0.5	0.02	4.53	0.05	0.62	P & P	110.3	0.43	0.02	3.94	0.04	0.54	
remaining for U	ME & ID	122.7	2.44	0.06	55.60	1.24	4.07	P & P	119.9	2.12	0.05	48.35	1.08	3.54	

*ME, measured, ID, indicated

The tables above indicate:

- (1) The remaining mineral resource's average grade with a cut-off of 0.1% Cu for underground mining falls below the break-even and it cannot produce profit
- (2) All of mineral resource with 0.3% Cu cut-off or above look good for resource-reserve conversion but Author needs to select an optimized cut-off grade for the conversion, prioritize maximizing the project's Net Present Value (NPV) or cash flow (CF) rather than just processing all 0.3% Cu material.

The second, Author will find which one (mine-able material) will be the mineable reserve at an optimized cut-off Cu grade. Author takes many factors into consideration when estimating mineral reserves, including all the inputs including costs, metal prices and mining factors, and also some subsequent events, for example, Cash flow. Then an economic viability test of material based on the above estimation with a range of cut-off grade set-up is our one very important step for the reserve estimation, seeing Figure 15.2 below:

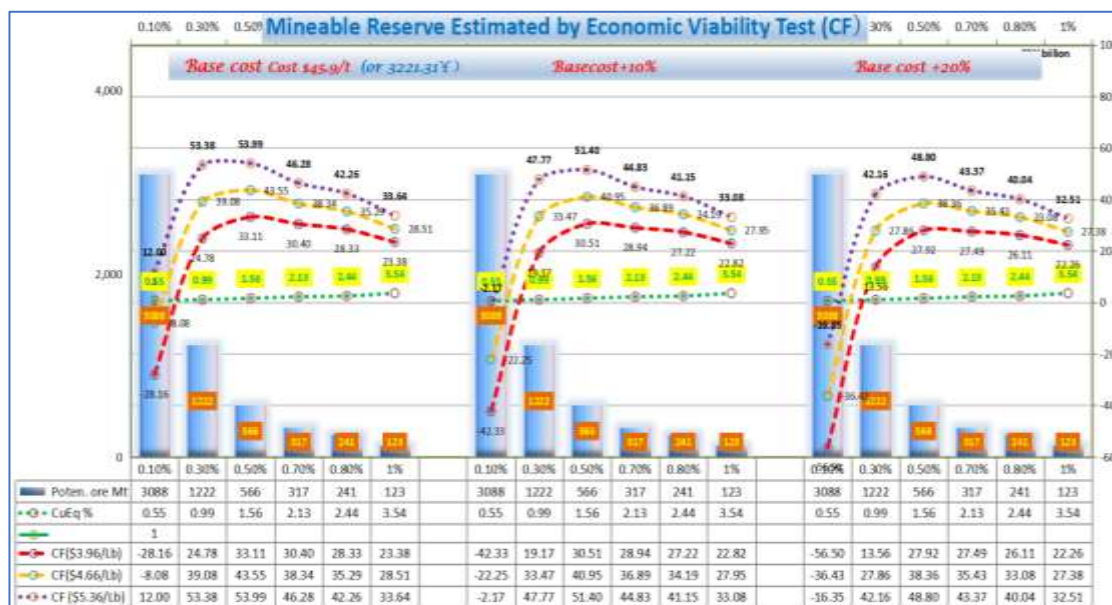


Figure 15. 2 Cut-off grade optimization curve for reserve estimation

As marketing and mining costs fluctuate, dynamic cut-off are used rather than a single static number. Figure 15.2, in fact, is a cut-off grade optimization curve which indicates one important info: it is a stable cut-off grade achieving maximum cash flow assuming copper changes within a small fluctuation of \$3.96/Lb (4.66-20%), \$ 4.66/Lb and \$5.36/Lb (4.66+20%)

(1) Achieving a maximum CF of 53.38,43.35 and 33.11Billion US\$ **at a 0.5%Cu cut-off** with mining cost of \$45.9/t (or 321.31RMB)

(2) Achieving a maximum CF of 51.4,40.95 and 30.51Billion US\$ **at a 0.5%Cu cut-off** if the mining cost is increased to \$50.49/t (or 10% increase)

(3) Achieving a maximum CF of 48.8,38.36 and 27.49Billion US\$ **at a 0.5%Cu cut-off** if the mining cost is increased to 55.08\$/t (or 20% increasing)

The conversion of mineral resources to mineral reserves is a critical process in mining, representing the transition from identifying a potential mineral deposit to demonstrating its economic viability through careful studies. Following table 15.8 shows the Reserve estimation in this report.

Table 15. 6 Jiama underground reserve estimation

Item	Category	Mass	Average Grade				
			Cu	Mo	Ag	Au	CuEq
	P/P	Mt	%	%	g/t	g/t	%
underground	Proven	239.44	1.00	0.04	22.11	0.50	1.68
	Probable	313.52	0.89	0.04	18.21	0.44	1.47
	P & P	552.97	0.94	0.04	19.90	0.46	1.56

1 Mineral Reserve for Jiama open pit and Underground, Effective Date of June 30, 2026

2 The mineral reserve estimate was prepared with reference to the 2019 Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards

1, The reserve estimated based on the following parameters:

Open pit:

- a) 98% of mining recovery and 2% of ore dilution
- b) 43 ° of overall slope
- c) \$4.66/Lb of Copper price (average price for the last three year from year 2023-2025)
- d) 85% of copper recovery

Underground:

- a) 12% of ore dilution
- b) 15% of mining loss
- c) 85% of copper recovery

4. Copper Equivalent 0.61%CuEq for open pit and 1.56 %CuEq for underground

5. The mineral reserve estimate was prepared by Mr. He, He is Qualified Person as defined by NI 43-101 with over 36 years' experience in mining.

The Mineral Reserve Estimate for Jiama Underground was reported with an effective date of June 30, 2026.

Reserve estimated in the table can be also expressed as:

552.97Mt@1.56% CuEq

Reserve estimates in Table 15.8 can be used for long-term mine planning. They define the Life-of-Mine (LOM), guide capital investment, and dictate the economic viability of the operation. These estimates outline what can be safely and profitably extracted over decades

Jiama is a combined Open pit and Underground mining project. In author opinion, expanding an existing open pit is a highly common and effective strategy to increase mineral or aggregate reserves, extend mine life, and improve the overall economics of an operation.

15.5 Jiama Ore Reserves Statement

The ore reserves estimate for Jiama was according to the 2019 definition standards set by the Canadian Institute of Mines, Metallurgy and Petroleum (CIM). Currently, open-pit mining and underground mining have a break-even point of 0.39% and 0.69%, respectively. Using the mineral resources provided in Chapter 14 and parameters such as ore depletion and mining recovery rates in Chapter 16, the mineral reserves of the Jiama project were estimated. The estimated reserves in the Jiama mining area are shown in Tables 15.9 and 15.10.

As of June 30, 2026, In two small open-pit pits (N_Op and S_OP), the total ore reserves is of 113 million tons, containing 550,000 tons of copper at a grade of 0.49%, containing 21,700 tons of molybdenum at a grade of 0.02%, containing 16.09 million ounces of silver at a grade of 4.44 g/t, and containing 0.18 million ounces of gold at a grade of 0.05 g/t (see Table 15.9).

Table 15.7 Ore Reserve for Open Pits in Jiama Project as of June 30, 2026

Category	Ore	Average					Grade				
		Cu	Mo	Au	Ag	CuEq	Cu	Mo	Au	Ag	CuEq
	Mt	%	%	g/t	g/t	%	kt	kt	t	kt	kt
Proven	77.7	0.51	0.02	0.06	5.41	0.65	399.2	15.07	4.84	0.42	504.96
Probable	35.0	0.44	0.02	0.04	2.29	0.53	154.8	6.63	1.23	0.08	183.86
Total	112.7	0.49	0.02	0.05	4.44	0.61	554.1	21.70	6.08	0.50	688.82

Table 15.8 Ore Reserve for Underground in Jiama Project as of June 30, 2026*

Class	Mass	Average Grade					Metal Contained				
		Cu	Mo	Au	Ag	CuEq	Cu	Mo	Au	Ag	CuEq
	Mt	%	%	g/t	g/t	%	kt	kt	t	kt	kt
Proven	77.7	0.51	0.02	0.06	5.41	0.65	399.2	15.07	4.84	0.42	504.96
Probable	35.0	0.44	0.02	0.04	2.29	0.53	154.8	6.63	1.23	0.08	183.86
P & P	112.7	0.49	0.02	0.05	4.44	0.61	554.1	21.70	6.08	0.50	688.82

1 Mineral Reserve for Jiama open pit and Underground, Effective Date of June 30, 2026

2 The mineral reserve estimate was prepared with reference to the 2019 Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards

2, The reserve estimated based on the following parameters:

Open pit:

b) 98% of mining recovery and 2% of ore dilution

b) 43 ° of overall slope

c) \$4.66/Lb of Copper price (average price for the last three year from year 2023-2025)

d) 85% of copper recovery

Underground:

a) 12% of ore dilution

b) 15% of mining loss

c) 85% of copper recovery

4. Copper Equivalent 0.61%CuEq for open pit and 1.56 %CuEq for underground

5. The mineral reserve estimate was prepared by Mr. He, He is is Qualified Person as defined by NI 43-101 with over 36 years' experience in mining.

15.6 Changes and discussions on Jiama mineral reserves

Australian mining consultancy MINING ONE conducted a reserve estimate for the Jiama project in 2013. The two open-pit mining pits within the Jiama mining area contained reserves of 240 million tons of ore, containing 1.24 million tons of copper, with a grade of 0.51%, containing 42,000 tons of molybdenum, grade 0.02%, containing 74.68 million ounces of silver, grade 9.65 g/t, containing 0.0 gold 69 million ounces, grade 0.09 g/t In 2013, the underground mining reserves under mining rights in the Jiama mining area were 200 million tons of ore, containing 1.47 million tons of copper at a grade of 0.74%, containing 100,000 tons of molybdenum at a grade of 0.05%, containing 88.49 million ounces of silver at a grade of 13.75 g/t, and containing 2 million ounces of gold at a grade of 0.031g/t (Table 15.11).

Table 15. 9 Comparison of 2013 Reserve Estimate and 2026 Reserve Estimate

2013 Mineral Reserve Estimate by Mining One									
Open pit									
Type	Mass Mt	Cu %	Mo %	Au g/t	Ag g/t	Cu kt	Mo Kt	Au Moz	Ag Moz
Proven	7.90	0.41	0.019	0.03	4.1	32.3	1.5	0.01	1.05
Probable	232.80	0.52	0.018	0.09	9.84	1,205.50	40.82	0.68	73.63
Total	240.70	0.51	0.018	0.09	9.65	1,237.80	42.32	0.69	74.68
UNDERGROUND									
Type	Mass Mt	Cu	Mo	Au	Ag	Cu (kt)	Mo(kt)	Au(Moz)	Ag(Moz)
Proven	17.02	0.748	0.049	0.267	14.735	12.70	8.42	0.15	8.06
Probable	183.06	0.734	0.05	0.315	13.664	1,342.90	92.28	1.85	80.43
Total	200.00	0.735	0.05	0.311	13.755	1,470.00	100.70	2.00	88.49
2026 Mineral Reserve Estimate by Changchun Institute									
Open Pit									
Type	Mass Mt	Cu %	Mo %	Au g/t	Ag g/t	Cu Mt	Mo Mt	Au Moz	Ag Moz
Type	Mt	%	%	g/t	g/t	Mt	Mt	Moz	Moz
Proven	77.7	0.51	0.02	0.06	5.41	0.4	15.07	0.15	13.51
Probable	35	0.44	0.02	0.04	2.29	0.15	6.63	0.05	2.58
Total	112.7	0.49	0.02	0.05	4.44	0.55	21.7	0.18	16.09
Underground									
Proven	239.44	1.00	0.04	0.5	22.11	2.39	0.1	3.85	170.21
Probable	313.52	0.89	0.04	0.44	18.21	2.79	0.13	4.44	183.55
Total	552.97	0.94	0.04	0.46	19.9	5.2	0.22	8.18	353.79

Comparing the Mining One's 2013 Jiama Reserve Estimates with that in this report, it shows that after nearly 16 years of open pit mining, the ore reserves in open-pit at Jiama mine have dropped from 240 million tons to 110 million tons. However, underground mineral reserves have increased from 200 million tons in 2013 to 550

million tons in 2026, a 175% increase. Copper metal content increased from 1.47 million tons to 5.2 million tons, a 250% increase; Molybdenum increased from 100,000 tons to 220,000 tons, a 120% increase; Gold increased from 2 million ounces to 8 million ounces, a 300% increase; Silver increased from 88 million ounces to 354 million ounces, a 300% increase.

16 MINING METHODS

16.1 Introduction

The Jiama Copper-Polymetallic deposit is a typical porphyry–skarn type deposit in the eastern section of the Gangdise metallogenic belt, located in the fore-section of an overthrust fault zone. Multiple effects such as tectonic, freeze-thaw, and alpine landforms have led to the development of faults and fractures within the area, resulting in significant spatial differences in rock mass stability and varying risks in mining and geotechnic areas. The mining area includes four zones with three ore types: skarn, hornfels and porphyry. A combination of open-pit and underground mining methods has been used in Jiama project. This section provides a detailed overview of the geotechnical engineering of the Jiama project, including the status of the development and transportation system, mining methods, and ventilation and drainage.

16.2 Geotechnical overview in the mining area

16.2.1 Ore Deposit Background

The Jiama Copper-Polymetallic deposit consists of a deep, concealed porphyry-type Copper-molybdenum mineralized body, a skarn-type copper-polymetallic mineralized body which surrounding the porphyry body and occurring along the interlayer tectonic zone between the Lower Cretaceous Linbuzong Formation sand-slate-hornfels and the Upper Jurassic Duodigou Formation limestone-marble, and a hornfels-type copper-molybdenum mineralized body occurring in the fracture system above the porphyry body. The porphyry-type mineralized body is mainly controlled by the folds and faults in the mining area, the skarn mineralized body is mainly controlled by the interlayer expansion space caused by the contact zone of the rock mass and the thrust structure, and the hornfels mineralized body is mainly controlled by the fracture system generated by the fracturing of the brittle hornfels at the top during the emplacement of the porphyry body.

Based on the ore-bearing lithology and spatial location, four mineralization zones were identified: No. I skarn zone, No. II skarn zone, No. III hornfels zone and No. IV porphyry zone.

16.2.2 Geotechnical Condition

Jiama mining area lies in the fore section of the thrust structure system. The fold structures are relatively well developed within the area, followed by fault structures. Skarn-type orebodies are the main orebody type in Jiama mining area, distributed in layers in the upper part of the Upper Jurassic Duodigou Formation and the area where

it contacts the Lower Cretaceous Linbuzong Formation, with the major orebodies located above the groundwater level in the limestones. The strata within the area are relatively complex with developed structural zones, strong rock weathering, developed neotectonics activities, large thickness of the freeze-thaw layer and complex slope geological conditions.

The rock strata in the mining area are divided into five geo-technological rock groups: loose rock group, hard rock group, relatively hard rock group, relatively soft rock group, and soft rock group. Among them, the ore body and surrounding rocks are divided into four engineering geological rock groups: hard rock group, relatively hard rock group, relatively soft rock group, and soft rock group.

The structures in the mining area are mainly composed of faults, bedding, and joint fractures. According to the "Code for Hydrogeological and Geological Exploration in Mining Areas" (GB/T12719-2021) in China, four structural planes can be delineated: II, III, IV, and V structural plane in the mining area.

16.2.3 Geotechnical domain classification

1. Class II structural plane

F1 (Bulangou Fault), F2 (Talongwei Fault), F13 (Thermu Fault) and F14 (Xiapu Fault) basically coincide with the stratigraphic strikes within the area, running in an NW direction in the entire mining area, extending about 19 km. The faults are all reverse faults, dipping to northeast, and are classified as Class II structural plane.

These faults control the main structural framework of the mining area. Due to the combined effect of the overthrust structure and these faults, two strike-slip faults have formed within the mining area: Xiagongpu (F3) and Niumatang (F7). Among them, the northwest of the F3 fault crosses F7 near Niumatang. The rock strata at the intersection of the two faults are fractured, which can easily trigger geological disasters.

2. Class III structural plane

Six faults—F5, F6, F8, F9, F10, F11 and F12—are classified as Class III structural plane. All are in the upper stream of Bulanggou creek and the northwest side of Panyanggou creek in the southeast of the mining area. These faults strike northwest, north south and north-northeast, extending several tens of meters. These are secondary faults in the mining area, all of which are slip-type faults affecting rock mass stability, but they are far from mining adits and have little impact on underground mining. They only have some impact on the stability of the southeast slope of the South Open-Pit (S_OP).

Due to limitations of surface overburdens and geotechnical exploration, the occurrence of fault patterns in the Class II and III structural planes require further investigation.

3. Class IV-V Structural Plane

Class IV-V structural planes in mining areas mainly refer to beddings, joints, and fractures of varying sizes within the mining area. Based on on-site measurement and mapping of structural planes on site and previous research data, statistical analysis was conducted on the structural planes of slate, hornfel, skarn, and granite porphyry dykes. The structural plane occurrence of rocks in Niumatang, Copper-Lead Mountain and the open-cut mining area is shown in Figures 16.1 to 16.4. The occurrence analyzing results which correspond to the lithological structural planes are shown in Table 6.14. Each rock type develops more than three sets of jointed fractures, most dominated by one joint plane, supplemented by others.

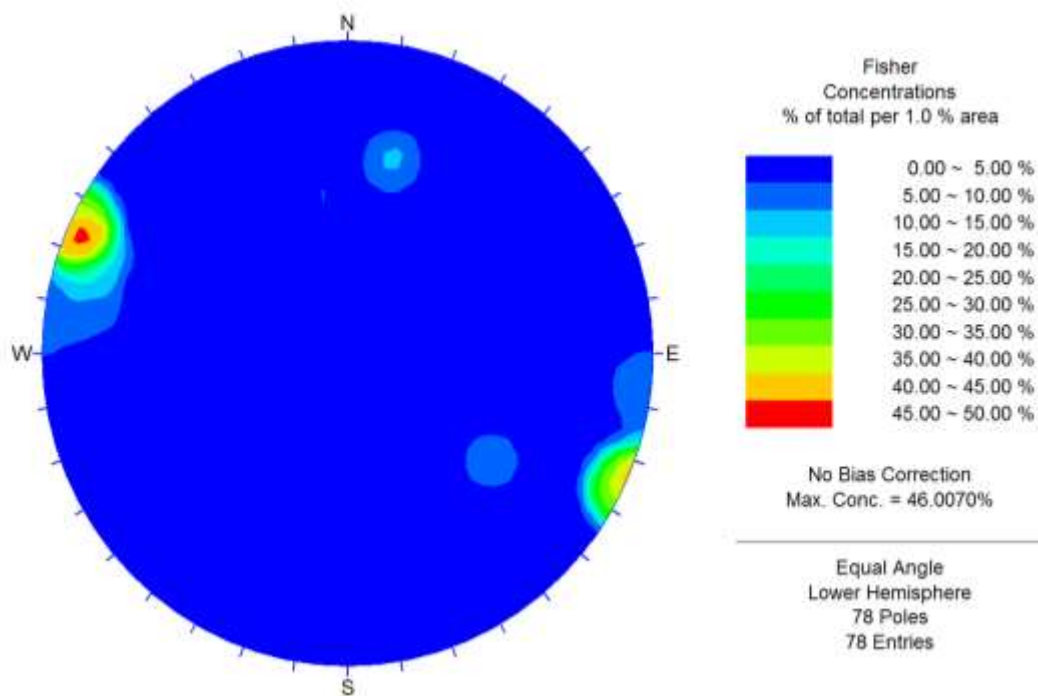


Figure 16. 1 Isodensity maps of joints and fractures in slate

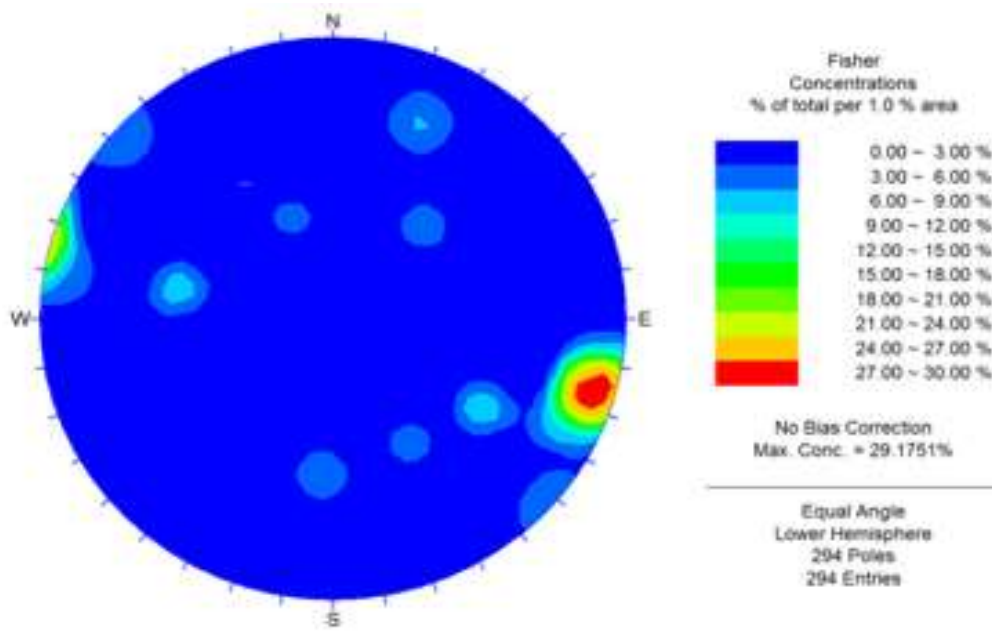


Figure 16. 2 Isodensity maps of joints and fractures in hornfels

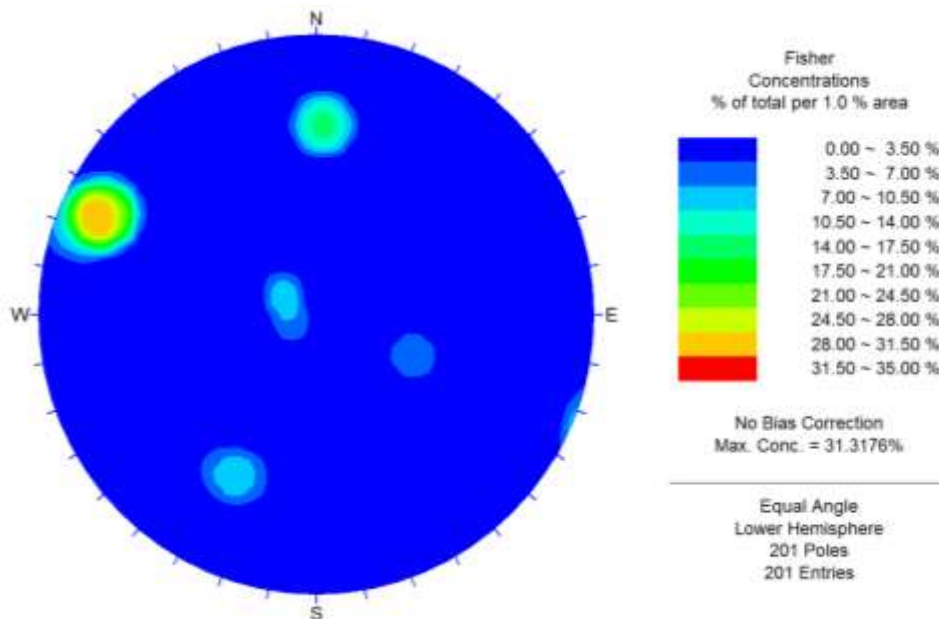


Figure 16. 3 Isodensity maps of joints and fractures in skarn

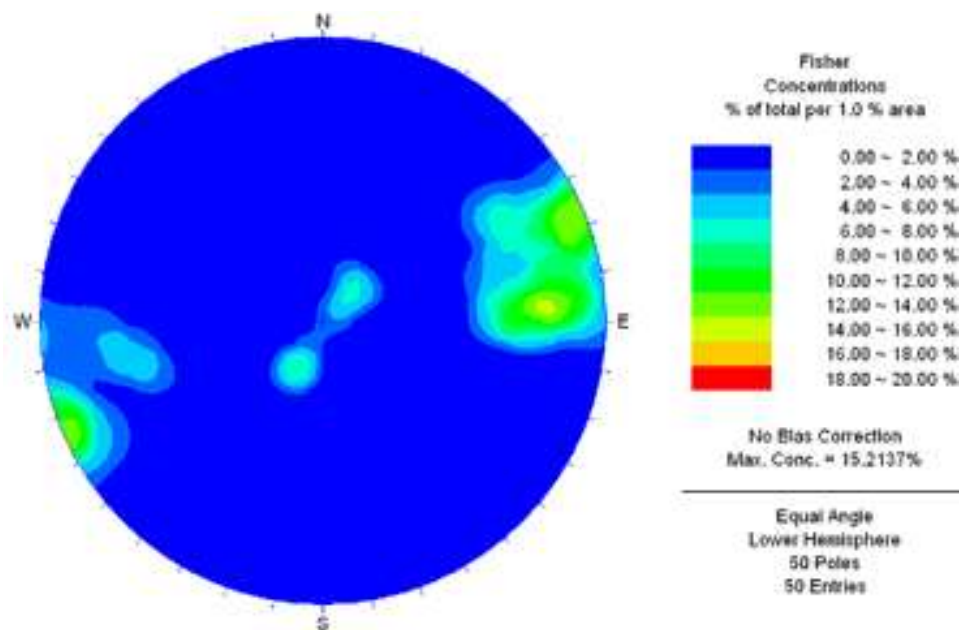


Figure 16. 4 Isodensity maps of joints and fractures in limestone

Table 16. 1 Statistical Table of Dominant Joint Plane in the Rock Mass

Lithos	Occurrence of Dominated Joint Plane (°)					Note
	1	2	3	4	5	
Slate	285∠85	99∠57	302∠62	203∠74	other	Niumatang, Cu-Pb MT
Hornfel	114∠81	183∠68	28∠65	109∠13	293∠41	
Skarn	110∠87	193∠64	306∠60	/	/	
Limestone	85∠60	280∠84	35∠80	30∠60	/	
Hornfel	23∠77	91∠77	225∠46	286∠70	/	Hornfel- Open-cut

16.2.4 Geotechnical Evaluation

Except for some skarn ore bodies and hornfels type ore bodies which are mined by open-pit mining, all other ore bodies are mined underground. The quality of the ore bodies and surrounding rock masses, as well as the stability of the shafts and tunnels surrounding rock, are evaluated as follows:

1. Orebody and Quality of Wall Rock

The surrounding rock directly above the ore body is mainly composed of hornfels,

slate, and marble, with well-developed rock fractures. However, the number of joints and fissures decreases significantly with increasing depth.

According to the rock mass quality index (M) method:

$$M = R_c \cdot RQD/30$$

Where: R_c — uniaxial saturated compressive strength of rock (MPa).

The calculated rockmass indices for the ore body and surrounding rock are shown in Table 16.2.

Table 16. 2 Quality Index of Surrounding Rock and OreBodies in the Jiama Mining Area

Rock type and location	Hanging Wall		Foot Wall			Dyke	Orebody
	hornfels	slate	marble	marble-limestone	limestone	granite porphyry	skarn
R_c	99.95	66.36	39.21	44.4	52.16	127.37	48.43
RQD (%)	49.38	49.14	73.51	75.56	66.05	92	73.34
M	1.65	1.09	0.96	1.12	1.15	3.91	1.18
Class	II(good)	II(good)	III(medium)	II(good)	II(good)	I (excellent)	II(good)

From the table above, it can be seen that the surrounding rock of the ore body is mostly of good quality (Class II), the wall rock is relatively stable, and geological issues are less likely to occur during tunnel excavation.

2. Stability Evaluation of Surrounding Rock in Shafts and Drifts

Currently, the shafts, drifts, and tunnels in the Jiama mining area are concentrated in the area between Niumatang and South Tongqianshanopen-pit. The wallrocks of the shafts mainly consist of Linbuzong Formation hornfels, slate, marble, limestone and a small number of intrusive dikes. The span of tunnels is generally between 2m~2.5m. According to the "Technical Code for Geotechnical Engineering Investigation" (YS5202-2004) in China, the wallrock of mine shaft and tunnel engineering is classified as follows:

Hornfels rock: Segmented as fragmented mosaic texture, massive structure, RQD value 49.38%, uniaxial saturated compressive strength 99.95MPa, classified as hard rock, longitudinal wave velocity of rock block is 5225m/s (dry) and 5534m/s (saturated). It is generally developed 3~4 groups of fractures, average spacing 0.33m, mostly closed, occasionally filled with mud, poor penetration, wall rock geotechnical type is Class II.

Slate: Slate structure, the RQD value is 49.14%, with the uniaxial saturated compressive strength 66.36MPa, belonging to a hard rock, a longitudinal wave velocity of rock block is 5369m/s (dry) and 5795m/s (saturated). Fractures generally developed

in groups of 3~5, spacing 2.3m~12m, mostly closed, with poor penetration, good interlayer bonding, and the wall rock geotechnical type is Class II.

Marble: Granular metamorphic texture, massive structure, the rock layers are mostly thick-layered, RQD value 73.51%, uniaxial saturated compressive strength is 39.21MPa, belonging to relatively hard rock, the longitudinal wave velocity of the rock block is 2628m/s (dry) and 5836m/s (saturated), the rock fractures are generally developed in 3 groups, and there are rockfall phenomena in some sections of the exposed tunnels. The wall rock geotechnical type is Class III.

Limestone: Massive structure, mostly thick layered, RQD value 66.05%, uniaxial saturated compressive strength of 52.16MPa, relatively hard rock, rock block longitudinal wave velocity of 2820m/s (dry) and 5898m/s (saturated), generally three groups of rock fractures developed, and the wall rock geotechnical type is Class II.

The wall rock of the shafts and drifts in the Jiama mining area is mainly hard to relatively hard Class II geotechnical type which is of good geological properties.

3. Slope Stability Evaluation

Slope types within the Jiama mining area can be divided into natural slopes, artificial cut slopes, artificial accumulation slopes, as well as slopes from Niumatang, Tongqianshan, Hornfels, and South Open-pit.

1) Natural slopes

According to previous studies, the natural stable slope angle of hornfels in the area is generally 28.9°~32.9°, with an average of 30.9°. The natural stable slope angle of slate is generally 30.4°~33.8°, with an average of 32.1°; The naturally stable slope angle of limestone and marbleized limestone is generally 33.3°. Except for some local cliffs, the area is basically stable.

The mining area is primarily characterized by deep, high-mountain dissection, with steep slopes ranging from 30° to 50°, forming localized cliffs. The valley cross-sections are mostly V-shaped, with a longitudinal gradient greater than 15%. Surface runoff dynamics gradually intensify along the mountain slopes, resulting in well-developed gullies. Erosion is intense within the mining area, with significant weathering and freeze-thaw cycles. Quaternary loose deposits are mainly distributed along the valleys. Some natural slopes within the area are in a state of ultimate equilibrium, making them susceptible to landslides of varying scales under the influence of earthquakes, freeze-thaw cycles, heavy rainfall, and human disturbance.

2) Artificial accumulation slopes

The artificial accumulation slopes in the mining area are mainly the dump slopes with slope angles between 35°~36°. Among them, the waste pile at the South Open-pit dump site has a vertical height of about 185m~540m and an average thickness of 113m; The waste pile at the Hornfels Open-pit dump site forms a vertical height of about 300m~592m with an average thickness of 60m. The piled materials mainly consist of waste rocks and debris of the extracted hornfels, skarn, marble and limestone from mine production. They are not sorted with block diameters generally ranging from 20 cm~40 cm, with the largest diameter reaching about 1 m. The pile

structure is loose. These waste rock piles are mostly located on gentle slopes, with some piles forming cracks on their slopes. As mining construction progresses, the height of the waste piles gradually increases, making them prone to landslides and debris flow geological disasters, which should be taken seriously by the mine.

At the same time, the seasonal frozen soil freeze period in the mining area lasts 4-5 months. In its original state, the surface Quaternary loose layer is widely distributed, and during the freezing period, about 0.4 meters of seasonal permafrost appears on the surface. Due to stripping in open-pit mining sites and the overlay of dumps and tailings ponds, local seasonal permafrost has disappeared, while new artificial seasonal frozen soil forms at dumping sites and tailings ponds, altering the local original permafrost environment. However, the overall geological conditions after mining have not changed significantly.

3) Artificial cut slopes

The main slopes within the mining area are mixed slopes, located in the center of the mining area. These include slopes cut for the simple mining road and slopes from open-pit mining projects. The slopes cut for the mining road generally follow the natural contours of the mountain, with most cuts less than 6 meters in height. Due to the thinness of the residual slope layer, the slopes have good stability, and according to the investigation, no collapses or landslides have occurred.

The mining area has formed four open-pit mines: Niumatang, Tongqianshan, South Open-pit, and Hornfels Open-pit. Currently, Niumatang and Tongqianshan open-pit have been closed. The two open-pit mining sites, South Pit and Hornfels Pit, are currently been stripping and mining, and their current status is relatively stable.

16.2.5 Support requirements

Based on preliminary rock mechanics tests, geological surveys, and "big data" three-dimensional rock mass quality evaluation based on the drillhole database, along with related support methods and standards, the classification of rock mass support in the Jiama mining area follows the following principles:

1. Based on the RMR rock mass quality evaluation index and the three-dimensional rock mass quality evaluation results of the Jiama mining area, most of the rock masses in the Jiama mining area are classified as Class II or I, indicating relatively good rock mass quality. This type of rock mass is mainly composed of jointed limestone, marble, and skarn, with joints intersecting the roadway strike at large angles, which is beneficial to roadway stability. For Class II rock masses, permanent drifts can be supported primarily with shotcrete, while temporary drifts can be bared. Class II rock masses are mainly supported primarily with anchor spray net, with the support strength differentiated according to the intended use of the drifts.

2. Class IV and V rock masses are mainly marbled skarn. For these rock masses, the support method is determined based on the looseness of the wall rock. Whether permanent or temporary drifts, for rock masses that can provide anchoring force,

anchor spray net support is recommended. For relatively loose rock masses with sandy interspersed, steel arch support must be carried out as early as possible, and consideration should be given to supplement with advanced pipe umbrella support to prevent large-scale hanging-wall roof emergencies.

3. For anchor spray support types, considering that most cross-sectional widths of the drifts in mining areas are 4.2m, the length of the anchor rods should not be less than half the drift width, i.e., not less than 2100mm, and the row spacing between anchor rods should not exceed 1.0m. Depending on the different tunnel usage, selectively use end-anchor type anchor rods (such as resin cartridge anchor bolts, cement cartridge coil anchor bolts, etc.) and full-length anchor rods (such as pipe seam type anchor rods). For anchor spray net support in fractured rock areas, double-layer mesh can be considered to prevent block drops and net pockets.

4. As a passive support form, for the segmented heights of the Jiama mining area, the strength of the #14 steel arch frame is sufficient to support the weight of the wall rock inside the upper overhanging arch per unit width. The main damage to the steel arch on site is the collapse of the rock mass at the frame top which can be effectively addressed by strengthening the connecting bars between adjacent steel arch frames (parallel or triangular types) and timely laying perlite behind the steel arch frames to improve the overall support of the steel arch frame.

16.2.6 Evaluation of Current Mining Status

The surface mining production in Jiama copper polymetallic mine mainly from two open-pits ie. The hornfels open-pit (North Pit) and southern open-pit. The mining method in open-pit is mainly carried out in a sequence from outside to inside and top-down.

Underground mining mainly consists of Phase I underground and Phase II underground mining areas. Phase I underground mainly mines the ores below the Tongqianshan, Niumatang and the southern open-pit. The mining methods include sublevel filling method and Cut-and-fill mining, with the order of mining from bottom to top between levels, and mining every one stope after every three stopes within the level. After the second phase underground mining, the first phase underground is reclassified into the second phase underground mining area, mainly using sublevel stoping with backfill. The mining sequence is from top to bottom between levels, upward sublevel filling method within the level, and horizontal mining sequences is mining one stope after every three stopes.

During the future southern open-pit mining, there are potential local slope stability issues at the exposed area of the F1 fault in the middle and lower southwest slopes, which should be closely monitored and, if necessary, slope reinforcement measures should be taken.

The safety and stability of open-pit slopes in the Hornfels Open-pit are mainly

controlled by the slope's own geological conditions and disturbances from open-pit mining; underground mining does not significantly affect the safety and stability of the hornfels open-pit slopes.

Mining activities in the southern underground area are significantly affected by southern open-pit mining above. Due to the local stress field modification effect of southern open-pit mining on the direct underlying underground southern mining area, stress concentration occurs on the rock bridge between the open-pit footwall and the hanging wall of the southern underground mined-out area, posing potential safety risks of high-stress rock mass shear damage. Hornfels open-pit mining has a load relief effect on the southwest underground mining area, reducing stress levels is beneficial for slope stability.

Underground mining does not significantly affect the overall stability of the dump site. Specifically, there is a local risk of cracking on the two lower slopes of Dump Site #1, while Dump Sites #3 and #4 are basically unaffected by underground mining. The middle and lower parts of the open-pit slope of Tongyanshan are affected by local mining and have local shear damage, while underground mining does not affect the overall stability of Niumatang and Tongqianshan open-pit slopes.

16.3 Open-Pit Mining to Hornfels Type Orebody

16.3.1 Summary of related information

Since the construction of the second phase expansion began, the current open-pit mining area of hornfels orebody within the mining license area has formed an open-pit about 1150 meters long and 650 meters wide in an irregular semicircle shape. The open-pit mine currently has a maximum elevation of 5220 m and a minimum bench elevation of 5045 m, with all benches above the 5105 m level having reached the ultimate pit shell.

16.3.2 Open-pit Boundary of Hornfels Orebody

The economically reasonable stripping ratio for hornfels open-pit mining is 7.5m³/m³. Based on the geotechnical and hydrogeological conditions of the deposit, the occurrence characteristics of the orebody, and considering slope height and service mining life, the slope parameters are as follows:

Bench height: 15m (30m after merging two benches)

Bench slope angle: 55°~65°

Safety cleaning platform width: 12~16m

Final slope angle: less than 43°

Micromine mining software is used, and pit boundary optimization and delimitation are carried out based on the technical and economic parameters in Table 16.3

Table 16.3 The main input parameters of pit shell optimization in Micromine

Item	Unit	Parameter	notes
Block size	m	10×10×5	
Specific Gravity	t/ m ³	2.75	
Block Weight	t/ m ³	2.75	
Cu cutoff	%	0.2	<0.2% Cu as waste
Mo cutoff	%	0.03	<0.03% Mo as waste
Mining loses	%	2	(mining recovery 98%)
Ore dilution	%	2	
Cu mill recovery	%	84	
Cu price	10k RMB/t	7.2	
Mo price	10k RMB/t	32	
Mining cost	1 RMB/t	14.5	(39.9 yuan/ m ³)
Striping cost	1 RMB/ m ³	38	(13.8 yuan/t)
Mill cost	1 RMB/t	109.31	
Cost for admin and sale	RMB/t	42	
Final slope angle	degree	43	
Discount rate	%	9	

The optimized final open-pit mining shell is shown in Figure 16.5.

Pit shell design is carried out based on ore body shape, selected slope parameters, and development plan layout requirements. The final pit shell elevation is 4700m, classified as a slope-to-depression open-pit mining site, as shown in Figure 16.6.

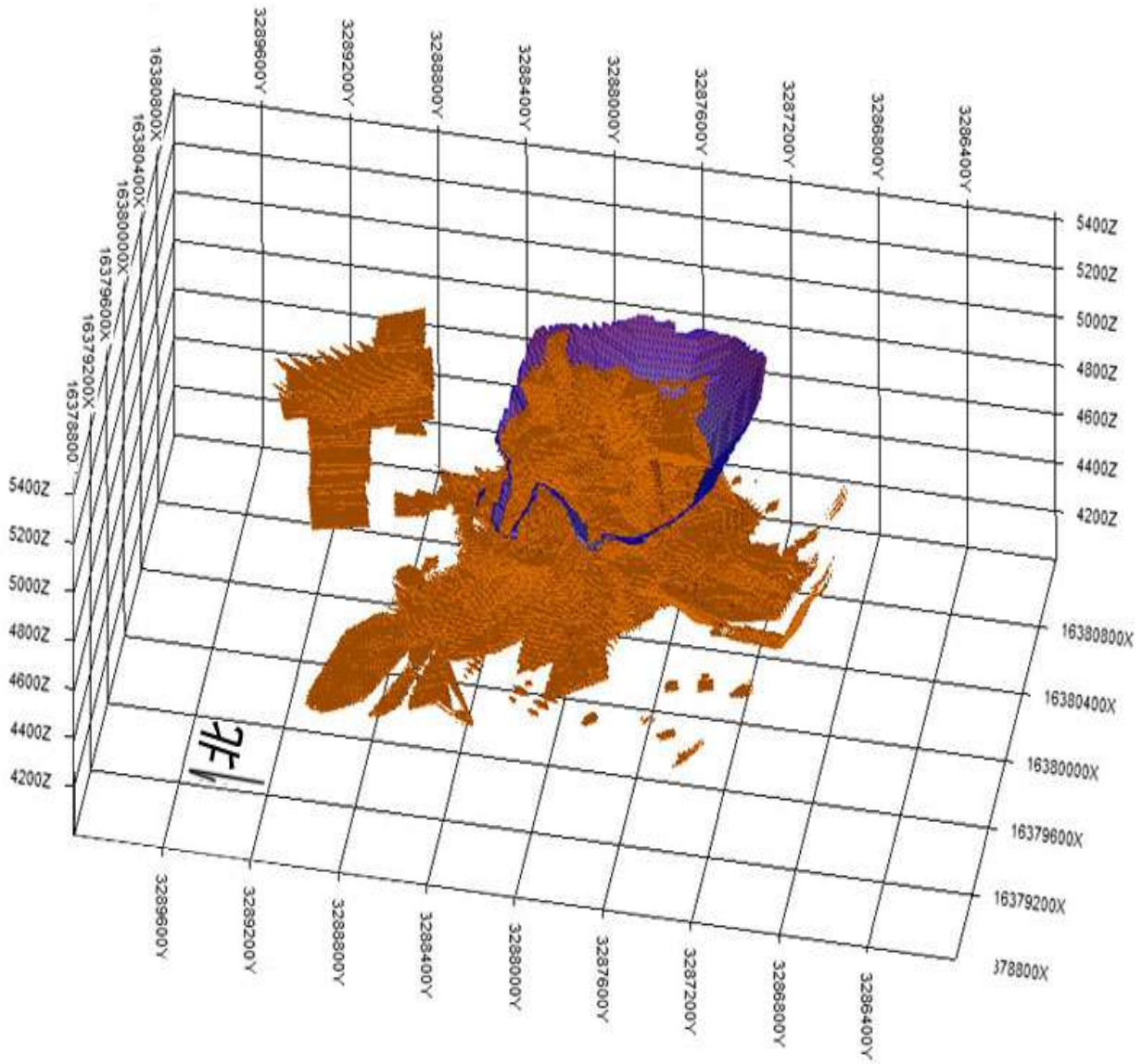


Figure 16.5 The shell wireframe from final optimization

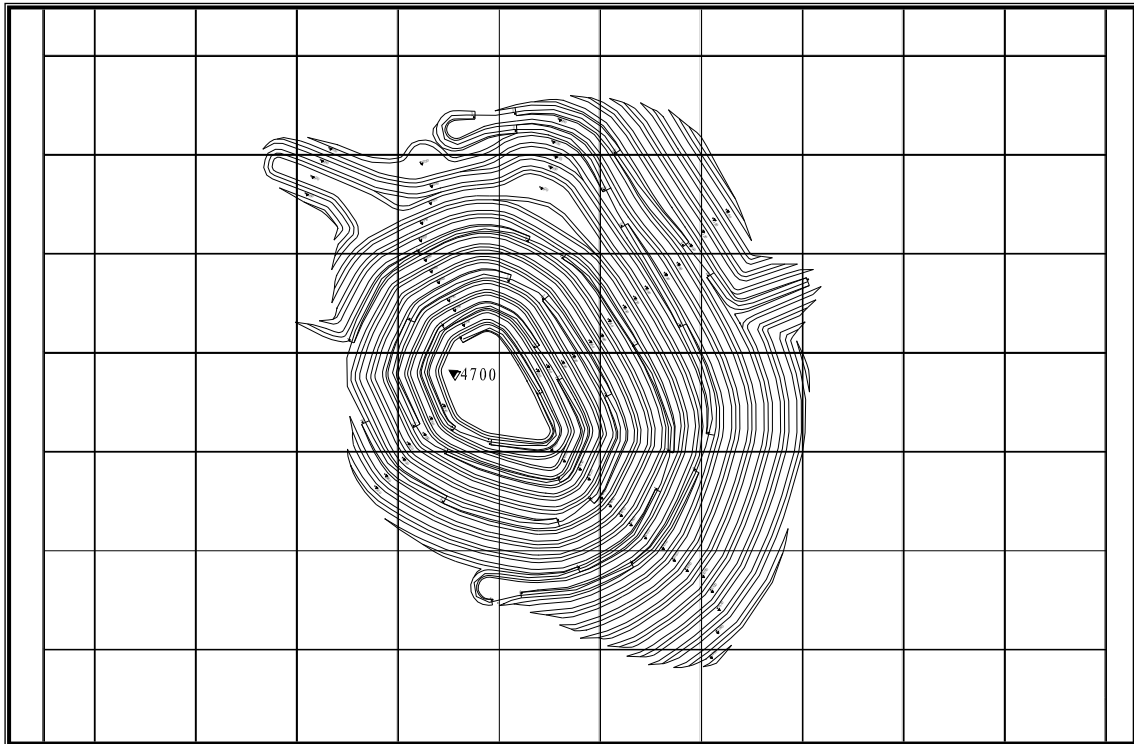


Figure 16.6 Final shell floor plan

Final shell parameters are shown in Table 16.4

Table 16.4 Main parameters of the final shell

Item	unit	parameter
Top (surface) size	m	1220×905
Bottom size	m	260×150
Maximum elev.	m	5225
Bench height	m	15(30m after merging two benches)
Bench slope angle	degree	55--65
Safety cleaning bench width	m	12--16
Bottom elev.	m	4700
Closed loop Elev.	m	4880
Maximum slope height	m	525
Slope height of concave section	m	180
Ultimate pit slope angle	degree	41.5--43.0

16.3.3 Development and Transportation for the Hornfels Orebody

The transportation method for the hornfels open-pit mine are as follow:

For ore, a combined system of road → fixed crushing station → surface belt conveyor → ore pass → inclined shaft belt conveyor is adopted; for waste rock, a single truck-road haulage system is used.

Ore is hauled from the stope face to the crushing station, and waste rock is transported to the waste dump, both by truck haulage. Six 60-tonne capacity dump trucks are employed for hauling ore and waste rock. The haul roads are designed to Class II mine road standard, with a maximum longitudinal gradient of 6.5%, an average gradient of 5%, a minimum turning radius of 30 m, a single-lane road width of 10 m, a two-lane road width of 14.5 m, and a transition gradient section length of not less than 60 m.

16.3.4 Mining and Stripping Process

(1) Drilling and Blasting Operations

Three down-the-hole (DTH) rigs with a hole diameter of 120 mm are used while stripping and mining drilling in the open pit, with a toe burden of 5 m. The hole spacing is 4.5 m and the row spacing is 4 m, with a drilling depth of 17 m. The blasting volume per metre of hole is 15.88 m³/m. The same rigs are also used for pre-split blasting of slopes, single-wall cut formation on hillsides, and other auxiliary drilling.

Medium-depth hole blasting adopts millisecond delay controlled blasting technique. ANFO (ammonium nitrate fuel oil) is the main explosive; emulsion explosive is used for wet holes. Two 15-t explosive charging trucks are used for blasting operations, with a charging efficiency of 250 kg/min.

The maximum fragment size for ore is controlled within 850 mm, and for waste rock within 1200 mm. Secondary crushing is carried out by two hydraulic rock breakers.

(2) Loading Operations

Three hydraulic excavators with a bucket capacity of 4 m³ are used as the primary loading equipment for ore and waste rock. The annual production capacity per unit is 2.447 million tonnes (244.7×10⁴ t).

(3) Auxiliary Equipment for The Mining Area

Two hydraulic backhoe excavators with a bucket capacity of 2.1 m³, two front-end loaders with a 5 m³ bucket, and two front-end loaders with a 3 m³ bucket are used as auxiliary loading equipment, primarily for auxiliary loading in the pit, slope maintenance, road maintenance, and other support activities.

For drilling site leveling, muckpile dressing, road construction, and assisting excavator operations, three 340-HP bulldozers are provided.

To reduce air pollution caused by road dust, two 25-t water trucks are equipped.

Given the high bearing capacity requirements for roads in large-scale open-pit

mines, one 120-HP vibratory roller and one 180-HP motor grader are also used.

16.3.5 Flood Control and Drainage for the Hornfels Open-Pit Mine

The topographic conditions for the hillside open-pit mining are favourable for natural drainage, so no dewatering equipment is required and a natural drainage system is adopted. However, it is necessary to ensure that the ground slope inside the pit is not less than 5‰ to prevent water ponding. In addition, interception ditches are excavated on the upstream side outside the pit boundary to intercept and divert surface runoff from outside the pit limit, preventing water from flowing into the pit. The flood interception channel adopts a trapezoidal cross-section with an approximate sectional area of 1.5m². It is designed that trapezoidal drainage ditches, unlined, are set at the cleaning benches at elevations 5120m and 5000m in the hornfels open pit, to discharge the internal catchment water from the open pit to the downstream area outside the pit (Table 16.5).

Table 16. 5 Parameters of drainage ditches at 5120m platform and 5000m platform

Order	Shape	size (bottom width× height,m)	Minimum slope (i)	Side slope ratio	length (m)
5120m ditch-north section	Trapezoidal cross-section	0.55×0.55	0.003	0.5	602
5120m ditch-south section		0.6×0.6	0.003	0.5	956
5000m ditch-north section		0.8×0.8	0.003	0.5	1320
5000m ditch-south section		0.65×0.65	0.003	0.5	572

When the mine enters the hollow open-pit mining phase, centralized dewatering is applied: a collection pool is excavated at the lowest working level, equipped with pumps, and the impounded water in the pit is lifted to the drainage ditch along the closed-loop contour for final discharge outside the pit.

16.3.6 Recommendation and Future Work

Strengthen slope monitoring to ensure construction safety, promptly conduct systematic slope mechanics studies of the entire mining area, and prepare for the next phase of the large-scale open-pit expansion project.

16.4 South Open-Pit Mine

16.4.1 Summary of Relevant Information

Since the start of the Phase II expansion project development, an open pit has been formed within the current mining license area, between exploration lines 36 and 72 in the southern skarn zone. The pit is approximately 1,000m long and 820m wide, roughly in the shape of an irregular circle. The current highest elevation of the open pit is 5,220m, and the lowest bench elevation is 4,895m, among which the benches above the 4,970 m level have been completely pushed back to the final pit limit (i.e., fully sloped to the final boundary).

16.4.2 Southern Open-pit Mine Boundary

The economically reasonable stripping ratio of the southern open-pit mine is 15.6 m³/m³.

Based on the engineering geology and hydrogeological conditions of the deposit, the occurrence characteristics of the ore body, and considering slope height and service life, the slope parameters are as follows:

Bench height:	15m (30m after merging of two)
Bench slope angle:	55°~70°
Cleaning bench width:	10~16m
Final slope angle:	< 43°

Using Micromine software, the boundary optimization and delimitation of the southern open-pit is carried out according to the technical and economic parameters in Table 16.6.

Table 16. 6 Major input parameters in Micromine for shell optimization

Itme	Unit	Parameter	notes
Block size	m	10×10×5	
Specific Gravity	t/ m ³	3.11	
Block Weight	t/ m ³	2.8	
Cu cutoff	%	0.2	<0.2% Cu as waste
Mining loses	%	2	mining recovery 98%
Ore dilution	%	2	

Item	Unit	Parameter	notes
Cu, Mo, Pb, Zn, Au, Ag Mill recovery	%	Cu: 85; Mo:70 Pb:85; Zn;75; Au:45;Ag:55	
Metal prices		Cu: 7.210kRMB/t Mo: 32 10kRMB /t Pb: 1.6 10kRMB/t; Zn: 2.310KRMB/t; Au: 595.0 RMB/g; Ag: 6.46 RMB/g	
Mining cost	1 RMB/t	14.72	
Striping cost	1 RMB/ m ³	31.22	
Mill cost	1 RMB/t	109.31	
Cost for admin and sale	RMB/t	42	
Final slope angle	degree	43	
Discount rate	%	9	

Between exploration lines 36 and 72, an approximately circular open-pit will be formed. The shell boundary generated by optimization and the perspective view of mining blocks are shown in Figure 16.7.

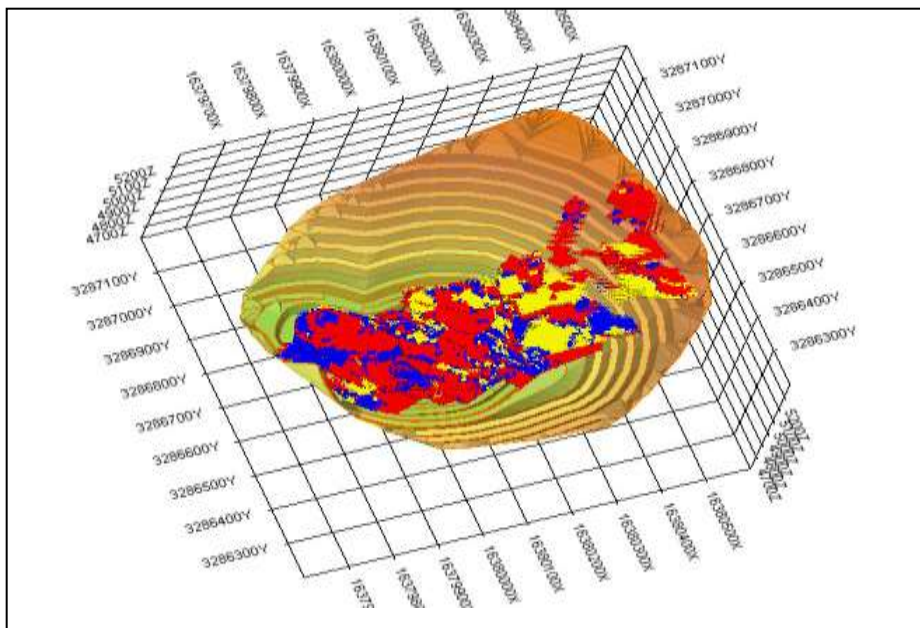


Figure 16.7 Optimized shell and block module perspective diagrams

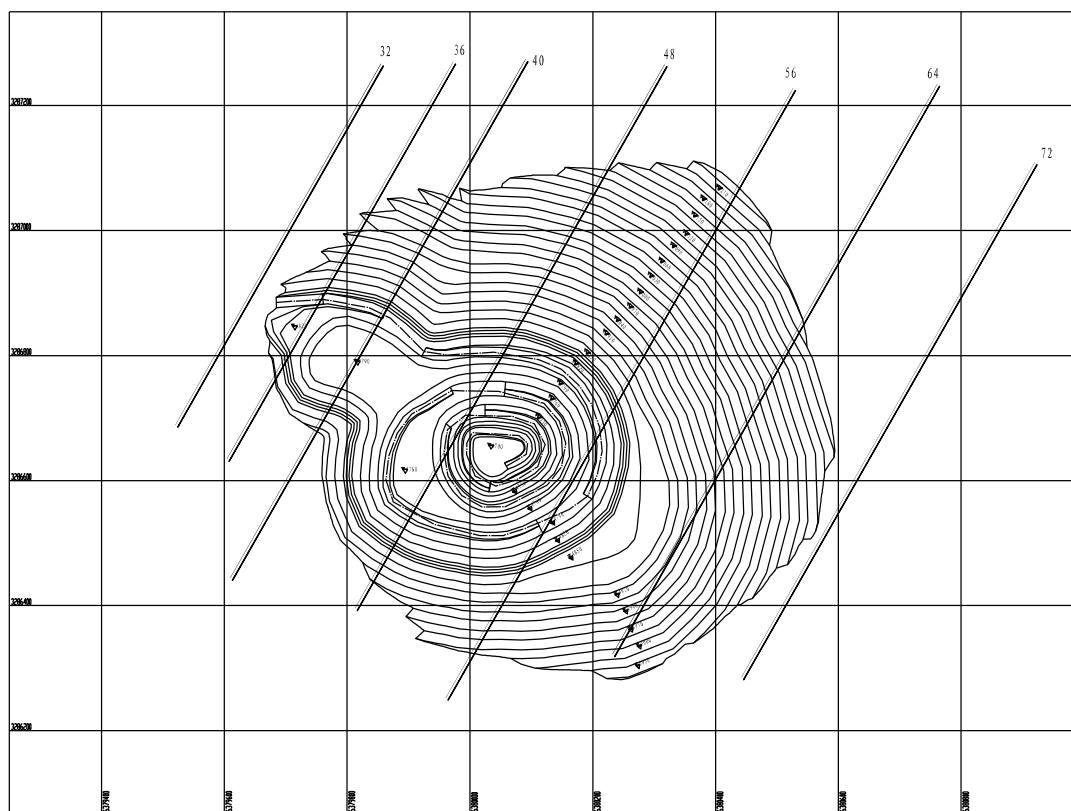


Figure 16.8 Outlined open-pit shell floor plan

The pit limit was designed in accordance with the orebody morphology, the chosen slope design parameters, and the layout requirements of the access/haulage roads. The final pit bottom is at elevation 4,715 m, and the pit is of the type that transitions from a hillside open pit to a hollow (below-the-closed-loop) open pit.

The final shell parameters of the southern open-pit are shown in Table 16.7.

Table 16.7 Main parameters of the final open-pit shell

Item	unit	parameters
Top (surface) size	m×m	925×820
Bottom size	m×m	80×60
Maximum Elev.	m	5312.07
Maximum slope height	m	5238

Item	unit	parameters
Pit Bottom height	m	4715
Maximum bench slope height	m	523
Depressed pit height	m	120
Closed loop height	m	4835
Bench height	m	15(30m after merging of two)
Last bench slope	degree	60--70
Cleaning bench width	m	10--16
Final slope angle	(°)	Less than 43

16.4.3 Southern Open-pit Haulage and Transportation

The southern open pit employs sixteen 60-tonne capacity dump trucks for haulage. The ore is subsequently transported to the No. 2 processing plant via a combined system of fixed crushing station → surface belt conveyor → ore pass → inclined shaft belt conveyor. A spiral layout is adopted for the deep, depressed (pit-section) portion of the open pit. The haul roads are designed to Class II mine road standard, with a maximum longitudinal gradient of 6.5%, an average gradient of 5%, a minimum turning radius of 30m, a single-lane road width of 10m, a two-lane road width of 14.5 m, and a transition gradient section length of not less than 60m.

16.4.4 Mining and Stripping Process

1. Drilling and Blasting Operations

Five down-the-hole (DTH) drills with a hole diameter of 120mm are selected for overburden stripping and ore drilling, with a toe burden of 5 m. For ore drilling, the hole spacing is 4.5m, the burden spacing is 4m, and the drilling depth is 17m. The blasting volume per metre of borehole is 15.88 m³/m, and the comprehensive annual drilling efficiency per drill unit is 858,000m³ (85.8×10⁴ m³). The same equipment is also tasked with pre-split slope blasting, single-wall cut formation on hillsides, and other auxiliary drilling.

Medium-depth hole blasting adopts millisecond delay controlled blasting technique. ANFO is the main explosive; emulsion explosive is used for wet holes. Two 15-t explosive charging trucks are employed for blasting operations, with a charging efficiency of 250 kg/min.

The maximum fragment size for ore is controlled within 850 mm, and for waste rock within 1,200mm. Two hydraulic rock breakers are selected for secondary breaking.

(2) Loading Operations

Hydraulic excavators with a bucket capacity of 2.1m³ are used as the primary loading equipment for ore, with an annual production capacity of 1.764 million tonnes (176.4×10⁴ t) per unit; hydraulic excavators with a 4 m³ bucket are used as the primary loading equipment for waste rock, with an annual production capacity of 2.447 million tonnes (244.7×10⁴ t) per unit. Based on the annual stripping and mining tonnage, three 4 m³ hydraulic backhoe excavators

and two 2.1 m³ hydraulic backhoe excavators are deployed.

(3) Auxiliary Equipment for Mine Area

Two hydraulic backhoe excavators with a 2.1 m³ bucket, three front-end loaders with a 5 m³ bucket, and two front-end loaders with a 3 m³ bucket are used as auxiliary loading equipment, primarily for auxiliary loading in the pit, slope maintenance, road maintenance, and other support activities.

For drilling site leveling, muckpile dressing, road construction, and assisting excavator operations, three 340-HP bulldozers are used. Two 25-t water trucks are provided to reduce air pollution from road dust. Given the high bearing capacity requirements of roads for large-scale open-pit mining equipment, one 120-HP vibratory roller and one 180-HP motor grader are also used.

16.4.5 Southern Open-Pit Water Control and Drainage

For hillside open-pit mining, the topographic conditions are favourable for natural drainage; therefore, no dewatering equipment is required, and a natural drainage system is adopted. However, it is necessary to ensure that the ground slope within the pit is not less than 5‰ to prevent water accumulation. In addition, interception ditches are excavated on the upstream side outside the pit limit to intercept and divert surface runoff from outside the boundary, preventing water from flowing into the pit. The flood interception channel has a trapezoidal cross-section with an approximate sectional area of 1.5 m².

It is designed that unlined trapezoidal drainage ditches are installed at the cleaning benches at elevations 5,120m, 5,030m, and 4,910m in the southern open pit to discharge the internal catchment water from the pit to the downstream area outside the pit limit.

Table 16.8 Ditch parameter at 5120m Bench, 5030m Bench, and 4910m Bench

Order	shape	Net size (bottom width×height,m)	Side slope ration	Minimum slope angle (i)	length (m)
5120m ditch	The trapezoidal cross-section, The ditch splits from the middle to both sides.	0.45×0.45	0.5	0.003	794
5030m ditch		0.55×0.55	0.5	0.003	1112
4910m ditch		0.75×0.75	0.5	0.003	1449

After the mine enters the hollow (pit-section) open-pit mining stage, a centralized drainage system is adopted: a collection pool is excavated at the lowest working level, pumps are installed, and the accumulated water in the pit is lifted to the drainage ditch at the closed-loop elevation to be discharged out of the pit. .

16.4.6 Suggestions and Future Work

Strengthen slope monitoring to ensure construction safety, promptly conduct systematic slope mechanics studies of the entire mining area, and prepare for the next phase of the large open-pit expansion project.

16.5 Underground Mining Systems

16.5.1 Summary of Relevant Information

Depending on the variations in orebody thickness and dip angle, three types of cut-and-fill mining methods are adopted underground, with two-step cut-and-fill stoping being the primary approach. A multi-level combined development and haulage system has been established underground. A combined forced-and-exhaust diagonal ventilation system and a cemented whole-tailings backfill system are employed. Various types of pillars are left in place underground, stope structural parameters are strictly controlled, and the stoping and backfilling procedures are standardized, ensuring safe and efficient underground mining.

16.5.2 Mining Methods

1. Sublevel Stoping with Backfilling

1) Block Layout and Structural Parameters

A stage haulage drift is arranged every 120 m along the orebody strike, forming a large panel of 120 m in width. A 20-m-wide panel pillar is left between adjacent large panels. Within each large panel, a 15-m-wide continuous pillar is left at the central position, dividing the large panel into two small panels of 60 m width each. Within each small panel, mining areas (districts) are delineated along the long axis of the panel, with each mining area being 90 m long. One to two ore passes are arranged in each mining area. Stopew are then defined within each mining area, with a standard stope width of 15 m and a standard length of 42.5 m. Each mining area contains six stopes, which are alternately designated as primary stopes and secondary stopes.

Where rock mass conditions are poor, the stope is subdivided along its length into smaller stopes of 15–30 m in length as independent extraction units; alternatively, a stope may be divided along the span into two stopes with a reduced width of 7.5 m (or both length and span reduced simultaneously) as independent extraction units, in order to control the exposed area and exposure time of the hanging-wall.

Within the stage height, sublevels are delineated along the orebody longitudinal direction, with a sublevel height of 20–27 m.

2) Development and Cutting

Sublevel haulage drifts are driven in the large-panel pillars (20 m wide) to serve as haulage access to each stope. Stope backfill and return-air drifts are driven in the small-panel pillars (15 m wide). Each sublevel haulage drift and backfill drift are

connected via ramps. One return-air raise and one to two ore passes are arranged for each mining area. The elevation difference between the lowest sublevel drift and the rail haulage level is controlled at about 20 m to ensure that the ore pass has sufficient storage time and reduces interference between ore extraction and transportation.

From each sublevel haulage drift, a drilling-and-mucking drift is driven along the stope axis. A cut cross-cut and a cut raise are driven at the end of the stope. The cut raise is formed by large-diameter blasthole VCR (Vertical Crater Retreat) method, followed by drilling upward parallel blast holes in the cut cross-cut and blasting using the cut raise as the free face to form a cut slot. The stope employs a flat-bottom mucking configuration.

3) Stope Extraction

Each stope is mined from the bottom upward, sublevel by sublevel within the stage.

A Simba H1354 (or GZ919) hydraulic jumbo drill is used to drill upward inclined fan-shaped blast holes in each sublevel drilling drift, blasting the ore against the pre-formed cut slot.

A Chinese-made BCJ-4 explosive charging truck is used, with No. 2 rock emulsion granular explosive as the explosive. Digital detonators are used for sequential blasting. Two to three rows of blast holes are fired per blast, with multiple ore blocks in a mining area blasted simultaneously.

An LH514E electric remote-controlled LHD is used for mucking inside the stope, with ore discharged through the drilling-and-mucking drift, sublevel haulage drift, and panel ore passes. The allowable ore fragment size is ≤ 500 mm, with a boulder yield of 1–2%; boulders are broken centrally using hydraulic breakers.

After each sublevel is extracted, backfilled, and cured, the next upper sublevel is mined. Secondary stopes are extracted one sublevel behind the primary stopes.

4) Stope Ventilation

Fresh air enters the working face via the sublevel haulage drift and the drilling-and-mucking drift, while contaminated air is discharged through the panel return-air raise into the stage return-air drift. For areas after blasting, stopes far from the main airflow, and dead-end working faces, auxiliary fans are used to enhance ventilation.

5) Pillar Recovery

In view of the special condition of simultaneous mining of the upper hornfels open pit and the lower skarn orebody, and to ensure production safety and control ground pressure, the large-panel pillars (20 m wide) are designed to remain unmined (not recovered).

6) Stope Backfilling

Prior to backfilling, preparation work is carried out: bulkheads are erected at both ends of the drilling-and-mucking drift on the current sublevel for sealing, and backfill pipelines are installed in the drilling-and-mucking drift of the upper sublevel. Multi-point and multi-stage backfilling is performed until the stope is backfilled to the roof.

The backfill strength must satisfy the following requirements: the backfill in primary stopes must withstand blasting disturbance during extraction of secondary stopes without collapsing, and must ensure the safety of mucking equipment; it must meet the requirement for a large-scale LHD floor; the backfill strength in the first sublevel must meet the safety requirements for the subsequent lower-level extraction; and the combined supporting action of the backfill and the panel pillars must satisfy the safety requirements for the combined open-pit and underground mining.

2. Bottom-Trench Small-Sublevel Open Stopping with Subsequent Backfill

This method is applicable to gently inclined and horizontal ore bodies with a thickness of 15–30 m and a dip angle of less than 11°.

1) Block Layout and Structural Parameters

The ore block adopts a panel layout. Each panel is 120 m long along the strike, with a panel pillar width of 15 m. Within the panel, stopes are arranged for two-step extraction. Each panel comprises six stopes, which are divided into primary stopes and secondary stopes, arranged alternately. Both primary and secondary stopes have a width of 18 m.

The bottom of the primary stope has a trench structure for LHD mucking, and the secondary stope drilling-and-mucking drift is used as the mucking drift. The secondary stope adopts a flat-bottom structure with remote-controlled LHD mucking, where the LHD loads ore from the middle of the ore block and retreats along the drilling-and-mucking drift.

2) Development and Cutting

Development and cutting works are arranged on a panel-by-panel basis. A ramp is driven for every two panels. From the ramp, along the orebody strike and approximately 5 m below the footwall of the orebody at the junction of the primary and secondary stopes, a mucking drift is driven. From this mucking drift, at an angle of about 45°, a mucking access is driven horizontally to reach the trench drift of the primary and secondary stopes. Ore passes are arranged in the panel pillar at corresponding positions of the mucking drift. In the upper part of the panel pillar, along the orebody hanging wall, a backfill and return-air inclined drift is driven. Cut raises and cut cross-cuts are arranged at the ends of the ore rooms.

3) Stope Extraction

First, upward parallel blast holes are drilled in the cut cross-cut and blasted against the cut raise as the free face to form a cut slot.

Drilling is done with a Simba H1354 medium-depth hydraulic jumbo drill. Upward inclined fan-shaped blast holes are drilled in each trench drift, blasting the ore against the pre-formed cut slot.

Charging is carried out with a Chinese-made BCJ-4 explosive charging truck, using No. 2 rock granular explosive, with digital detonators for initiation.

Electric LHDs are used for mucking in the mucking access, with ore discharged through ore passes. Residual ore is mucked by remote-controlled LHDs, and boulders are broken centrally using hydraulic breakers.

4) Stope Backfilling

Prior to tailings backfilling, preparation work is carried out: backfill pipelines are installed in the backfill and return-air inclined drift, and bulkheads are erected in the lower mucking access and trench drift.

5) Pillar Recovery

In view of the special condition of simultaneous mining of the upper hornfels open pit and the lower skarn orebody, and to ensure production safety and control ground pressure, the panel pillars (15m wide) are designed to remain unmined (not recovered).

3. Upward Horizontal Cut-and-Fill Stopping

1) Panel and Stope Layout

The orebody is divided into panels, with each panel serving as a mining unit for production. Panels are arranged along the strike. Each panel consists of four stopes. The width of the panel is equal to the horizontal thickness of the orebody, and the height is the stage height of 50 m. Within each panel, stopes (rooms) and pillars are delineated for two-step extraction. The stope (room) width is 12 m, and the pillar width is 15 m. A sill pillar of 4–6 m height is left, while no crown pillars or rib pillars are left.

Stopes are mined in horizontal slices, with a slice height of 3.1 m. Every four slices form a sublevel, with a sublevel height of 12.5 m, and every four sublevels form a stage. The first slice of the stope has a roof height of 4.1 m; after extraction, it is backfilled with 3.1 m, leaving 1.0 m as blasting compensation space for the next slice (downward + horizontal ore breaking).

Primary stopes (rooms) are mined first, followed by secondary stopes (pillars). The rooms are backfilled with cemented fill, while the pillars are backfilled with uncemented fill. No pillars are left between panels.

2) Development and Cutting

Sublevel drifts are driven in the footwall through the main ramp. From the sublevel drifts, perpendicular to the orebody strike, slice access drifts are driven downward to reach the orebody, and after gradually cutting the roof and floor, layered slice access drifts are formed to meet the requirements of each slice extraction. After every four slices are mined, a new slice access drift is driven from the sublevel drift. Through the slice access drifts, horizontal bottom-cut drifts are driven perpendicular to the strike within the orebody, then widened to the stope (pillar) width to form a bottom-cut layer. A backfill and return-air raise is arranged on the hanging-wall side of the stope. Ore passes are arranged along the orebody strike (at 50 m intervals), and an LHD transports ore and waste through the stope access and access drifts to the ore passes.

3) Extraction, Mucking and Ventilation

A Boomer 281 jumbo drill is used to drill horizontal blast holes for downward ore breaking. The broken ore is loaded by an ACY-3 LHD and discharged to the panel ore

passes, then dropped to the stage rail haulage level.

Fresh air enters the stope via the stage cross-cut, intake raise, sublevel drift, slice access drift, or via the panel ramp, sublevel drift, and slice access drift. Contaminated air after cleaning the working face is discharged from the hanging-wall backfill return-air raise into the upper stage return-air drift.

4) Backfilling

After extraction of each stope (pillar) is completed, the floor is cleaned and levelled to keep it smooth. Then, classified tailings (non-)cemented backfill materials are used to fill the void.

Backfill pipelines are laid from the backfill return-air raise to the stope. For each slice, the backfill height should leave at least 1.5 m below the stope roof to provide free space for blasting in the next upper slice. After one slice is backfilled in the stope (pillar), the cemented pad must be cured to reach the required strength before mining the next upper slice. This cycle continues until the entire stope (pillar) is completely extracted.

Table 16. 9 Major Technical Standards of Underground Mining

ID	Item	Unit	Sublevel Open Stopping with Subsequent Backfill	Bottom-Trench Small-Sublevel Open Stopping with Subsequent Backfill	Upward Horizontal Slice Cut-and-Fill	Combined
1	Mine production (10,000 t/a)	10,000 t/a				660
1	Mine production (t/d)	t/d				20000
2	Mine service life (Service life)	a				
2	Mine service life (Construction period)	a				
7	Proportion of mining method	%	80	15	5	100
8	Panel production capacity	t/d	1000	800	400	940
9	Number of panels in simultaneous operation	–	14	4	2	20
0	Ore loss rate	%	14	18	11	14.45
11	Dilution rate	%	10	11	8	10.05
12	By-product ore rate	%	16	15	16	15.85
13	Development and cutting ratio per kilotonne	m ³ /kt	23	50	156	34
14	Development ratio (overall)	m ³ /kt				50
14	Exploration and development	m ³ /kt				16
14	Development and cutting	m ³ /kt				34
15	Number of simultaneous development faces	–				13
16	Mining equipment efficiency					
16	Medium-depth drill jumbo	m/machine-shift				120

ID	Item	Unit	Sublevel Open Stopping with Subsequent Backfill	Bottom-Trench Small-Sublevel Open Stopping with Subsequent Backfill	Upward Horizontal Slice Cut-and-Fill	Combined
16	– Short-hole drill jumbo	m/machine-shift				200
16	– 6 m ³ LHD	kt/machine-year				500
16	– 4 m ³ LHD	kt/machine-year				400
16	– 3 m ³ LHD	t/machine-year				300
16	– ZL50E loader (3 m ³)	kt/machine-year				300
17	Daily development advance	m ³ /d	1000			
17	Daily waste rock production	t/d	864			
17	Daily by-product ore production	t/d	2040			

16.5.3 Development and Transportation System

At present, a development and haulage system has been established above the 4,300 m elevation in the underground mine, with centralized rail haulage levels at 4,450 m, 4,400 m and 4,300m. The mine adopts a combined development system consisting of a belt incline shaft + 4,490 m auxiliary ramp + 4,505 m ramp + 4,261 m main adit. The longitudinal projection of the development system is shown in Figure 16.9.

The belt incline shaft is responsible for ore transport to the No. 2 processing plant. Ore produced from each level is hauled by 20 t electric locomotives pulling 10 m³ bottom-dump cars to Nos. 4 and 5 vertical transfer ore passes, where it is lowered to a crushing station at the 4,250 m elevation. The ore is fed into a Type 5065 gyratory crusher. After crushing to a particle size of less than 250 mm, the ore is transferred via the No. 2 protection belt conveyor to the No. 1 main belt conveyor, which transports it along the belt incline shaft to the surface transfer station, and then via the surface transfer belt conveyor to the ore stockpile at the No. 2 processing plant.

Underground production waste rock is hauled to the surface via the 4,490 m and 4,505 m ramps and discharged to the No. 1 waste dump.

16.5.4 Underground Ventilation

The mine currently adopts a two-wing diagonal ventilation system with multiple intake shafts, i.e., the dedicated intake shaft and the auxiliary intake shaft serve as air intakes, while the south-wing and north-wing return-air shafts serve as exhausts. Fan stations are installed at the surface collars of the dedicated intake shaft, auxiliary intake shaft, and the south-wing and north-wing return-air shafts. A combined forced-and-exhaust ventilation method is employed.

The ventilation system diagram is shown in Figure 16.10.

(1) Main Ventilation System

A two-wing diagonal ventilation system with multiple intake shafts is adopted, with the dedicated intake shaft and auxiliary intake shaft for intake air, and the south-wing and north-wing return-air shafts for exhaust, using a combined forced-and-exhaust ventilation method. Two counter-rotating axial fans are installed at each of the dedicated intake shaft, the south return-air shaft, and the north return-air shaft. One counter-rotating axial fan is installed at the auxiliary intake shaft.

(2) Stope Ventilation System

For the 4,400 m and 4,450 m levels: Fresh air enters via the dedicated intake shaft and the original skip shaft into the 4,400 m rail haulage level, converging at the northern 4,400 m level intake shaft. It is then distributed to the production sublevels at 4,420 m, 4,440 m, 4,465 m, 4,490 m and 4,510 m according to the air quantity requirements. The contaminated air after sweeping the working faces flows to the south and north return-air shafts respectively, and is exhausted to the surface.

For the 4,300 m level: Fresh air enters via the dedicated intake shaft and the original skip shaft into the 4,300 m rail haulage level, converging at the northern 4,300 m level intake shaft. It is then distributed to the production sublevels at 4,320 m, 4,347 m and 4,474 m according to the air quantity requirements. The contaminated air after sweeping the working faces flows to the south and north return-air shafts respectively, and is exhausted to the surface. A schematic diagram of the underground ventilation system is shown in Figure 16.10.

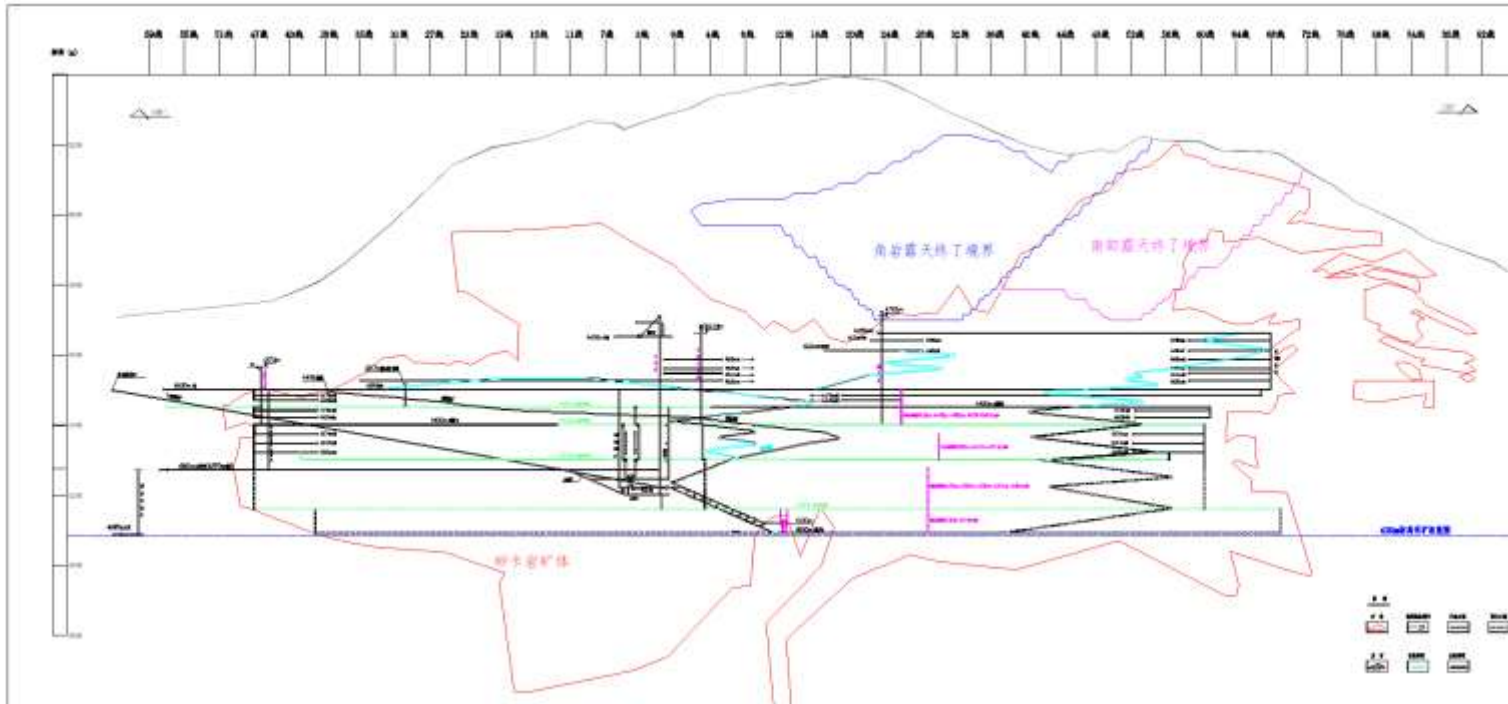


Figure 16. 9 Longitudinal projection diagram of the transportation system

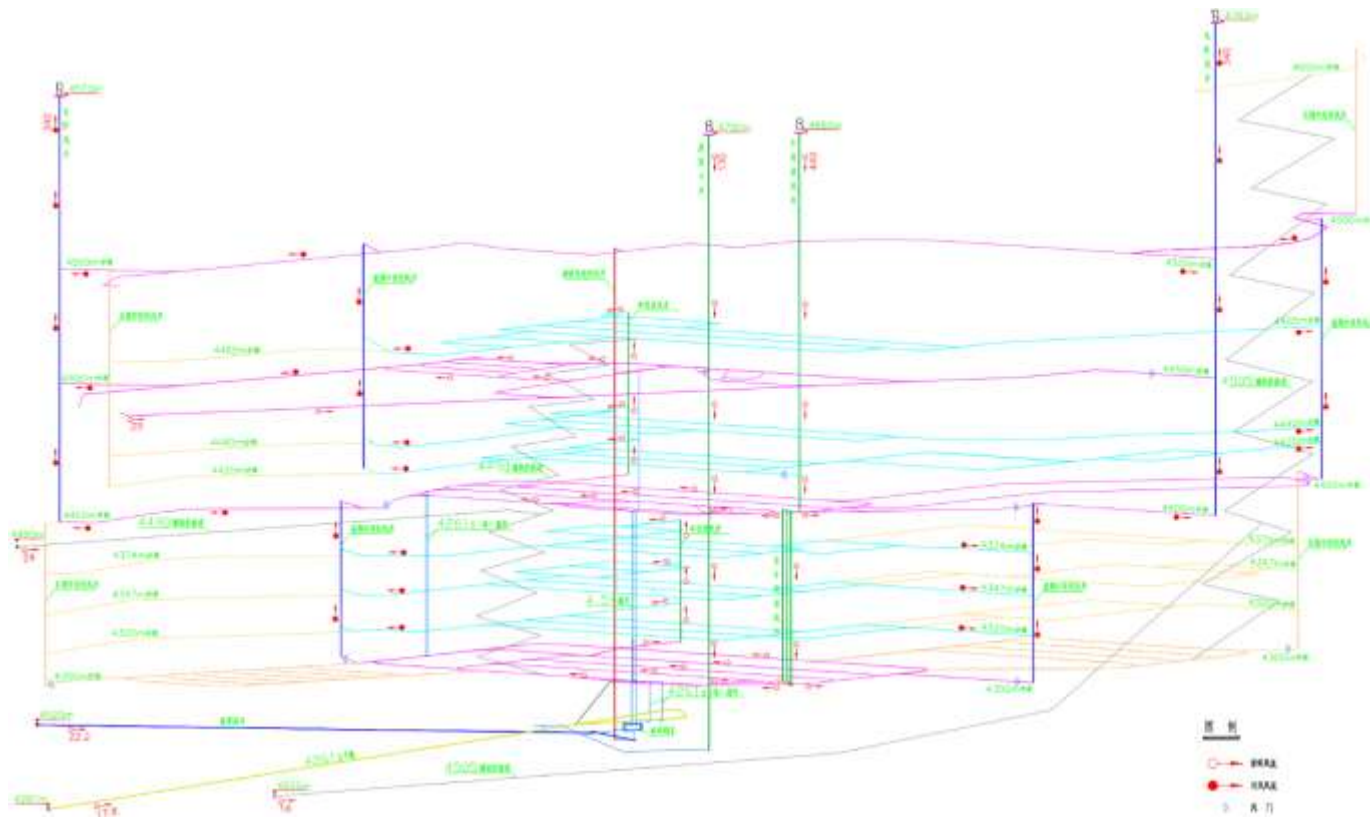


Figure 16.10 Schematic diagram of the underground ventilation system

16.5.5 Underground Backfilling

A backfill plant has already been constructed in the northern part of the mine area at elevation 4,820 m, which adopts whole-tailings backfilling with cement or new-type cementitious materials as the binder. Tailings from the Phase II processing plant are thickened to approximately 60% solids concentration by deep-cone thickeners at the processing plant, and then pumped by diaphragm pumps to the vertical sand silos at the backfill plant. After further dewatering and densification in the vertical sand silos, the tailings are mixed and agitated uniformly with cement to prepare a qualified backfill slurry, which is then transported to underground stopes for backfilling. The backfill plant is equipped with four backfill slurry preparation systems (three operating and one standby), with a single-system capacity of 180 m³/h.

17 RECOVERY METHODS

17.1 Introduction

This section describes in detail the process flowsheet and engineering design basis of the No. 2 Concentrator Plant operated by Tibet Huatailong Mining Development Co., Ltd. The concentrator process design is based on the test work results, evaluation data, trade-off studies, and related design information described in Section 13. The processing facilities primarily consist of crushing, grinding and classification, flotation, and concentrate dewatering circuits. The plant is designed to process 12.6 Mtpa of copper-molybdenum ore and copper-lead-zinc ore sourced from both open-pit and underground mining operations.

The No. 2 Concentrator Plant encompasses the complete mineral processing chain, from crushing through final concentrate shipment and tailings disposal.

17.2 Plant Process Flowsheet

The major processing facilities at the No. 2 Concentrator Plant include:

- Crushing
- Grinding and classification
- Flotation
- Concentrate thickening and filtration
- Supporting auxiliary facilities

The process flowsheet of the concentrator is illustrated in the figure below.

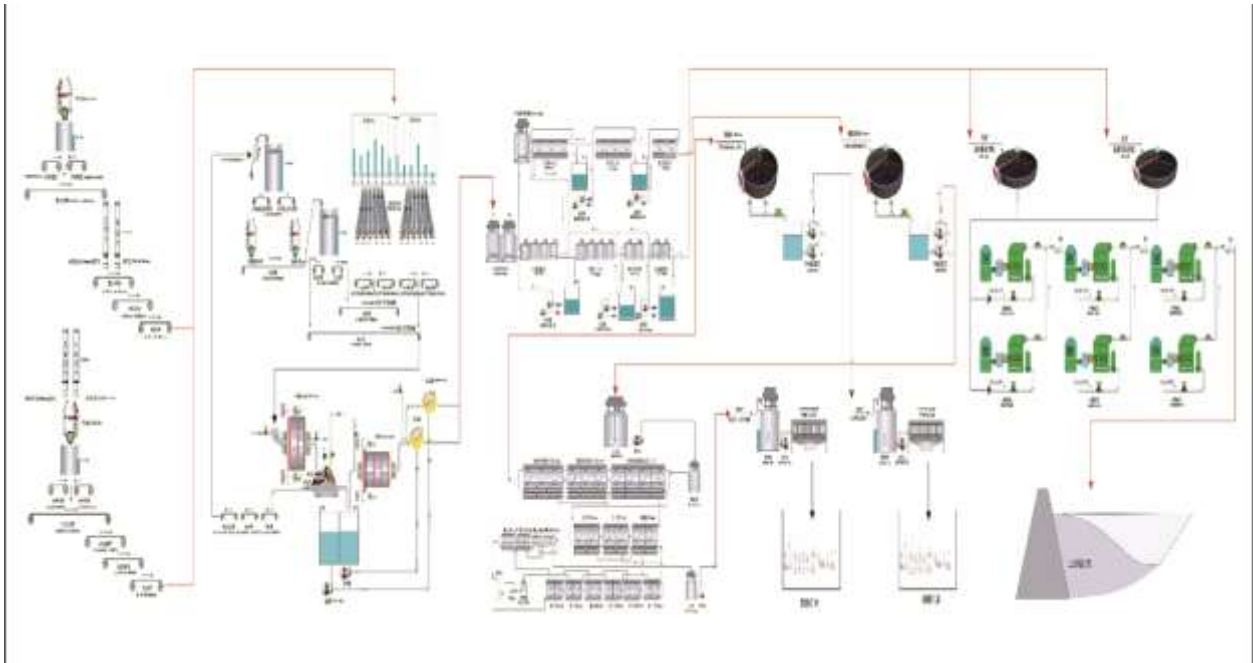


Figure 17. 1 Concentrator Process Flowsheet

17.2.1 Crushing

Crushing Circuit

The crushing system consists of separate open-pit and underground circuits. Both systems have identical processing capacities and process configurations. A single-stage open-circuit crushing process is utilized. Skarn ore is mined underground. Following primary crushing underground, the ore is conveyed by belt conveyor to the concentrator's ROM stockpile. Hornfels ore is mined by open-pit methods. After primary crushing, it is transported by belt conveyor to the concentrator's ROM stockpile. The particle size of the feed delivered to the ROM stockpile is less than 300 mm.

Open-Pit Crushing Station

The ore is transported by truck to the primary crushing station and fed into a 50-65 hydraulic gyratory crusher. Crushed ore is discharged into a surge bin beneath the crusher. Ore from the surge bin is withdrawn by a heavy-duty apron feeder onto the open-pit conveyor system and transported via multiple belt conveyors to the ROM stockpile feed point.

Underground Crushing Station

The ROM ore is transported by underground electric locomotives and fed by a vibrating feeder into a 50-65 hydraulic gyratory crusher. Crushed ore enters a surge bin beneath the crusher. Ore is then withdrawn by a heavy-duty apron feeder onto the underground conveyor system and transported via multiple belt conveyors to the ROM stockpile feed point.

Dust suppression measures have been incorporated into the crushing plant design.

17.2.2 Grinding and Classification

The milling and classification circuit consists of two parallel processing lines, each dedicated to a different ore type. Both lines have identical capacities and process configurations.

The circuit utilizes a Semi-Autogenous Grinding (SAG) + Pebble Crushing + Ball Milling configuration (SABC circuit).

Performance targets include:

- SAG mill product: 30% passing 0.074 mm
- Ball mill product: 50–55% passing 0.074 mm
- Hydrocyclone overflow: 70% passing 0.074 mm

Grinding Circuit

Ore is fed from the heavy-duty apron feeder via belt conveyor into a $\Phi 10.37 \text{ m} \times 5.19 \text{ m}$ dual-drive SAG mill, which then discharges passes through a linear vibrating screen. Oversize material is conveyed to a pebble bin and subsequently processed through an HP500 cone crusher before being returned to the SAG mill. Screen undersize combines with discharge from a $\Phi 7.32 \text{ m} \times 12.5 \text{ m}$ dual-drive overflow ball mill and flows into a slurry pump sump. The slurry is pumped to a cluster of $G660 \times 10$ hydrocyclones.

- Cyclone overflow reports to flotation.
- Cyclone underflow returns to the ball mill for further grinding.

17.2.3 Flotation

The flotation plant consists of two independent circuits:

- Circuit 1: Copper-Lead-Zinc Bulk Flotation
- Circuit 2: Copper-Molybdenum Bulk Flotation followed by Copper-Molybdenum Separation

Final products include:

- Copper-Lead-Zinc bulk concentrate
- Copper concentrate
- Molybdenum concentrate

Copper-Lead-Zinc Bulk Flotation

The flowsheet consists of:

- 1 rougher stage
- 3 scavenger stages
- 2 cleaner stages

Conditioning is performed in two $\Phi 8,000 \times 8,500$ mm high-efficiency mixing tanks.

Rougher and scavenger flotation use KYF-200 flotation cells arranged as:

- 6 rougher cells
- 2 scavenger cells
- 2 scavenger cells
- 2 scavenger cells

The two cleaner stages utilize KYF-50 flotation cells arranged as:

- 3 cleaner cells
- 3 cleaner cells

All middlings are returned via froth pumps.

Copper-Molybdenum Bulk Flotation

The flowsheet consists of:

- 1 rougher stage
- 3 scavenger stages
- 3 cleaner stages

Conditioning is performed in two $\Phi 8,000 \times 8,500$ mm high-efficiency mixing tanks.

Rougher and scavenger flotation utilize KYF-200 flotation cells arranged as:

- 6 rougher cells
- 2 scavenger cells
- 2 scavenger cells
- 2 scavenger cells

The three cleaner stages utilize KYF-50 flotation cells arranged as:

- 3 cleaner cells
- 3 cleaner cells
- 2 cleaner cells

All middlings are returned via froth pumps.

Copper-Molybdenum Separation

The copper-molybdenum separation circuit consists of:

- 1 rougher stage
- 2 scavenger stages
- 5 cleaner stages

Rougher and scavenger flotation utilize XCF-24/KYF-24 flotation cells arranged as:

- 2 rougher cells
- 2 scavenger cells
- 2 scavenger cells

Cleaner stages utilize:

- Cleaner 1: XCF-16/KYF-16
- Cleaner 2: XCF-12/KYF-12
- Cleaner 3: XCF-8/KYF-8
- Cleaner 4: XCF-8/KYF-8
- Cleaner 5: XCF-6/KYF-6

Cleaner stages are configured as:

- 2 + 2 + 2 + 2 + 2 cells

Scavenger tailings constitute the final copper concentrate.

The fifth cleaner concentrate constitutes the final molybdenum concentrate.

17.2.4 Concentrate Dewatering

Copper-lead-zinc bulk concentrate is thickened in a GZN45 thickener and filtered using a CJZH-18/100/30 plate-and-frame filter press. Final concentrate moisture is maintained below 12%, and the concentrate is bagged for sale.

Copper concentrate follows the same process:

- GZN45 thickener
- CJZH-18/100/30 plate-and-frame filter press
- Final moisture below 12%
- Bagged for sale

Molybdenum concentrate is stored in agitated tanks and dewatered using an XMZGE80/1000-U plate-and-frame filter press. Overflow from the agitation tanks and filtrate from the filter press are directed to a ZXN200 inclined-plate thickener. Settled molybdenum concentrate recovered in the thickener is returned to the filter press, reducing molybdenum losses.

17.2.5 Auxiliary Facilities and Reagents

(1) ROM Stockpile

- Effective storage volume: 64,000 m³
- Ore storage capacity: 124.16 kt
- Storage duration: 3.1 days

(2) Buffer Ore Bins

To accommodate choke-fed rock crushing operation and balance the differing operating schedules between crushing and grinding, buffer bins are installed both upstream and downstream of the rock crusher.

- Upstream bin volume: 575 m³
- Upstream capacity: 1,127 t
- Upstream retention time: 2.2 h
- Downstream bin volume: 627 m³
- Downstream capacity: 1,229 t
- Downstream retention time: 2.4 h

(3) Concentrate Storage

Bagged concentrate storage areas are located within the concentrate dewatering facility.

Storage areas:

- 1,980 m²
- 720 m²

Corresponding storage durations:

- Approximately 24 days
- Approximately 60 days

(4) Lime Milk Preparation Facility

To ensure continuous operation, a covered quicklime storage yard is provided.

A small lime surge bin is installed upstream of the ball mill for process control.

Storage capacities include:

- Lime stockpile: 1,400 m³ (1,700 t)
- Lime bin: 42 m³ (50 t)

Storage durations:

- 17.5 days
- 0.6 days

(5) Reagent Facilities

All flotation reagents are purchased externally and delivered to site in drums by truck. Reagents requiring preparation are stored in the reagent preparation building and lifted by crane to mixing tanks, where water is added to achieve the required concentration. Prepared reagents are pumped to reagent storage tanks equipped with level sensors that automatically control pump operation. Reagents not requiring preparation are lifted directly to the reagent storage tank platform and manually transferred into storage tanks.

(6) Maintenance Facilities

All process areas are equipped with maintenance cranes for routine servicing.

Maintenance lifting equipment is installed in:

- Crushing plant
- Screening plant
- Grinding plant
- Flotation plant
- Concentrate dewatering and drying plant

Adequate maintenance access and working areas are incorporated into the facility layout. Belt conveyors are equipped with 1–5 t electric hoists to facilitate maintenance activities. Major plant overhauls are outsourced to specialized contractors.

(7) Other Auxiliary Facilities

A dedicated grinding media storage facility is provided to ensure

uninterrupted ball consumption requirements. Grinding balls are transferred by crane to ball addition hoppers located at the mill feed end.

Electromagnetic metal detectors are installed above conveyor belts upstream of the rock crushing equipment to remove tramp iron and prevent equipment damage.

Flotation air is supplied by dedicated blowers. Due to elevated noise levels, the blower installation is housed in a separate blower building adjacent to the flotation area.

Wastewater from all plant areas is collected and routed to centralized treatment facilities to prevent uncontrolled discharge and maintain plant hygiene. Each operating area contains isolated operator rooms and instrument/control rooms to provide a safe and comfortable working environment.

The plant is designed with adequate ventilation throughout, including dedicated dust collection and ventilation systems in dust-generating areas.

The overall safety design follows applicable national occupational health and safety regulations and adheres to the principle of "Safety First." All operating platforms exceeding 0.6 m in height are equipped with guardrails or protective barriers. Warning signs are installed in hazardous areas throughout the plant to ensure personnel safety.

18 PROJECT INFRASTRUCTURE

18.1 Introduction

Infrastructure is the core support for the construction and operation of mining projects, a prerequisite for ensuring continuous, stable, safe, compliant, and green low-carbon development, and plays a decisive role in the overall effectiveness and investment returns of a project throughout its entire lifecycle.. This chapter, based on the actual situation of the Huatailong Company's Jiama Copper-Polymetallic Project, strictly adheres to national and industry mine construction standards, safety regulations, and environmental protection requirements. Combining the unique geographical and climatic environment of the Tibetan Plateau with the project's overall planning layout, it systematically elaborates on the planning ideas, construction content, technical solutions, and key implementation points of the project's infrastructure, including transportation, water supply and drainage, power supply, communication, general layout and transportation, and public auxiliary utilities. Through integrated planning, sound engineering design, and efficient allocation of resources, the Project has established an infrastructure system that is safe, reliable, cost-effective, environmentally responsible, and easy to operate and maintain. This infrastructure provides essential support for the efficient operation of the mining, mineral processing, and transportation systems while meeting environmental protection, occupational health and safety, and long-term sustainability objectives. The overall infrastructure strategy is intended to support the development of the Project as a benchmark mining operation within the Tibet Autonomous Region.

18.1.1 General Layout and Planning

The company is a production-oriented mine with well-equipped existing mining areas, waste dumps, living and auxiliary industrial zones, and mineral processing plants.

(1) General layout of the mining industrial area

The mining industrial area consists of open-pit hornfels, southern open-pit mining, and underground mining. Ancillary facilities include a surface fixed crushing station, an open-pit ore belt conveyor system, an underground ore belt conveyor system, a filling station, a 110kV substation in the mining area, a mining elevated water pool site, an underground mining industrial plant area, and a waste rock dump site.

The hornfels open-pit mine is located in the southeast corner of the mining area, approximately 2.8 km away from the No. 2 mineral processing plant. The southern open-pit mine is located in the southern part of the mining area, approximately 0.3 km north of the hornfels open-pit mine.

The crushing station industrial site is located 300m north of the entrance and exit of the open-pit mine, outside the boundary of blasting fly rocks, with a site elevation of 4970.0m.

The surface facilities for the open-pit ore belt conveyor system include: the surface conveyor belt of the crushing station-ore pass industrial site, the ore pass site (site elevation 4920.0m), the surface drive station (site elevation 4638.61m), and the Transfer Station No. 1 (site

elevation 4575.0m). The ore is eventually transported from Transfer Station No. 1 to the raw ore stockpile of the processing plant.

The surface facilities of the underground ore belt conveyor system include: the underground conveyor belt inclined shaft head site (site elevation 4515.0m) and the surface conveyor belt corridor and Transfer Station No. 2 (site elevation 4572.0m). The ore is finally transported from Transfer Station No. 2 to the raw ore stockpile of the processing plant.

The filling station industrial site is located on the slope west of the existing Niumatang waste dump, and includes the filling station plant, various silos, and a sand and gravel crushing station. The raw material for the sand and gravel crushing station is waste rock taken from the nearby Niumatang waste dump. The site elevation is 4820m.

The 110kV substation is located on a mountain ridge on the northwest side of the existing Niumatang open-pit mine, with a site elevation of 4615.0m.

The mining elevated water pool site is located on a hillside about 200m west of the filling station, with a 3000 cubic meter water pool and a site elevation of 4600.0m.

The main industrial sites for each adit and ventilation shaft include: the 4500m adit, the auxiliary ramp adit site, the entrance of the measure inclined shaft, the entrance of the intake air shaft, and the entrance of the measure intake air shaft.

The waste dump comprises three sections: No. 1, No. 3, and No. 4. waste dump. No. 1 serves underground mining, while No. 3 and No. 4 serve open-pit mining. Waste rock from underground mining is transported to the surface via underground waste rock chutes and a 4261m adit, and then transferred to waste dump No. 1 by surface dump trucks. Waste rock from open-pit mining is transported to waste dump No. 3 and 4 by dump trucks.

The Niumatang mining area is located in the central part of the mining area, about 6.2 km away from the No. 1 mineral processing plant; the Tongqianshan mining area is located in the south-central part of the mining area, southeast of the Niumatang mining area, about 7.1 km away from the No. 1 mineral processing plant. Currently, the Niumatang and Tongqianshan open pits have been closed.

(2) Overall layout of the mineral processing plant

The mine currently has two ore processing plants: Phase I and Phase II. Phase I has a designed processing capacity of 6,000 tons per day and is located approximately 7 kilometers from the ore deposit, at the entrance of the mining area, on the north side. Phase II has a designed processing capacity of 40,000 tons per day and is located 1,100 meters northwest of the mining area, in a mountain depression approximately 700 meters northwest of the 4,450-meter flat opening. It is about 5.5 kilometers from Phase I and is connected to the mine by a main road.

(3) Overall layout of the waste dump

This design includes three waste dumps: No. 1, No. 3, and No. 4. waste dump. No. 1 serves underground mining, No. 3 serves hornfels open-pit mining, and No. 4 serves southern open-pit mining.

No. 1 waste dump: adopts a single-step waste dump mode, sets a reasonable stacking height

and slope ratio, has sufficient storage space, and has a moderate land area.

No. 3 waste dump: Located in the gully surrounding the horn rock open-pit mine, it is a valley-type site with a clear topographic slope, moderate catchment area, and large overall storage capacity. The site is designed according to first-class standards and can fully meet the long-term waste rock storage needs of the corresponding mine.

No. 4 waste dump: Located in a gully near the southern open-pit mine, it also has a valley layout, good terrain slope and water catchment area, and sufficient storage capacity, which is suitable for the requirements of open-pit mining waste rock dumping.

(4) Overall layout of the water source area

The mine's water source is a river outside the plant area, using a combination of large-diameter wells and seepage channels. Multiple booster pump stations are installed along the waterway, and two elevated water tanks supply water to the two mineral processing plants respectively. The entire water supply system has been completed and put into operation, ensuring a stable supply of water for production and daily life in the mining area.

(5) Power supply system overall layout

There are two existing substations in and around the mining area. The 110/10.5kV substation in the industrial zone of the first-phase mineral processing plant within the mining area draws its power from the Tangjia 110kV substation in Mozhugongka County, 24km from the mining area. The 220kV substation in Gesang Village, Gongka Town, Mozhugongka County, 22km from the mining area, draws its power from the Mozhugongka County 220kV substation. The total power capacity of these substations meets the electricity needs of Mozhugongka County and this project.

(6) Overall layout of tailings dam

The mine currently has two tailings facilities, each corresponding to a different processing plants. The first-phase dry tailings dump is a valley-shaped storage facility and has been closed. The second-phase wet tailings dam is also valley-shaped and is currently in normal operation. Both dams were constructed to Class II standards.

To support the long-term operation of the mine, the company has selected a new site for the development of an additional tailings storage facility, which is currently under construction. The selected site is characterized by favorable topographic conditions, limited environmental and land-use constraints, and a low population density in the surrounding area. No additional flood-diversion structures are required based on the site conditions. The new facility has been designed as a Class II tailings storage facility. In conjunction with the planned underground backfill program, the design storage capacity of the new tailings dam is sufficient to accommodate the mine's tailings disposal requirements throughout the remaining life of the operation.



Figure 18. 1 Schematic diagram of the distribution of major facilities in the mining area

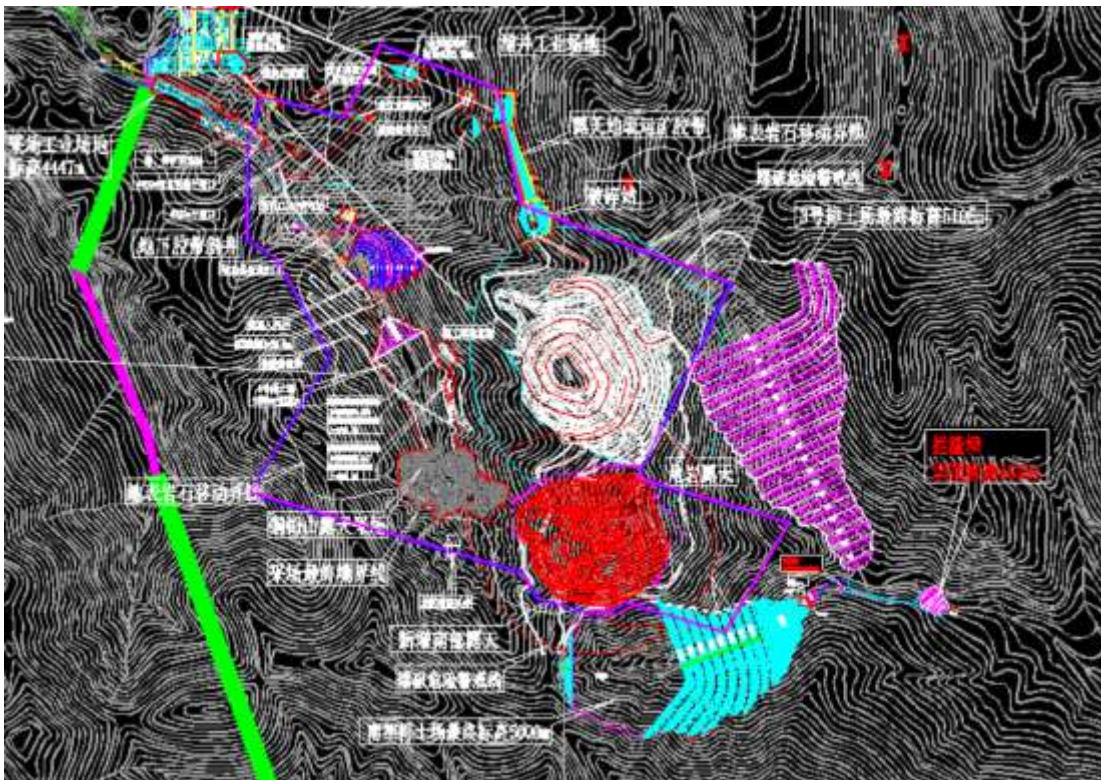


Figure 18. 2 Internal Relationship Diagram of the Mining Area

18.2 Overview of Surface Infrastructure in the Mining Area

18.2.1 Roads

18.2.1.1 Main Road Access

The main external access road to the Huatailong Jiama Mining Area in Tibet is National Highway 318, starting from the mine headquarters, a dedicated mine access road extends approximately 10 km northward through the Jiama Valley and connects directly to G318. From there, driving west for about 60 kilometers leads directly to Lhasa city, and driving east for about 8 kilometers reaches Mozhugongka county, forming a convenient transportation corridor connecting the autonomous region's capital with the county territory. This access road is a standardized asphalt-paved mining road, with a width sufficient for two-way traffic of heavy-duty freight vehicles. It is equipped with comprehensive retaining walls, guardrails, and a drainage system, adaptable to complex climatic conditions such as rain, snow, and freezing at high altitudes. The road traverses high-altitude valleys, with some sections exceeding 4000 meters in elevation. During winter and spring, it is susceptible to snow accumulation and icing. The mining area and transportation departments collaborate on de-icing and road maintenance operations to ensure the unimpeded transport of mining production materials and personnel around the clock.

External transportation is carried out using a combination of truck and rail transport. Materials delivered from the Lhasa Railway Station to the Mine site, as well as concentrate transported from the Mine to the Lhasa Railway Station, may be handled by a trucking company controlled by Huatailong Mining Development Co., Ltd. Transportation requirements beyond these services are contracted to qualified third-party transportation providers.

18.2.1.2 Service Channels

(1) The internal roads of the Phase I and Phase II mineral processing plants are made of cement concrete and are constructed according to the Class III industrial road standards. The roadway dimension, turning radii and gradients are set reasonably, and the overall road network is well developed.

(2) The connecting roads within the office and residential areas also adopt the Class III industrial road standards. The road surface and traffic parameters are consistent with those used for the processing plant roads, providing favorable operating conditions.

(3) The extensive connecting roads in the mining area are Class III external roads with asphalt pavement. The road is well-structured, and the roadway gradients, turning radii and road widths have been designed according to specific operational requirements, providing adequate access for all site transportation activities.

18.2.1.3 Haul Roads

Specialized connecting and haul roads within the mining area are classified by function, with most featuring gravel pavement. The structural layers are standardized, and gradients are adapted to the mountainous terrain. Roads connecting the tailings facilities, shafts, mining

sections, and water treatment plants share similar width specifications. Haul roads routing from the open pits to the crushing plants and waste dumps are appropriately widened to accommodate heavy-duty haul trucks. Haul roads running from the mining areas to the processing plants feature cement concrete pavement, with turning radii and slopes engineered strictly according to design specifications. The overall road network fully satisfies daily requirements for production hauling, material transport, and equipment maintenance.

18.2.2 Earthworks and Geotechnical Engineering

18.2.2.1 Geotechnical Engineering Investigation

According to the Geotechnical Engineering Investigation Report of the Phase II Expansion Project of the Copper-Polymetallic Mine of Tibet Huatailong Mining Development Co., Ltd., provided by the Meishan Geological and Mineral Engineering Survey Institute in May 2012, the industrial site of the mineral processing plant is classified as a Class II construction site. The foundation soil, from top to bottom, consists of: loose gravelly silt ①1, slightly dense gravelly silt ①2, medium dense gravelly silt ①3, and strongly weathered slate ②. The conclusion is that there are no major active faults at or near the construction site, and the site is generally in a relatively stable state. Although there are geological hazards such as high side slopes within the site area that could affect site safety, these hazards can be effectively eliminated or mitigated by taking appropriate engineering measures (such as retaining walls). The foundation soil is predominantly composed of gravelly soil and slate, with high bearing capacity, serving as a good natural bearing layer. This site is deemed suitable for engineering construction.

18.2.2.2 Typical Foundation Design

The main plants of the processing plant include raw ore stockpile, grinding and flotation plant (comprising grinding and copper-molybdenum mixed flotation), copper-molybdenum separation plant, ore concentration plant, concentrate dewatering plant, tailings concentration plant, tailings pressurization pump station, and pre-processing plant water reuse pump, etc., arranged along the hillside from top to bottom along contour lines. The coarse crushing system is located in the mining area. The coarsely crushed ore is transferred to the raw ore stockpile of the processing plant by belt conveyor. Other auxiliary workshops of the processing plant, such as: lime milk slurry preparation plant, processing plant's 110kV substation, and electric boiler room, are arranged along the hillside near the grinding and flotation plant.

The crushing and grinding process is as follows: coarse crushing (mining area) + semi-autogenous grinding + ball milling + hard rock crushing. Flotation consists of copper-molybdenum floatation, followed by concentration, desorption, and regrinding prior to differential copper-molybdenum separation floatation. The copper-molybdenum mixed floatation tailings are concentrated to a density of 64%–66% before being pumped to the tailing facility for storage, with a small portion routed to the back fill plant for underground backfilling.

18.2.3 Benches, Platforms and Stockpiles

The mining area has three waste dumps with clearly defined functions: Dump No. 1 serves underground mining, while Dump No. 3 and 4 serve open-pit mining. Dump No. 1 utilizes a single-bench dumping method with an engineered slope configuration; its storage space and footprint fully satisfy operational requirements. Dumps No. 3 and No. 4 both feature multi-bench layouts with layered operations and safety platforms. Slope parameters have been optimized based on rock and soil mechanics, ensuring robust overall structural stability. Both sites have ample storage capacity, which can not only ensure the current waste rock storage but also adapt to the future development needs of the mine.

18.2.4 Rainwater Management

There is no historical statistical data for maximum flood levels in this area, and no natural rivers run through the mining area. The primary objective for flood control at the industrial sites is managing rainfall-induced surface runoff. Based on the site-specific topography of each industrial area, perimeter interception and drainage ditches have been constructed to safeguard operations and mitigate flood risks.

Interception and drainage ditches are constructed around the waste dump to intercept rainwater and prevent surface runoff from eroding the platform and slopes of the waste dump. Downstream of the waste dump, retaining dams act as buffers and interceptors against soil erosion.

18.2.5 Mine Rock and Soil Transportation

Based on local topography, site layout, and transport distance, the southern open-pit waste rock was directly transported to the waste dump by truck. This haulage method has low construction costs, short construction period, flexible equipment scheduling, high operational efficiency, and is relatively simple to operate and manage.

18.3 Ancillary Facilities and Utilities

18.3.1 Buildings and Structures

The primary civil and structural facilities for the overall project include:

Phase I processing plant: Coarse crushing plant, medium/fine crushing and screening plant, fine ore transfer station and fine ore bins, grinding and floating plant, concentrate dewatering plant, thickening tanks, tailings pressure filtration plant, conveyor gallery, crushing station, water pumping stations, analytical labs, and a mechanical repair workshop. Auxiliary facilities in the processing plant and domestic facilities include a fuel depot, substations, an administration building, an open pit mine office building, a duty room, and garages.

Phase II processing plant includes: raw ore stockpile, hard rock crushing plant, grinding and flotation plant, copper-molybdenum separation plant, concentrate dewatering plant, bulk concentrate and copper concentrate thickener, tailings thickener, lime milk preparation plant,

lime silo, conveyor gallery, transfer station, crushing station, filling station, cement silo plant, sand silo plant and other production facilities and buildings, as well as boiler room, substation, power distribution station, mining and processing office building, mine canteen, expansion of mine office building, industrial and trade company office building, core storage, duty room, garage and other ancillary living facilities and buildings.

18.3.2 Accommodation facilities

The residential and living zone comprises three employee dormitories, an employee canteen, a living quarter for third-party contractors, and an employee recreation center.

The plant front area is situated at the northern part of the mineral processing plant site, encompassing a police post, an administrative building, and parking facilities. As the northern sector represents the lowest elevation of the plant and the sole access gateway, locating the front area here optimizes security management and enhances the architectural landscaping of the site. The office area includes an office building and a parking lot in front of the office building.

The mine currently operates four employee apartment blocks located at the mine site (3 blocks) and within the county town (1 block), providing accommodation for 1,252 personnel. These apartments are equipped with essential amenities, including bathrooms, beds, wardrobes, and oxygen generators. The "Happy Apartment" features two central bathhouses, and eight public restrooms are distributed across the mining area. Three canteens service the site (located at the No. 2 processing plant, the residential area, and the mining site). Additionally, four project departments representing third-party contracting firms are established on-site: the Huakan Project Department, the 4261 Project Department, the Fourteenth Metallurgical Construction Project Department, and the Zhejiang Huaye Project Department. Each contractor base is equipped with its own dormitories, canteens, and offices.

18.3.3 Emergency Support and Medical Facilities

The mine maintains an emergency rescue and medical services team composed of trained, part-time personnel, equipped with dedicated ambulances, stretchers, and critical rescue apparatus and medical supplies. The mining operation should establish comprehensive emergency response plans and conducts regulatory drills. In the event of casualties or major incidents, the mine manager or their designated representative is required to immediately report to the scene to direct rescue operations and implement measures to prevent incident escalation. All casualties must be reported accurately and transparently to the local labor administration and the governing industry authorities in accordance with regulatory mandates.

18.3.4 Compressed Air Supply

An air compressor stations are set up at the 4500m adit portal and the 4490m ramp portal on the mine surface for compressed air self-rescue. The 4500m air compressor station is equipped with one JN250-8 type air compressor and one BK132-8ZG type air compressor, and the 4490m air compressor station is equipped with one JN250-8 type air compressor.

The gas used for production comes from underground mobile air compressors. Two mobile air compressors are installed in each production section, mainly the DLGF24/8-160 model.

The main gas supply pipeline is made of $\phi 133 \times 4$ type seamless steel pipe. It is laid along the 4500m horizontal shaft and the 4490m inclined road to each section (segment), and the main pipe is set for the communication tunnels within each section. The gas supply branch pipes are made of $\phi 45 \times 3$ mm seamless steel pipe.

18.3.5 Production and Fire Water

At an elevation of 4,575 m, the Phase II processing plant utilizes a 4,000 m³ elevated water storage tank for production water, sourced from the portal of the Chikang River. At an elevation of 4,635 m on the northern flank of the mining area, a 3,000 m³ elevated water storage tank services mining operations, drawing its supply from the 4575m elevated water tank. Water for underground production and fire protection is supplied from this 4635m surface mining water storage tank via hydrostatic pressure. A 50 m³ domestic water tank is situated adjacent to the 4635m tank to support emergency supply and rescue functions.

The main water supply pipeline originates from the 4635m elevated water tank and is laid along the existing 4500m adit and 4490m inclined ramp to various production sections (segments) underground. Production water supply, fire-fighting water supply, and water supply for rescue operations share a single pipeline. The main water supply pipeline parameters differ: $\Phi 219 \times 6.5$ seamless steel pipe is used in the north area, while $\Phi 133 \times 4$ mm seamless steel pipe is used in the south area. Branch water supply pipes use $\Phi 89 \times 4.5$ mm seamless steel pipe.

18.4 Power Supply System

(1) Power supply for the Phase I processing plant

The Phase I mineral processing plant of the mine has a designed throughput of 6000 t/d. It currently has one 110kV substation, whose main and backup power supplies are drawn from the 110kV Tangjia substation and the 110kV substation of the second-phase processing plant, respectively. The first-phase processing plant's 110kV substation is equipped with two 10000kVA main transformers. Both the 110kV and 10kV sides of the substation use a single busbar segmented wiring configuration. The 10kV side supplies power radially to the substations in various workshops of the first-phase processing plant, high-voltage equipment, the tailings filtration plant, the tailings pressurization plant, the 4087 pump room, the 4261 pump room, and the power distribution room of water source areas for both phases.

(2) Power supply for the Phase II processing plant

The second-phase processing plant of the mine has a designed throughput of 44,000 tons per day. The mine already has a 110kV substation for the second-phase processing plant. The main and backup 110kV power supply for the substation is drawn from the Mozhu 220kV substation. The 110kV substation for the second-phase processing plant is equipped with two 50,000kVA main transformers. The actual power load is 50,000kW. Both the 110kV and 10kV

sides of the substation use a single busbar segmented connection. The 10kV side supplies power radially to the substations in each workshop of the processing plant, the high-voltage electrical equipment in the processing plant, and the second-phase tailings dam.

(3) Power supply for the mining area

The mine already has one 110kV substation in the mining area, with two 110kV power supplies drawn from the I and II sections of the 110kV substation in the second-phase processing plant, respectively. The 110kV substation in the mining area is equipped with two main transformers with a capacity of 25000kVA. The current actual load in the mining area is 8000kW. The substation uses a single busbar segmented connection, supplying power radially to both the open-pit and underground substations.

(4) Current power supply status for Phase II tailings

The Phase II tailings dam currently has a 10kV power distribution room, with the 10kV power supply drawn from the Phase II processing plant's 110kV substation. The 10kV side of the Phase II tailings dam's 10kV power distribution room uses a single busbar without segmentation, supplying power radially to the centrifugal pumps and return water transformer.

(5) Power supply for Phase III tailings

The Phase III tailing dam (Youlongbu TSF) and its auxiliary infrastructure are currently under construction. Power for the Youlongbu tailing facility 110 kV substation will be drawn from the No. 2 tie-line of the Phase II process plant 110 kV substation. The Youlongbu Substation will be equipped with a 20,000 kVA main transformer to service the Phase III tailing dam and its ancillary facilities.

19 ENVIRONMENTAL STUDIES, PERMITTING APPROVALS, AND SOCIAL OR COMMUNITY IMPACT ASSESSMENTS

19.1 Environmental Baseline Study and Environmental Impact Assessment

Huatailong has conducted a series of comprehensive environmental and social baseline studies and impact assessments. These studies began in the early development phase of the project and cover subsequent phased expansion work as well as a number of supporting technical studies.

19.1.1 Summary of Completed Research

Environmental and Social Impact Assessment updates continue to build upon established baseline data and impact assessments, integrating current operational factors and the latest expansion impacts. These assessments have been formally approved by the Department of Ecology and Environment of the Tibet Autonomous Region. Baseline studies, monitoring data, and management reports encompass the following parameters:

Baseline studies and impact assessments cover aspects such as air, water, soil, biodiversity, noise, health, and cultural heritage.

Annual, quarterly, and monthly monitoring shall be conducted on all or some of the following items: water quality, electromagnetic environment, biodiversity, ambient air quality, noise and vibration, soil pollution status, and responsibility for mine ecological restoration.

These studies are based on the Environmental Impact Report for the Phase II Construction Project of the Jiama Copper-Polymetallic Mine (2013), the Environmental Impact Report for the Southern Open-Pit Mining Project of the Jiama Copper-Polymetallic Mine of Tibet Huatailong Mining Development Co., Ltd. (2022), and the Environmental Impact Report for the Youlongbu Tailings Dam Project of the Jiama Copper-Polymetallic Mine of Tibet Huatailong Mining Development Co., Ltd. (2024), and their specialized appendices. In some cases, these documents take precedence over previous environmental impact assessment reports and related references.

19.1.2 Progress of Environmental Impact Assessments

In 2007, Huatailong executed the consolidation and development of the Jiama Project resource base in strict accordance with regional mineral resource integration directives (Tibet Land and Resources Integration Regulation [2007] No. 2). The Company has progressively completed environmental impact assessments and statutory acceptance filings for multiple renovation and expansion phases, managing data collection, synthesis, and analysis independently. In April 2022, the Company formally commissioned Shenyang Wanyi Safety Technology Co., Ltd. to prepare the environmental impact assessment report for the Youlongbu tailing dam project. The final report was completed in October 2024 and officially submitted to the Department of Ecology and Environment of the Tibet Autonomous Region for statutory approval in November 2024.

In accordance with the relevant laws and regulations of the People's Republic of China concerning ecological and environmental protection and mineral resources, this environmental impact assessment report complies with the relevant management provisions of the current Environmental Impact Assessment Law of the People's Republic of China. This law requires mining enterprises to prepare environmental impact assessment documents and undergo approval and acceptance procedures for new construction, renovation, and expansion projects. The environmental impact assessment documents cover the existing production system of the mine and the proposed Yulongbu tailings dam project, supplemented by a comprehensive baseline survey of the site's environmental conditions. The environmental assessment work is based on verifiable on-site investigations, data collection, and public consultation results.

19.1.3 Main Conclusions

The overall findings of the report did not reveal any potentially fatal flaws or unmitigable impacts. The environmental impact assessment report clearly outlines a series of environmental impacts during the construction, production, and post-closure phases, specifically including:

- Ambient air quality impacts
- Surface water and groundwater environmental impacts
- Acoustic environmental impacts
- Solid waste environmental impacts
- Soil environmental impacts
- Ecological environment impacts
- Electromagnetic environment impacts

19.1.3.1 Land Use, Permits, and Relocation Resettlement

Any delays or disputes that may arise during land use, permit approval, and resettlement could hinder or postpone mining activities in key areas, thereby directly affecting resource reserve extraction plans.

- **Land ownership and relocation resettlement**

Agriculture and animal husbandry are the leading industries in the area, which is one of the six national commodity grain production bases in the autonomous region. The residents and cultivated land of Jiama Township are mainly distributed in the valley area of the lower reaches of the Chikang River, with an average altitude of 4,500 meters. The upper and middle reaches of the river basin are natural grasslands. Fundamentally, land use is influenced by factors such as altitude, grassland carrying capacity, water accessibility, and distance from settlements.

It has been confirmed that all mining and infrastructure areas are within the mining and construction land area of Huatailong Company, and no third-party mining rights exist. However, existing and future expansion projects require reasonable resettlement and economic compensation for the local community.

The latest relocation and resettlement work involves 11 herder households within the area occupied by the Yulongbu tailings dam.

Any delays or disputes in the land acquisition, compensation, or resettlement process could

directly hinder the development and utilization of the mining area and its infrastructure.

- **Permits**

The environmental and social impact assessment and management plan comply with the relevant mining and ecological environment laws and regulations of the People's Republic of China and the Tibet Autonomous Region. All expansion projects require approval from the Tibet Autonomous Region Department of Ecology and Environment, Department of Natural Resources, and other relevant authorities.

Failure to obtain environmental impact assessment approval, land use pre-approval, soil and water conservation plan approval, and other relevant administrative permits in a timely manner will result in delays or restrictions on mining activities, affecting the overall construction progress and compliant operation of the project.

19.1.3.2 Water Resources Management and Hydrogeology

Any potential inadequate drainage, improper water resource management, or violations of relevant regulations could lead to flooding, environmental penalties, or suspension of mining activities.

- **Drainage and groundwater drawdown**

Water intake from water source projects and drainage of water from underground wells will create groundwater drawdown cones within a certain range, which will have a certain impact on the regional water tables.

- **Surface water and floods**

The project area belongs to the Lhasa River water system, which is mainly replenished by rainwater and alpine snowmelt; precipitation is concentrated, rivers have strong seasonality, and the water volume variance between the wet and dry seasons is distinct. The mining and processing industrial sites and tailing facilities have caused changes in the local topography, and the original catchment pathways have consequently been affected. A comprehensive rainwater management system must be established; interception ditches must be constructed for the mining areas, dump sites, and tailing facility projects, with particular consideration required for those sulfur-bearing materials confirmed to pose a risk of acid leaching.

Poor management of surface runoff may lead to water accumulation in the pit areas, landslides at the dump sites, overtopping of the tailing dam, watershed contamination, or infrastructure damage, which in turn could trigger operational disruptions.

- **Water quality and discharge**

Wastewater and mine water discharges generally comply with Class III standard of the Environmental Quality Standards for Surface Water (GB 3838-2002). All collected water is treated and recycled. Under normal operating conditions, the site achieves zero external discharge, fulfilling national and regional emission standards. Exceeding standards at some groundwater monitoring points is mainly due to geological conditions. Overall, regional groundwater quality remains high, indicating that current mining operations have not significantly degraded the surrounding water environment. Observed localized trace contaminants (oils) stem primarily from equipment maintenance, vehicle upkeep, and surrounding community activities. Non-compliance with water management regulations risks regulatory sanctions or the suspension of discharge permits.

Any violations of mining regulations may result in regulatory measures or suspension of emissions permits.

19.1.3.3 Acidic Rock Drainage (ARD) and Tailings Management

ARD emissions or tailings dam malfunctions could lead to environmental pollution, decreased public trust, and operational suspension by regulatory authorities.

- **Acidic rock drainage**

All sulfur-bearing lithological areas should be considered potential sources of acidic substances. Rainwater runoff zones, waste rock dumps, and ore storage yards in open-pit mines must be managed with lining facilities, rainwater and sewage separation systems, and wastewater treatment facilities (slow-release sulfidation + HDS) to collect and treat leachate and leaching water containing acidic substances.

Failure to effectively control and manage acidic rock drainage (ARD) may result in groundwater and surface water pollution, ecological damage, regulatory penalties, or forced cessation of activities in the affected areas.

- **Tailings storage facilities**

The Phase I dry tailings dam, the Phase II Guolanggou tailings dam, and the Youlongbu tailings dam currently under construction all adopt a lining design and are equipped with an engineered rainwater control system. The current mitigation measures can effectively limit the migration of pollutants.

Despite mitigation measures, tailings dam leaks, lining failures, or drainage system malfunctions can still lead to catastrophic environmental damage, loss of tailings dam storage capacity, and regulatory orders to halt operations for rectification.

19.1.3.4 Biodiversity, Sensitive Targets and Protected Areas

Disturbances to sensitive environments or heritage sites could lead to mandatory shutdowns by regulators or communities, additional mitigation costs, or loss of access to critical mining areas.

- **Sensitive Environment**

Ecologically sensitive targets in and around the area include the Yarlung Tsangpo River Mid-Reach Valley Black-necked Crane National Nature Reserve, the Tibet Mozhulangjie Seabuckthorn Forest Municipal Nature Reserve, Jiama Wetland, Chikang Wetland, Jiama Scenic Area (the birthplace of Songtsen Gampo), and rare wild animals and plants.

Some protected fauna, such as the black-necked crane and the white-lipped deer, still inhabit the area. Expansion into these areas requires strict control of potential key risks and continuous monitoring. Completed faunal surveys indicate that faunal communities in these areas are particularly sensitive to historical overgrazing and habitat alteration.

Jiama Wetland and Chikang Wetland are marshy meadow wetlands with meadow soil. The vegetation is dominated by *Kobresia tibetica* and *Blysmus sinocompressus* communities.

Jiama Wetland is located near the Lhasa River, and other dominant communities include reeds and rushes. Both wetlands play a significant role in regulating climate, conserving water resources, and preventing soil erosion.

The tailings dam site and mineral processing plant of the Phase II expansion project are relatively far from the Yarlung Tsangpo River Midstream National Black-necked Crane Nature Reserve and the Jiama Wetland, but slightly closer to the Jiama Tourist Area and the Chikang Wetland. However, overall, they do not involve ecologically sensitive targets and therefore have no impact on them. Due to the ongoing development activities and planned expansion projects in the Huatailong mining area, the range of invasive plants and animals in the affected area may further expand.

Failure to effectively control invasive species or protect sensitive environments may lead to unintended consequences such as regulatory intervention or additional regional compensation requirements.

- **Historical sites and landscapes**

Within the territory of Jiama, there are currently: Songtsen Lhakhang Temple, a stupa within the ruins of the Horkang Manor in Chikang Village, three stupas at the ruins of the Jampa Minjuling Palace, and the Songtsen Holy Spring. To inherit and protect this outstanding ethnic cultural heritage, Jiama Township has established the "Songtsen Gampo Birthplace" tourist area. However, due to mining development, a relatively large industrial and mining landscape will be formed within the tourist area, which will have a certain impact on the local tourism landscape.

Any unplanned disruption could result in work stoppages, legal action, or reputational damage.

19.1.3.5 Air quality, noise and vibration

Exceeding statutory thresholds for air quality, noise, or vibration can result in regulatory penalties, community opposition, or operational restrictions.

- **Atmospheric emissions**

The Huatailong mining area itself is exposed to multiple emission sources (such as ore processing plants, waste dumps, transport roads and tailings ponds).

Under normal operating conditions, air emissions at sensitive monitoring points comply with relevant standards. However, due to the nature of the activity, emissions may exceed standards under abnormal circumstances. Violations may result in fines, production restrictions and rectification, or operational limitations.

- **Noise and vibration**

Blasting operations and the use of heavy equipment would generate noise and vibration, but monitoring results show that these comply with the limits stipulated in the Emission Standard for Industrial Enterprises Noise at Boundary (GB 12348-2008) and the Environmental Quality Standard for Noise (GB 3096-2008). However, the planned expansion construction activities are expected to increase the frequency of blasting operations and heavy equipment use, ultimately leading to regulatory action requiring a work stoppage for rectification or the implementation of noise and vibration reduction measures.

19.1.3.6 Mine Closure, Legacy Issues and Financial Assurances

Inadequate mine closure planning or residual pollution may result in the loss of mining rights, additional security deposit requirements, or reputational damage.

- **Mine closure plan**

The report outlines detailed environmental protection measures for the mine closure, including site remediation, facility dismantling, and post-closure monitoring.

Underestimating the responsibility for mine closure or failing to implement the mine closure plan may result in regulatory violations or loss of mining rights.

- **Residual pollution**

No new legacy liabilities were identified, but if not effectively managed, ongoing radioactive waste (ARD), tailings, or hydrocarbon pollution could pose liability risks in the future.

19.1.3.7 Social Permissions, Stakeholder Consultation, and Community Health

Loss of social permission localized community health crises may lead to severe operational disruptions or additional mitigation costs.

- **Stakeholder participation**

The region's residents primarily rely on subsistence agriculture and animal husbandry for their livelihoods, with limited formal employment opportunities. Therefore, the Huatailong Copper Mine has become a significant source of employment and income for the local population. Traditional mining activities have a widespread impact on the region, and the community maintains a high level of interest in mineral development.

Relocation and resettlement, water supply security, and ecosystem services are the main concerns in the environmental impact report.

Failure to maintain a state of social permission could lead to protests, lockdowns, or reputational damage.

- **Community Health**

The influx of labor and population growth have exacerbated the pressure on sanitation, water supply and sanitation infrastructure.

Potential disease outbreaks or perceived health impacts may trigger regulatory measures or community intervention actions.

19.1.4 Proposed mitigation measures

The Environmental Impact Report elaborates in detail on mitigation and improvement strategies for all significant impacts, including dust and noise control, water resource management, biodiversity conservation, and community health and safety measures. Specific measures include, but are not limited to:

(1) Adopt an environmental and social management system and establish and implement a

routine monitoring and reporting mechanism.

(2) Implement water resource management strategies, optimize rainwater collection and utilization and sewage treatment processes to ensure compliance with relevant national and Tibet Autonomous Region standards.

(3) Reduce disturbance to sensitive ecosystems by developing reasonable transportation plans, restoring vegetation on temporary land occupation sites, and avoiding key habitats; and carry out long-term biodiversity monitoring at the same time.

(4) Establish a stakeholder communication mechanism and implement community relocation and resettlement and livelihood restoration work.

19.2 Waste, Tailings, Water Resources and Monitoring Plan

Huatailong has implemented a comprehensive waste and tailings management strategy aimed at minimizing environmental risks and ensuring regulatory compliance throughout the mine's lifecycle. Waste rock management employs an integrated approach: some materials are used in construction; some are used to backfill underground goafs; waste rock that may generate acidic substances is lined and stored; and progressive remediation is implemented. Tailings are stored in specially designed tailings dams. Huatailong currently has two tailings dams and is constructing a third one. All dams utilize advanced design technologies, including partial HDPE lining, downstream dam construction, and rainwater diversion systems, to effectively prevent leakage and protect groundwater and surface water resources.

19.2.1 Waste and Tailings Disposal

● Tailings dam facilities

The construction unit currently has three tailings ponds: a dry tailings dump, the Guolanggou paste tailings pond, and the Youlongbu tailings pond, which is under construction. The dry tailings dump will be used by the Phase I processing plant, while the Guolanggou tailings pond will be used by the Phase II processing plant. The Phase I dry tailings pond has completed its closure construction. The Guolanggou tailings pond is expected to reach its designed capacity in 2028, and the Youlongbu tailings pond will be put into operation in 2027. Tailings do not have leaching toxicity or corrosiveness and are not classified as hazardous waste.

● waste rock dump

This project currently includes three waste dumps: No. 1, No. 3, and No. 4. waste dump. No. 1 serves underground mining, while waste dumps No. 3 and No. 4 serve open-pit mining. The storage of waste rock may lead to the accumulation of heavy metals in the soil, causing pollution to the regional soil environment.

19.2.2 Water Resources Management

Huatailong Company's water resource management system focuses on reducing freshwater consumption, maximizing water resource recycling, and protecting surface and groundwater resources. Below the open-pit enclosed circle, a centralized drainage system is used, with the

treated water then settled and used for mining and surface dust control. Rainwater from the tailings dam is discharged through drainage wells and tunnels into the environmental protection dam's upstream storage area and pumped back to the concentrator for reuse.

Acidic water generated from mining activities (mainly from springs and ore stockpiles) is collected in collection ponds and treated using high-density sludge (HDS) technology before being reused. Water balance data is updated regularly to reflect the impact of factors such as mine expansion, changes in rainfall, and operational adjustments.

19.2.3 On-site monitoring plan

A comprehensive pollution source and environmental monitoring program has been implemented to ensure continued compliance and early detection of potential impacts. Water quality (surface water and groundwater) is a key monitoring parameter.

Groundwater and surface water samples were collected from multiple locations upstream and downstream of the water treatment plant, tailings dam, and waste dump, and the test results were compared with relevant national standards. Multiple water quality monitoring wells and points were set up around the tailings dam and water treatment plant to monitor groundwater levels and detect potential leaks. Observation and monitoring were conducted at the ecological restoration site.

Air quality monitoring indicators include particulate matter (inhalable particulate matter PM10 and PM2.5), sulfur dioxide, and nitrogen dioxide, and the monitoring results generally meet the limits stipulated by regulations.

19.2.4 Post-Closure Monitoring

Post-closure monitoring will be conducted as required by regulatory authorities after the facility is closed. The program will focus on the following key indicators:

- **Structural Stability:**

Regularly inspect embankments, slopes, and drainage facilities to detect signs of erosion, settlement, or instability. Simultaneously monitor pressure measuring tube and settlement marker point to confirm the integrity of the embankment.

- **Surface Water Quality:**

Routine sampling of downstream runoff and discharge points of tailings dams will be conducted to ensure compliance with relevant national and Tibet Autonomous Region standards.

- **Groundwater Quality:**

Quarterly sampling will be conducted at monitoring wells upstream and downstream of the tailings dam to obtain key indicator data, including pH, TDS, sulfate, nitrate and metal content.

- **Vegetation and Erosion Control:**

The effectiveness of vegetation restoration efforts and erosion control measures will be assessed through visual inspections and photographic documentation every six months.

Areas with poor vegetation cover or active erosion will be prioritized for remediation according to the vegetation restoration area monitoring plan.

- Leakage and Leachate:

The flow rate and water quality of the leakage collection system will be monitored. An investigation will be initiated once an increase in leakage or deterioration in water quality is detected, and additional mitigation measures will be taken if necessary.

19.3 Licensing and Permitting Requirements

The Huatailong copper mine project is subject to a comprehensive licensing system that regulates all aspects of exploration, construction, operation, and project closure. The licensing process is based on the Mineral Resources Law of the People's Republic of China and related supporting regulations. Environmental impact assessments and environmental and social management plans must be updated regularly to reflect project expansion and changes in regulatory policies.

All major project infrastructure including mining, processing, waste treatment, and tailings facilities—hold valid environmental approvals and are subject to ongoing supervision and management by local ecological and environmental authorities and industry regulatory agencies.

The project's environmental impact assessment report confirms that the company consistently complies with applicable national standards. The permitting and approval process is based on thorough baseline studies, stakeholder engagement, and the submission of technical documentation at each project stage. Compliance is monitored through regular reporting, on-site inspections, and a dynamic management mechanism to ensure the project continues to meet regulatory requirements and fulfills its environmental and social responsibility obligations.

19.3.1 List of Required Licenses

The following licenses and approval documents are essential files, maintained by the company's legal department, and tracked in its license register:

- Mining license: Covers all mining areas and is valid until 2043.
- Environmental permit documents: Includes environmental impact assessment documents related to all major project phases and expansion works.
- Specialized safety and environmental permits: Includes specific permits for facilities that pose environmental or safety risks, such as major hazard sources, storage and use of explosives, and collection and disposal of hazardous waste.
- Social responsibility and public engagement documents: Social project responsibility requirements documents and related public consultation records.
- Supporting infrastructure permits: Relevant permits for other types of supporting infrastructure, oil and gas resources, and telecommunications facilities.

19.3.2 Conditions and Other Obligations

All project facilities are located within the concession area of the Huatailong Copper Mine, and there are no other third-party mining rights within or around the permitted area. Surface mining rights and land use rights are recorded and maintained through a formal license register.

The relevant facilities must be constructed in accordance with engineering design standards, equipped with appropriate linings, leakage water collection systems and rainwater diversion facilities, and comply with relevant national and local regulations.

Water quality, dam stability, and seepage must be monitored regularly, and the monitoring results must be promptly reported to the ecological and environmental authorities and industry regulatory agencies. Any exceedances must be addressed.

Continuous consultation with affected communities is required, including establishing a complaint mechanism and disclosing monitoring results. Economic compensation for agricultural land is being implemented in accordance with the relevant requirements of the annex to the regulations.

Environmental impact assessments must comply with all requirements stipulated in the relevant clauses.

19.3.3 History of Compliance

Huatailong Copper Mine maintains a good compliance record in permit approvals and fulfilling environmental obligations. Its environmental and mining licenses have consistently been renewed and updated in accordance with regulatory requirements. The latest environmental impact assessment and supporting documents confirm that all major licenses are valid.

Clear requirements have been set for routine inspections, audits, and environmental monitoring reports that all reports must be submitted in accordance with regulations and any minor non-compliance discovered must be resolved immediately through corrective actions.

19.4 Social and Community Impact

Social and community impact assessments are a crucial step in ensuring the implementation of responsible environmental and social containment measures and achieving a long-term balance of interests for affected stakeholders. The diverse social impact of the Huatailong Copper Mine fully demonstrates its significant influence on local well-being, livelihoods, and development opportunities.

19.4.1 Stakeholder Identification

The social impact of the Huatailong Copper Mine project covers multiple communities in the area surrounding the mine. The project stakeholders include local villagers, village collective organizations, local government departments, and related social organizations, which together constitute the core objects of the project's social impact assessment.

19.4.2 Consultation Activities

The project has extensively engaged stakeholders, holding numerous meetings with local governments, village collectives, community residents, and relevant social organizations. It has collected and responded to community demands regarding relocation and resettlement, water supply guarantee, employment opportunities, and infrastructure development, establishing a standardized appeal and feedback mechanism.

19.4.3 Community Agreement

There are ongoing relocation and compensation programs that offer benefits including job opportunities, schools, clinics, and other infrastructure.

The company strictly adheres to community agreements, actively fulfills its social responsibilities, and conducts in-depth visits and assistance programs in villages. In 2023, it invested over 140 million yuan in livelihood projects, advancing industrial assistance and ethnic unity to boost rural revitalization.

19.4.4 Local Procurement and Employment Plan

The company has established a comprehensive local recruitment, training, and entrepreneurship support system, adheres to local employment policies, prioritizes hiring local residents, and is one of the region's leading employers. Simultaneously, it enhances the skills of local talent through training and education programs and sets clear local procurement targets, thereby driving local economic development.

19.4.5 The Main Issues Raised

During the public consultation, the core issues raised by community members revolved around relocation and resettlement, while also paying close attention to issues such as access to water resources, community health, employment opportunities, education, and land use, all of which were listed as priority concerns for stakeholders.

19.4.6 Social Risk Assessment

The focus is on the risks of physical and economic displacement resulting from relocation, which will be mitigated through regional adaptation programs and livelihood recovery measures. Other risks, such as land stress, impact on public services, and potential conflicts, will be managed through ongoing participation mechanisms and complaint channels, with particular attention paid to the rights of vulnerable groups such as women, children, the elderly, and people with disabilities throughout the process.

The assessment found no irremediable social risks.

19.5 Mine Closure and Ecological Restoration

19.5.1 Strategy for Mine Closure

After the mine's service life expires, waste gas, wastewater, waste rock, and noise will no longer be generated or emitted, and most of the pollution impact will disappear. The remaining impact will primarily be on the ecological environment. It is required that the mine's geological environment protection and land reclamation plan be implemented in accordance with the Geological Environment Protection and Land Reclamation Plan for the Jiama Copper-

Polymetallic Mine in Mozhugongka County, Tibet Huatailong Mining Development Co., Ltd., to basically restore the original land use function and achieve consistency with the surrounding environment. The ecological restoration area includes the area comprised of land damaged during mining development and permanent construction land no longer in use.

19.5.2 Post-Closure Monitoring

Post-closure monitoring is a core component of mine closure strategies, aiming to verify whether reclamation measures meet established standards, manage remaining environmental risks, and ensure that post-mining land use functions meet expectations. Key focus is on the stability of reclaimed areas, temporary safety facilities, and waste rock dumps, with groundwater and surface water quality, dam stability, vegetation restoration, and erosion control as core indicators. Following a risk-based dynamic management principle, high-intensity monitoring is implemented initially, gradually reducing intensity once performance standards are consistently met; if risk thresholds are triggered or abnormal trends emerge, monitoring can be immediately resumed and intensified.

Funds have been reserved for mine ecological restoration. The restoration will be implemented on a plot-by-plot basis according to the annual reclamation plan determined in the scheme, and will be managed in a unified manner to strengthen the use and protection of the reclaimed land.

20 ADJACENT PROPERTIES

The Tibetan Julong copper mine (the “Ju Long”) is China's largest porphyry copper mine with copper metal resources exceeding 20 million tons, adjacent to the Jiama mining project (Figure 21.1). The Julong Copper Mine has undergone nearly 35 years of exploration history. From early anomaly investigation (1988), anomaly investigation confirmation (1994), preliminary exploration (2001), general exploration (2005), detailed exploration (2006), prefeasibility study (2008), to feasibility study and development in recent years, more than 300,000 meters have been drilled, with copper metal resources (Indicated and Measured) currently defined > 20 Mt. Molybdenum metal resources amount is about 1.8 Mt. Silver metal resources is up to 15000 tons (according to company internal data).

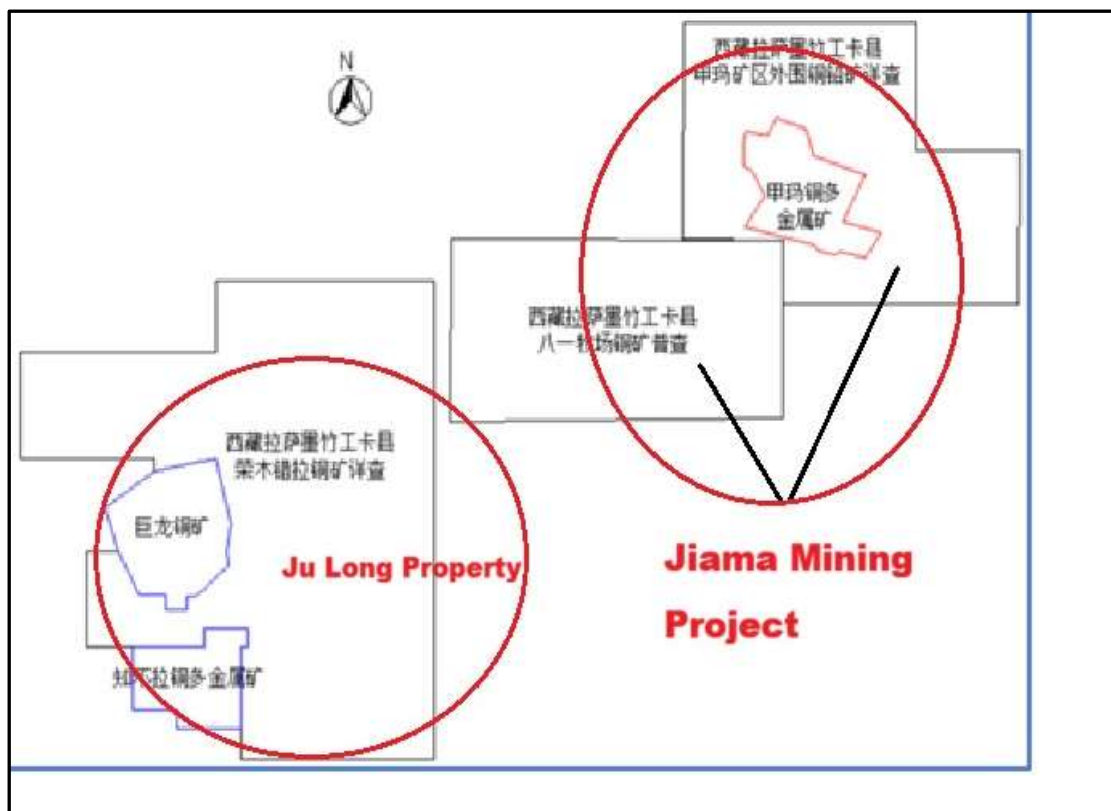


Figure 20.1 Schematic diagram of the locations of the Jiama and Julong mining Properties

Ju Long copper mine is a super-large porphyry copper deposit and is an important part of the Qinghai-Tibet Plateau copper mining cluster. The first production phase of mine began in December 2021, with a daily mining and beneficiation capacity of 150,000 tons, and copper output of 154,400 tons in 2023. The second phase of the renovation and expansion project completed the main construction and core equipment installation on December 29, 2025, successfully synchronized and trial-started, and was officially completed and put into operation on January 23, 2026. Once Phase II is at full capacity, it will add a daily ore processing capacity of 200,000 tons, bringing the total daily processing capacity of Phases I and II to 350,000 tons per day. The third phase of the project is planned for mining and selection capacity of about 600,000 tons per day. Once approved, it will become the largest copper mine in the world in terms of mining and processing scale. Zijin Mining Group, one of the largest mining companies in China and in the world acquired about 57% of its equity through acquisitions, achieving absolute control. Now, Ju Long Mine is run by the Zijin Mining Group directly.

21 INTERPRETATION AND CONCLUSION

Through a comprehensive review and evaluation of the mining license, exploration licenses, exploration works, mine development and production of the Jiama project, the author believes that the data for Jiama project is reliable and the exploration and mining operations are compliant. The data generation, sample preparation, and accuracy of geological and mining data provided for this report comply with Canada's NI43-101 and CIM standards.

Based on the data and information for the Jiama project the mineral resources and reserves estimate for the Jiama project are reliably conducted. Using 0.3% copper as the cutoff grade and the 3D Leapfrog mining software as the platform, the 3D geological model and resource reserves estimate results using Jiama geological and mining data are shown in Tables 21.1 and 21.2:

Table 21.1 Mineral Resource Estimate for Jiama project as of June 30, 2026*

Category	Mass	Cu	Mo	Ag	Au	Pb	Zn	Cu	Mo	Ag	Au	Pb	Zn
	Mt	%	%	g/t	g/t	%	%	Mkt	Mt	Moz	Moz	kt	kt
Mining License Area													
Measured	565.9	0.73	0.04	13.93	0.30	0.08	0.05	4.09	0.20	253.46	5.52	474.28	263.81
Indicated	598.3	0.71	0.03	13.37	0.32	0.07	0.04	4.23	0.20	257.28	6.19	420.37	221.95
M & I	1,164	0.72	0.03	13.65	0.31	0.08	0.04	8.32	0.40	510.74	11.71	894.65	485.76
Inferred	357.5	0.69	0.03	14.37	0.32	0.15	0.05	2.46	0.11	165.13	3.65	520.21	194.09
Exploration License Area													
Measured	57.2	0.50	0.02	5.51	0.14	0.01	0.01	0.28	0.01	10.13	0.26	4.52	4.58
Indicated	113.6	0.48	0.02	5.41	0.13	0.01	0.01	0.54	0.02	19.75	0.48	6.08	8.22
M & I	170.8	0.49	0.02	5.44	0.13	0.01	0.01	0.83	0.03	29.88	0.74	10.60	12.80
Inferred	97.2	0.48	0.02	5.79	0.13	0.01	0.01	0.53	0.02	18.10	0.39	5.57	11.58
Mining and Exploration License Areas at Jiama Mine													
Measured	623.1	0.71	0.03	13.16	0.29	0.08	0.04	4.38	0.21	263.59	5.77	478.80	268.39
Indicated	711.9	0.68	0.03	12.10	0.29	0.06	0.03	4.77	0.23	277.03	6.67	426.45	230.17
M & I	1,335	0.69	0.03	12.60	0.29	0.07	0.04	9.15	0.44	540.62	12.45	905.25	498.55
Inferred	454.7	0.65	0.03	12.53	0.28	0.12	0.05	2.99	0.13	183.22	4.04	525.79	205.66

*: 1. Mineral Reserves and Mineral Resources have been estimated as of 30 June 2026 in accordance with NI 43-101 - Standards of Disclosure for Mineral Projects (NI 43-101).

2. 0.3% copper cut-off grade has been used to report the Mineral Resource Estimation.

3. The Mineral Resources was depleted to account for UG mining mining and current open-pit excluded.

4. Mineral Resources are reported inclusive of Mineral Reserves.

5. All Mineral Resource Estimates results and their tonnages have been rounded to reflect the imprecise nature of the estimates for each classification category, therefore totals may not appear to sum correctly due to rounding.

6. Tony (Yingting) Guo, PhD, PGeo and Chaoxian (Ian) Zhou, MSc estimated the Mineral Resources. This Mineral Resource Estimation was estimated with an effective date of 30 June 2026, and depleted to account for mining production up to 31 December 2025.

7. Mineral Resources, which are not Mineral Reserves, do not have demonstrated economic viability.

As of June 30, 2026, the measured copper metal resource within the mining license of the Jiama project is 4.09 million tons, with a grade of 0.73%.; Molybdenum metal content is 0.20 million tons, grade 0.04%; Lead metal content was 0.47 million tons, grade 0.08%; Zinc metal content is 0.26 million tons, grade 0.05%; Associated gold metal content is 5.52 million ounces, with a grade of 0.30g/t; Associated silver metallic content is 253.46 million ounces, with a grade of 13.93 g/t. The indicated resources within mining license are 4.23 million tons of copper metal, with a grade of 0.71%; Molybdenum metal content is 0.20 million tons, with a grade of 0.03%; Lead metal content was 0.42 million tons, grade 0.07%; Zinc metal content is 0.22 million tons, grade 0.05%; Associated gold metal content is 6.19 million ounces, with a grade of 0.32g/t; Associated silver metal content is 257.28 million ounces, with a grade of 13.37 g/t. Inferred resources within mining license are: Copper metal content is 2.46 million tons, grade 0.69%; Molybdenum metal content was 0.11 million tons, with a grade of 0.03%; Lead metal content was 0.52 million tons, grade 0.15%; Zinc metal content was 0.19 million tons, grade 0.05%; Associated gold metal content is 3.65 million ounces, with a grade of 0.32g/t; Associated silver metal content is 165.13 million ounces, with a grade of 14.37 g/t.

The measured copper metal resources within the exploration license around the Jiama mining area are 0.28 million tons, with a grade of 0.50%; Molybdenum metal content was 0.01 million tons, grade 0.02%; Lead metal content is 0.045 million tons, grade 0.01%; Zinc metal content was 0.046 million tons, grade 0.01%; Associated gold metal content is 0.26 million ounces, with a grade of 0.14 g/t; Associated silver metallic content is 10.13 million ounces, with a grade of 5.51g/t. Indicated resources: Copper metal content is 0.54 million tons, grade 0.48%; Molybdenum metal content was 0.02 million tons, grade 0.02%; Lead metal content is 0.061 million tons, with a grade of 0.01%; Zinc metal content was 0.082 million tons, grade 0.01%; Associated gold metal content is 0.48 million ounces, with a grade of 0.13 g/t; Associated silver metallic content is 19.75 million ounces, with a grade of 5.41 g/t. The inferred resource contains 0.53 million tonnes of copper metal, with a grade of 0.48%; Molybdenum metal content was 0.02 million tons, grade 0.02%; Lead metal content was 0.056 million tons, grade 0.01%; Zinc metal content was 0.012 million tons, grade 0.01%; Associated gold metal content is 0.39 million ounces, with a grade of 0.13g/t; Associated silver metallic content is 18.1 million ounces, with a grade of 5.79g/t.

The total measured resources in the Jiama mining area include 4.38 million tons of copper metal, with a grade of 0.71%; Molybdenum metal content was 0.21 million tons, grade 0.03%; Lead metal content was 0.48 million tons, grade 0.08%; Zinc metal content was 0.27 million tons, grade 0.04%; Associated gold metal content is 5.77 million ounces, grading 0.29g/t; Associated silver metallic content is 263.59 million ounces, with a grade of 13.16 g/t. Indicated resource of 4.77 million tons of copper metal, grade 0.68%; Molybdenum metal content was 0.23 million tons, grade 0.03%; Lead metal content was 0.43 million tons, grade 0.06%; Zinc metal content is 0.23 million tons, grade 0.03%; Associated gold metal content is 6.67 million ounces,

with a grade of 0.29g/t; Associated silver metallic content is 277.03 million ounces, with a grade of 12.10g/t. The inferred resource contains 2.99 million tonnes of copper metal, with a grade of 0.69%; Molybdenum metal content was 0.13 million tons, grade 0.03%; Lead metal content was 0.53 million tons, grade 0.12%; Zinc metal content was 0.21 million tons, grade 0.05%; Associated gold metal content is 4.04 million ounces, with a grade of 0.28g/t; The associated silver metal content is 183.22 million ounces, with a grade of 12.56 g/t.

In December 2012, Australian mining consultancy MINING ONE estimated the resource for the Jiama project at a cutoff grade of 0.3% copper equivalent (Table 1.1).

Through nearly 16 years of mining in the Jiama mining area, an accumulated 80.15 million tons of copper ore, 579,413 tons of copper ore, 63.17 million tons of molybdenum ore, 19,130 tons of molybdenum metal, 21.08 million tons of lead ore, 352,008 tons of lead metal, 19.27 million tons of zinc ore, 183,005 tons of zinc metal, 57.29 million tons of gold ore, 596,814 ounces of gold, and 7,679,000 tons of silver ore, and 34,115,222 ounces of silver have been mined and produced. With Huatailong's continued efforts to intensify exploration, the copper, gold, and silver mineral resources in the Jiama mining area have increased significantly. With a cutoff grade of 0.3% copper, the measured and indicated resources in the Jiama property contains 9.15 million tons of copper metal, 124,500 tons of molybdenum metal, 905,000 tons of lead metal, 498,000 tons of zinc metal, 12.45 million ounces of gold and 540.62 million ounces of silver. Compared to the measured results in December 2012 by Mining One, copper metal increases by 3 million tonnes, gold by 7.12 million ounces, and silver by 247.23 ounces in the 2026 report. The changes of other molybdenum, lead, and zinc metals are minor and negligible. For the inferred resources, copper metal has increased by 1.74 million tons, gold by 2.72 million ounces, silver by 116.3 million ounces, and the changes of molybdenum, lead, and zinc metals are minor and are negligible.

Mineral reserve estimates are based on the 2019 definition standards set by the Canadian Institute of Mines, Metallurgy and Petroleum (CIM).

Currently, open-pit mining and underground mining have a break-even point of 0.39% and 0.69%, respectively. Reserve estimates are based on data and information as of December 31, 2025. Mineral reserve estimates are based on NI43-101 "Standards and Disclosures for Mineral Projects" and CIM Best Practices for Resource Reserve Estimation (2019). The authors believe that the reserve estimate is suitable for reporting and meets the reporting standards of Chapter 18 of the HKEX Listing Rules. The reserves are estimated to utilize a cutoff grade of 0.3% copper. The estimated reserves are summarized in Table 24.2

As of the date of June 30, 2026, the open-pit reserves of 113 million tons of ore are reported for the two small open-pit mining pits within the Jiama mining permit,

which containing 550,000 tons of copper at a grade of 0.49%, 21,700 tons of molybdenum at a grade of 0.02%, 16.09 million ounces of silver at a grade of 4.44 g/t, and 0.18 million ounces of gold at a grade of 0.05 g/t

As of the date of June 30, 2026, the underground mining reserves within the mining license in the Jiama mining area are 553 million tons of ore, containing 5.2 million tons of copper at a grade of 0.94%, 220,000 tons of molybdenum at a grade of 0.04%, 353.79 million ounces of silver at a grade of 19.9 g/t, and 8.18 million ounces of gold at a grade of 0.46 g/t.

Table 21.2 Mineral Reserve Estimate as of June 30, 2026*

		Average Grade					Metal Contained				
Underground											
Category	Ore	Cu	Mo	Ag	Au	CuEq	Cu	Mo	Ag	Au	CuEq
	Mt	%	%	g/t	g/t	%	Mt	Mt	Moz	Moz	Mt
Proven	239.44	1.00	0.04	22.11	0.50	1.68	2.39	0.10	170.21	3.85	4.02
Probable	313.52	0.89	0.04	18.21	0.44	1.47	2.79	0.13	183.55	4.44	4.61
Total	552.97	0.94	0.04	19.90	0.46	1.56	5.20	0.22	353.79	8.18	8.63
Open pit											
Proven	77.7	0.51	0.02	5.41	0.06	0.65	0.40	15.07	13.51	0.15	0.51
Probable	35	0.44	0.02	2.29	0.04	0.53	0.15	6.63	2.58	0.05	0.19
Total	112.7	0.49	0.02	4.44	0.05	0.61	0.55	21.7	16.09	0.18	0.69

*: 1. The mineral reserves report date is June 30, 2026;

2. All mineral reserves are determined according to the CIM standard specified in Canadian National Standard 43-101

3. Mineral reserves are estimated based on the following mining and economic factors:

open-pit mining:

a) mining methods use a 5% dilution factor and a 95% mining recovery rate;

b) The overall openpit slope is 43 degrees;

c) Copper price at \$4.66 per pound;

d) Overall copper processing and recovery rate is 85%

Underground mining:

a) Mining dilution by 12%;

b) Mining losses by 15%

c) Beneficiation yield of 85%.

4. Mineral reserves: Open-pit copper equivalent grade 0.61% CuEq, underground copper equivalent grade 1.56% CuEq; CuEq = Cu+0.01*Ag+1.69*Mo+0.79*Au; Cu, 4.66 USD/bl, Mo, 20 USD/bl, Ag,40USD/oz ,Au, 2890 USD/oz

5. The mineral reserve estimate was prepared by Dr. Siwei He, an external consultant at Changchun Institute. He is a qualified QP under the Canadian NI43-101 standard.

Australian mining consultancy Mining one conducted a reserve estimate for the Jiama project in 2013. The two open-pit mining pits within the Jiama mining area contained reserves of 240 million tons of ore. The underground mining reserves under mining rights in the Jiama mining area were 200 million tons of ore (Table 1.3).

Comparing the Mining one 2013 Jiama Reserve Estimates with that in this report, the ore reserves in open-pit at Jiama mine have dropped from 240 million tons to 110 million tons after nearly 16 years of open pit mining. However, underground mineral reserves have increased from 200 million tons in 2013 to 550 million tons in 2026, a 175% increase. Copper metal content increased from 1.47 million tons to 5.2 million tons, a 250% increase; Molybdenum increased from 100,000 tons to 220,000 tons, a 120% increase; Gold increased from 2 million ounces to 8 million ounces, a 300% increase; Silver increased from 88 million ounces to 354 million ounces, a 300% increase.

22 Recommendations

The review of the Jiama project suggests that the current open-pit mining operations have the potential to expand. The Jiama mining area consists of hornfels, skarn, and porphyry as a single interconnected large orebody, making large-scale open-pit mining feasible for the entire mining area. Huatailong is advised to conduct a feasibility study of large-scale open-pit mining as soon as possible.

The large open-pit feasibility study should fully demonstrate the resource utilization scope, resource utilization rate, and resource industrial indicators, form the overall project development plan, clarify the production coordination plan during the development, and fully consider the smooth transition of mining production.

The gold-molybdenum mineralization clues found at Bayi Ranch are worth more exploration and drilling.

Within the Jiama mining area, there is an exploration potential in the northern and western section of the mineralized bodies 1_1 and 3_1. The southern end of the orebody has not yet been enclosed by drilling yet, so there is still potential on the southern side. Further drilling is recommended to fully understand the true extent of this large mineralization system.

Quality control of exploration samples needs to be strengthened; sample collection, testing, and quality control should strictly follow the quality control standards specified in CIM and NI43-101. In particular, strengthen the quality monitoring and management of standard and blank samples

Core logging, especially for drill cores, should be standardized, with suggestions to add descriptions of mineralized features, oxidation characteristics, and magnetic feature measurements.

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24 DATA AND SIGNATURE PAGE

This Technical Report was prepared to NI 43-101 standards by the following Qualified Persons. The effective date of this report is June 30, 2026.

Zhang Guang Pian

1. Zhang Guangpian, mining engineer, I am currently an independent technical consultant, residing at No. 1801, Building 22, Golden World Bay Community, Nangan District, Changchun City, Jilin Province, China. Email: zgpcgdi@qq.com, Phone: +8613756123131.

2. I graduated from Northeast Institute of Technology in 1988 with a bachelor's degree in mining engineering and have been engaged in mining technology consulting and design for over 37 years.

3. I am a Fellow of the Australasian Mining and Metallurgy Association (AusImm), ID number 318443.

4. I meet the requirements of an "independent qualified person" as defined in "National Document 43-101."

5. I visited and inspected the Jiama project from April 24 to April 27, 2026, and had conducted multiple visiting and inspections prior to this t.

6. I am responsible for chapters 4-6, 13, and 16-19 of this report.

7. I have no connection with China Gold International Resources Co., Ltd. or Huatailong Mining Development Co., Ltd.

Date of signing: June 30, 2026



Zhang Guang Pian

Yingting (Tony) Guo, P.Geo., MMSA

I, Yingting (Tony) Guo, P.Geo. do hereby certify that:

1. I am an independent consulting geologist and Canadian citizen residing in the Province of British Columbia, Canada. Mailing address: 2707 164A Street, Surrey, B.C., Canada V3Z 0P3.

2. I hold a B.A.Sc. in Geology Science conferred by the Nanjing University from Nanjing, China in 1982 and a Ph.D. in Geology and Exploration conferred by the China University of Mining and Technology from Beijing, China in 1988.

3. I am a member (License # 31257), in good standing, of the Association of Professional Engineers and Geoscientists of the Province of British Columbia, Canada and a Qualified Professional (QP) member (# 01472QP) of the Mining and Metallurgical Society of America with the special expertise in geology and ore reserve.

4. I have been practicing my profession related to mining and mineral exploration for over 31 years in a wide variety of locations in North, South America, Africa and China. Specific to the content of this report are two trip to Fiji involving technical reports in 2024 and 2026.

5. I fulfill the requirements to be an “independent qualified person” as defined under “National Instrument 43-101”.

6. I visited the Jiama project during number 9 to 19 of 2024 and April 22-24 of 2026. I am responsible for all the chapters except Chapters 2-10; Chapter 15, Chapter 16-22 in the report.

7. To the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the report not misleading.

8. I am independent of China Gold International Resources and Huatailong Mining Development Limited .

Dated June 30, 2026



Signature of Qualified Person
Yingting (Tony) Guo, P.Geo.

Dr. Siwei He, P.Eng

I, Siwei He. P.Eng (APECBC, , License # 35251), do hereby certify that:

1. I am currently an Independent Consultant residing at:

1460 Columbia Ave
Port Coquitlam, B.C.
V3C 1C3
Telephone: 604-248-6456
Email: swjhe118@gmail.com

2. This certificate applies to the technical report entitled “UPDATED MINERAL RESOURCE AND RESERVE ESTIMATE, NI43-101 TECHNICAL REPORT ON JIAMA COPPER POLYMETALLIC MINE, TIBET, CHINA, JUNE 3th, 2026.

3. I graduated with a Bachelor’s degree in Geological Engineering (BSc) from Guizhou Engineering University and with Ph.D in Exploration Engineering from China University of Geosciences, 1992.

4. I am a member of the APECBC (#35251)

5. I have over 16 years of experience as a geologist and mining engineer in mine operation, six years in mine research and consultant with different companies.

6. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.

7. I am responsible for chapter 15 of this report

8. I am independent of VGMPLC.

Signed this June 30, 2026.



Siwei He P.Eng
Consulting Engineer

