# Technical Report for the Unkur Copper-Silver Deposit, Kodar-Udokan Area, Russian Federation

**Report Prepared for**

## Azarga Metals Corp.

**Report Prepared by**

SRK Consulting (Russia) Ltd.
Project Number RU00556
May 15, 2017

# Technical Report for the Unkur Copper-Silver Deposit, Kodar-Udokan Area, Russian Federation

**Azarga Metals Corp.**
Unit 1, 15782 Marine Drive
White Rock, BC
Canada V4B 1E6
Tel: +1.604.536.2711

**SRK Consulting (Russia) Ltd.**
4/3 Kuznetsky Most Street,
build.1, 3rd Floor, 125009, Moscow, Russia

e-mail: info@srk.ru.com
website: www.srk.ru.com
Tel: +7 (495) 545-44-16
Fax: +7 (495) 545-44-18

**SRK Project Number RU00556**

**Effective date: March 31, 2017**
**Signature date: May 15, 2017**

**Author:**

Robin Simpson, MAIG
Principal Consultant, (Resource Geology)

**With the assistance of:**

Alexander Batalov, MAusIMM
Senior Consultant (Resource Geology)

Dr David Pattinson, CEng, MIMMM
Corporate Consultant (Minerals Processing and Metallurgy)

# Important Notice

This technical report was prepared by SRK Consulting (Russia) Ltd. (“SRK”) for Azarga Metals Corp. The information, conclusions, and estimates contained herein are based on: i) the information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended for use by Azarga Metals Corp. subject to the terms and conditions of its contract with SRK and relevant securities legislation. The contract permits Azarga Metals Corp. to file this report as a technical report with the TSX Venture Exchange (the “Exchange”) or with Canadian or similar securities regulatory authorities pursuant to National Instrument 43-101, Standards of Disclosure for Mineral Projects. Except for Exchange purposes or the purposes legislated under provincial securities law, any other uses of this report by any third party is at that party’s sole risk. The responsibility for this disclosure remains with Azarga Metals Corp. The user of this document should ensure that this is the most recent technical report for the property as it is not valid if a new technical report has been issued.

# 1 Summary

## Introduction

SRK Consulting (Russia) Ltd. (hereinafter referred to as SRK) was commissioned by Azarga Metals Corp. (Azarga Metals) to prepare a report, in accordance with the requirements of National Instrument 43-101, for the Unkur Project, located in the Zabaikalsky Region, Russian Federation. Azarga Metals Corp. holds its interest in the Unkur license through its 60% ownership of Azarga Metals Limited.

This technical report summarizes the information available on the Unkur Project and presents the results of the maiden mineral resource estimation. In the opinion of SRK, this property warrants further exploration expenditures. An exploration work program of diamond core drilling and data acquisition is recommended, with the aim of providing sufficient information for preparing a preliminary economic assessment for the project.

Opinions and conclusions expressed by SRK herein are based on results from Azarga Metals' exploration work, and the historical exploration data collected during the 1969-1971 and 1975-1978 field campaigns.

SRK's opinion is valid through March 31st, 2017. This opinion relies on the information provided by Azarga Metals by that time. In its turn, the information presented by SRK reflects specific technical and economic conditions at the time of reporting. Taking into account the specific character of mining these conditions can significantly change over a short time period.

SRK is not an insider, associate or an affiliate of Azarga Metals Corp., and neither SRK nor any affiliate has acted as advisor to Azarga Metals Corp., its subsidiaries or its affiliates in connection with this project. The results of the technical review by SRK are not dependent on any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings.

## Property Description and Location

The licensed area of the Unkur Project is located in the Kalarsky District of the Zabaikalsky Region, 15km east of the Novaya Chara town. The area of the license is 53.9 km$^2$. License ЧИТ 02522 БР for geological exploration and mining of copper and associated components at the Unkur Project belongs to LLC Tuva-Cobalt, an affiliated company of Azarga Metals Corp.

## Accessibility, Climate, Local Resources, Infrastructure and Physiography

The Unkur site can be accessed from the Chara village and the Novaya Chara town by the year-round unsealed road. The distance from the site to Novaya Chara is about 22 km. The Baikal-Amur Mainline (BAM) railroad is located 5.5 km away from the licensed area.

There is an airport in Chara. Novaya Chara railway station is accessed by the BAM from Bratsk through the town of Severobaikalsk. In winter snow roads are used to access Chita and Taksimo.

The climate of the Project area is a harsh continental climate with very cold and long winters and short hot summers. The average air temperature in January at the upper elevations of the Project area is minus 27.8°C. The winter air temperature minimum in lower elevations is minus 57°C and at altitude, minus 47°C. The July air temperature maximum is plus 32°C. The cold and long winter (October to April) is characterised by high air pressure. Yearly precipitation distribution is very uneven. The first snow usually falls in mid-September and snow cover melts in the middle of April at lower elevations and in May at higher elevations.

The district is economically poorly developed. As of 2014 the estimated population of the Kalarsky district was 8,383 people within an area of some 56,000 km$^2$.

There is a federal electric power line of 100 MW passing through the north-eastern part of the licensed area.

The Project area is located on the northern slopes of the Udokan range in the catchment of the Kemen and Unkur rivers. The Project area is characterized by low- and medium-mountain relief with absolute elevations of 1,100-1,200 m, and local differences in elevation of 100-200 m.

## History

The first phase of systematic exploration of the region was 1948-1953. This work established the copper-bearing properties of the Lower Proterozoic sedimentary strata, and the Udokan deposit and other deposits were discovered.

The Unkur deposit was discovered during 1:200,000 scale mapping in 1962.

Follow-up work, in particular trenching, was carried out in 1963. Two further campaigns of substantial exploration works (diamond drilling, trenching, mapping and geophysical surveys) took place in 1969-1971 and 1975-1978. These campaigns outlined mineralization over a strike length of approximately 5 km.

No field exploration works were carried out at the Unkur Project after 1978 until the Azarga Metals program began in 2016.

Historical mineral resource estimates presented in this section have been superseded by the mineral resource estimate discussed herein. The historical estimates presented in this section are relevant to provide context but should not to be relied upon.

Based on the results from the two exploration campaigns, estimates of copper and silver tonnes and grade were produced in 1972 (Table ES-1), 1979 (Table ES-2), and revised in 1988 (Table ES-3). These estimates adhere to the procedures and categories of the Soviet resource/reserve system. The qualified person has not done sufficient work to classify these historical estimates as current mineral resources or mineral reserves, and the issuer is not treating the historical estimate as current mineral resources or mineral reserves.

These historical estimates for the Unkur project were prepared in accordance with the Soviet Union resource/reserve classification system. The categories used in the Soviet system are based on reliability of the exploration data, complexity of the geological setting, and exploration maturity of the deposit.

National Instrument 43-101 requires mineral resource reporting to adhere to the resource category definitions established by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) in the *Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines*. The categories in the Soviet resource/system are incompatible with these definitions, and the estimation methods mandated by the Soviet system are different to the geological modelling and geostatistical estimation methods the qualified person would recommend as optimal for the Unkur deposit. Furthermore, the poor quality of the core remaining from the previous exploration programs, and the difficulty of doing detailed verification of historical results, means that any future program of resource definition drilling is likely to replace rather than build on the historical drilling data. Therefore, the historical estimates reported here should be regarded as an indication of exploration potential, instead of an inventory that will necessarily be converted into mineral resources.

For the 1972 estimate, the combined strike length of the C2 and prognostic resources was 5 km, and the depth limit on the extent of the prognostic resources was 1000 m below surface. Prognostic silver resources were estimated within the copper mineralization domain. Average silver grades were determined based on the chemical assays of eight composite samples. The arithmetic mean of these samples is 73.3 g/t, and this grade was applied to all the blocks. Therefore, the prognostic resources of silver amount to 10.1 Kt Ag.

**Table ES-1: Results from the 1972 estimate for the Unkur Project (Mulnichenko V., 1972), classified according to the Soviet Union resource/reserve classification system of 1960**

| Resources | Block No. | Mineralization Thickness, m | Contained Ore, Kt | Average Cu Grade, % | Contained Metal, Kt |
|---|---|---|---|---|---|
| C2 | Block 1 | 12.4 | 77,760 | 0.80 | 622 |
| | Block 2 | 4.3 | 9,978 | 0.60 | 60 |
| **Total, C2 Category** | | **9.8** | **87,738** | **0.78** | **682** |
| Prognostic resources | Block 3 | 12.4 | 33,849 | 0.80 | 271 |
| | Block 4 | 8.3 | 16,409 | 0.75 | 123 |
| **Total, prognostic resources** | | **10.7** | **50,258** | **0.78** | **394** |
| **Total** | | **10.1** | **137,996** | **0.78** | **1,076** |

Upon completion of the second phase of exploration works for the Unkur Project carried out in 1979, the second estimate for the Unkur deposit was performed with regard to the new drilling data (Table ES-2). Prognostic silver resources were again estimated within the copper mineralization domain, based on the chemical assays of eleven composite samples. The arithmetic mean of these samples is 68.3 g/t, and this grade was applied to all the blocks. Therefore, the prognostic resources of silver amount to 9.7 Kt Ag.

**Table ES-2: Results from the 1979 estimate for the Unkur Project (Berezin G., 1979), classified according to the Soviet Union resource/reserve classification system of 1960**

| Resources | Block No. | Mineralization Thickness, m | Contained Ore, Kt | Average Cu Grade, % | Contained Metal, Kt |
|---|---|---|---|---|---|
| C2 | Block 1 | 12.9 | 91,820 | 0.80 | 725 |
| | Block 2 | 4.3 | 9,978 | 0.60 | 60 |
| **Total, C2 Category** | | **8.6** | **101,798** | **0.77** | **785** |
| Prognostic resources | Block 3 | 12.9 | 24,685 | 0.80 | 195 |
| | Block 4 | 8.3 | 16,409 | 0.75 | 123 |
| **Total, prognostic resources** | | **10.6** | **41,095** | **0.77** | **318** |
| **Total** | | **10.1** | **142,893** | **0.77** | **1,103** |

In 1980 the Soviet resource/reserve classification system was updated. The changes primarily affected the definitions of the C2 resource category and prognostic resources: under the new system, the C2 category was grouped with estimated reserves, and the prognostic resources were divided into three categories: P1, P2, and P3. In 1988 the Unkur deposit was re-estimated and re-classified in accordance with the new classification system. A consequence of this revision was the entire inventory was classified as prognostic resources (Table ES-3).

**Table ES-3: Results from the 1988 estimate of Unkur Project resources, classified according to the Soviet Union resource/reserve classification system of 1980**

| Resources | Component | Contained Ore, Kt | Average Grade | Metal Contained |
|---|---|---|---|---|
| P1 | Copper | 83,500.9 | 0.79% | 660 Kt |
| | Silver | | 68.3 g/t | 5703 t |
| P2 | Copper | 58,107.7 | 0.75% | 436 Kt |
| | Silver | | 68.3 g/t | 3969 t |
| P3 | Copper | 87,532.5 | 0.77% | 674 Kt |
| | Silver | | 68.3 g/t | 5979 t |

The most recent assessment of the copper and silver resources for the Unkur Project was prepared by the geologists of the Central Geological Research Institute (TsNIGRI). The results of this estimate are presented in (Table ES-4). The data supporting the 2014 estimate are the same as for the 1979 and 1988 estimates, and the resource/reserve reporting system is the same as was in place for the 1988 estimate, but the estimated tonnes and metal were an order of magnitude lower than in the 1988 estimate.

The differences between the prognostic resource statements of 1988 and 2014 are due to different interpretations of how the Russian resource/reserve reporting system should be applied to the Unkur deposit. One of the main reasons for the substantially lower tonnage estimate in 2014 is that extrapolation down dip was limited to 300 m below surface, on the assumption that this would be the maximum depth of open pit mining. A greater depth limit, of 1,000 m below surface, was used to constrain the 1988 and earlier estimates, on the basis that the deposit could potentially be mined by underground methods.

**Table ES-4: Results from the 2014 estimate for the Unkur Project (Volchkov and Nikeshin, 2014), classified according to the Russian resource/reserve classification system of 1980**

| Category | Block No. | Component | Tonnes, Kt | Average Grade | Metal Contained |
|---|---|---|---|---|---|
| P1 | 1 | Copper | 16,516.5 | 0.90% | 148.6 Kt |
| | 2 | | 3,964 | 0.65% | 25.8 Kt |
| Total P1 | | Copper | 20,480.5 | 0.85% | 174.4 Kt |
| | | Silver | | 77.96 g/t | 1,600 t |

## Geological Setting and Mineralization

The Unkur Project is located in the Unkurskaya syncline formed by Lower Proterozoic metamorphosed sediments of the Aleksandrovskaya, Butunskaya, and Sakukanskaya formations. The syncline extends northwest-southeast for 10-12 km and is 4 km wide.

The horizon of copper-silver mineralisation is confined to sediments of the lower subformation of the Sakukanskaya formation. The portion of the horizon delineated by mapping, drilling, trenching, and geophysics is located on the southwest limb of the Unkur Syncline, and dips northeast at 45-60°.

Sulphide copper minerals comprise chalcopyrite, pyrite, bornite, chalcocite and covellite. Oxide minerals include malachite and brochantite. Accessory minerals include magnetite, magnetite, hematite and ilmenite.

## Deposit Types

The Unkur deposit is interpreted as a sediment-hosted stratiform copper deposit.

## Exploration

During the 2016-2017 exploration campaign, Azarga Metals took channel samples from two exposures of the mineralised zone in the bank of the Unkur River, and from four sites of historical trenching that were cleared to re-expose the bedrock. In total, 67 meters of samples were collected from the outcrops, and 186 meters from the trenches. Three of the trenches intersected copper-silver mineralisation. The trench samples were used for both modelling the contacts of the mineralisation domains, and for the geostatistical grade estimation within these domains.

Approximately 130 line kilometres of detail ground magnetics data were collected during Azarga Metals' exploration program. The results showed that copper-silver mineralisation is associated with a strong magnetic signature and that ground magnetics may be useful targeting tool on the project.

## Drilling

The main source of information for the mineral resource estimate presented in this report is 4,580 meters of diamond core drilling (from 16 drill-holes) completed during Azarga Metals' exploration campaign from August 2016 until February 2017. Section lines for drilling are spaced approximately 300m apart. Where there are two Zone 1 intersections on the same drill section, the spacing between intersections is typically 200m to 300m.

Based on the weight of the core, SRK estimates that the average recovery from the mineralised zone is approximately 90%. Given the style and grade of mineralisation at Unkur, SRK considers this recovery to be sufficient for the samples to support mineral resource estimation, and there are no material data quality issues related to drilling, sampling or recovery factors.

## Sample Preparation and Analyses

All core was digitally photographed. Intervals identified by the geologists as likely to be mineralised were selected for sampling, and the sampling interval was extended for at least 10 meters beyond the limits of the identified mineralisation. Hand-held XRF measurements were used as a further check, to ensure that all mineralised zones were identified for sampling.

Core selected for sampling was cut with a core saw. Sample lengths were nominally 1.0 m, but adjustments to the sample lengths were made in order to honour geological boundaries. Half core from the intervals selected for sampling was dispatched by road to SGS Laboratories in Chita.

The primary laboratory used for analysing Azarga Metals' samples is SGS Vostok Limited in Chita. Samples received by SGS were dried, crushed to 85% passing 2mm, and then ground to 90% passing 0.7mm. A subsample of 0.5 to 1.0 kg was collected for a further stage of fine grinding, to 95 % passing 75 micron. A 50 % split of this subsample (250 to 500 g) was used for analysis.

SGS analysed the samples for copper and silver. The copper content was determined by SGS method ICP90A (sodium peroxide fusion, then inductively coupled plasma - atomic emission spectroscopy). The silver content was determined by SGS method AAS12E (two acid digest, then atomic absorption spectroscopy).

External quality control samples used by Azarga Metals included certified reference material, submitted to SGS with the primary samples, and check assays by an umpire laboratory (ALS in Chita).

In SRK's opinion, the sample preparation, security and analytical procedures are adequate for the purpose of providing sufficient confidence to use the assay database for mineral resource estimation.

## Data Verification

The qualified person visited site in December 2014 and October 2016. The qualified person has also verified the database the mineral resource estimate is based on. This verification was done by personal inspection of drill core, drill sites and trenches during the 2016 site visit, and by checking database content against primary data sources and historical information.

In the opinion of the qualified person, the quantity and quality of data collected by Azarga Metals are sufficient to support estimation of mineral resources.

## Mineral Processing and Metallurgical Testing

In December 2014, a single 350 kg sample of the oxide Cu-bearing ore of the Unkur deposit was collected for metallurgical testwork. This sample was analysed by ZAO SGS Vostok Ltd, and the results were reported in February 2015. SRK reviewed this report, and made the following conclusions:

- Over 95% of the copper and silver could be recovered by whole ore hydrometallurgical processing, including acid leaching of copper followed by cyanidation of Ag from the acid leach residues.
- Carbonate minerals present in this sample resulted in a relatively high acid consumption.
- The single sample tested is unlikely to be representative of the entire deposit. A program of further metallurgical testing is recommended, based on multiple composite samples made up from drill core.

## Mineral Resource Estimates

The mineral resource statement for the Unkur project is presented in Table 14-1. This mineral resources have been estimated, for the first time on the Unkur project, in conformity with generally accepted CIM *Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines* and reported in accordance with the Canadian Securities Administrators' National Instrument 43-101.

**Table ES-5: Unkur Cu-Ag project mineral resource statement as at March 31, 2017**

| Domain | Classification | Million tonnes | Cu % | Ag ppm | Cu Eq % | Cu Metal (Mlb) | Ag Metal (Moz) |
|---|---|---|---|---|---|---|---|
| Zone 1, near surface | Inferred | 23 | 0.54 | 40 | 0.93 | 270 | 29 |
| Zone 2 North, near surface | Inferred | 9 | 0.47 | 43 | 0.89 | 90 | 12 |
| Zone 2 South, near surface | Inferred | 1 | 0.42 | 4 | 0.46 | 10 | 0.2 |
| *Total near surface* | *Inferred* | *33* | *0.52* | *39* | *0.90* | *380* | *41* |
| | | | | | | | |
| Zone 1, underground | Inferred | 8 | 0.53 | 34 | 0.86 | 100 | 9 |
| Zone 2 North, underground | Inferred | 1 | 0.47 | 43 | 0.89 | 10 | 2 |
| *Total underground* | *Inferred* | *10* | *0.52* | *35* | *0.87* | *110* | *11* |
| | | | | | | | |
| **Zone 1** | **Inferred** | **31** | **0.54** | **38** | **0.91** | **370** | **38** |
| **Zone 2** | **Inferred** | **11** | **0.46** | **38** | **0.84** | **120** | **14** |
| **TOTAL** | **Inferred** | **42** | **0.52** | **38** | **0.90** | **480** | **52** |

**Notes: (1) CIM Definition Standards were followed for mineral resources; (2) Reporting of near surface mineral resources is constrained by a conceptual pit shell; (3) Mineral resources are not mineral reserves and do not have demonstrated economic viability; (4) Mineral resources are reported at a cut-off grade of 0.3% copper equivalent for near surface and 0.7% copper equivalent for underground; (5) Copper and silver equivalent grades were estimated using USD3/lb copper price, USD20/oz silver prices, and assuming 100% recovery for both; the equivalence formula is Cu eq = Cu + (0.009722 x Ag); (6) Numbers may not add due to rounding.**

The main identified zone of copper-silver mineralization (Zone 1) is intersected by 13 drill-holes, two trenches and one sampled outcrop. Leapfrog Geo software was used to construct a wireframe interpretation of Zone 1, at a nominal threshold of 0.10% copper. Approximately parallel to Zone 1, and 100 to 150m southwest, a second zone of mineralization has been interpreted, from two drill intersections, one trench intersection, and one outcrop. This second zone is stratigraphically below Zone 1.

The Lower Proterozoic sedimentary rocks that host mineralization are partly covered by Quaternary moraine. The thickness of the moraine cover over the northern part of the mineralization domain is up to 100 meters.

Copper and silver grades within the Zone 1 mineralized domain were estimated by 2D Ordinary Kriging. The block size for 2D Kriging was 100 meters north-south and 100 meters vertically.

Based on a review the high grade tails of the copper and silver grade distributions, and assessment of how the highest grades were distributed spatially, SRK chose not to apply any grade capping to either the samples or the composites.

The copper and silver grades for Zone 2, which contains fewer intersections than Zone 1, were estimated by a simple average of sample grades for the northern and southern portions.

For the mineralized domains and the host rocks, a dry bulk density value of 2.67 t/m$^3$ was used for converting volumes into tonnages.

The portion of the mineralization model that met the CIM definition of a mineral resource ("…reasonable prospects for eventual economic extraction") was established by using NPV Scheduler software to generate a pit shell to constrain reporting of the open-pit resource. Within the pit, no mineralized blocks have an estimated grade of less than 0.4% (copper equivalent), and no further cut-off grade was applied. Below the pit, a cut-off grade of 0.7% (copper equivalent) was applied to define an underground component of the mineral resource.

All mineral resources were classified as Inferred, based on the intersection spacing relative to the interpreted continuity, and potential complexity, of mineralisation and geology.

## Environmental Studies, Permitting and Social Impacts

For this early development stage project, information regarding environmental and social setting is limited and obtained through publicly available data and from state authorities. There is no information available regarding any environmental liabilities to which the Unkur Project may be subject for, and no information about environmental and socio-economic studies that have already been conducted for the deposit. Before commencement of the design stage, baseline environmental and socio-economic studies will need to be conducted to support the project design decision making process. At the project design stage, an environmental impact assessment will be required, including proposals for impact mitigation activities. According to the mining license conditions, environmental monitoring should start at pre-engineering stages (geological exploration stage) and be adjusted at subsequent stages of project implementation (construction and operation).

The key environmental and social risks that SRK considers relevant at this stage of the Project, based on the limited information available, include water management issues due to proximity of the Kemen River, and potential cumulative socio-economic and environmental impacts due to a presence of other mineral deposits in the Kalarsky district which are at different development stages.

## Adjacent Properties

The Udokan copper deposit is located 25 km south of the licensed area of the Unkur Project. Similar to Unkur, the copper mineralization of the Udokan deposit is confined to sediments of the Sakukanskaya formation. For Udokan though, the mineralization is in the Upper subformation, whereas the Unkur mineralization is in the Lower subformation.

Information regarding Udokan is publically available on the Baikal Mining Company (Baikal) website (http://www.bgk-udokan.ru/en/). Mineral Resources and Ore Reserves for Udokan have been prepared according to the definitions and standards of the JORC Code. The reported combined Measured and Indicated Mineral Resources for Udokan, as of March 2014, are 1,822 Mt @ 1.01% Cu and 10.7 g/t Ag, for 18.4 Mt contained Cu, and 628 Moz contained Ag. The feasibility study for Udokan was completed in February 2014, and, according to the project execution dates presented by Baikal, mining will commence in 2021.

In addition to Unkur and Udokan, other sandstone hosted copper deposits in the Kodar-Udokan Area are discussed in a publically available US Geological Survey report (http://pubs.usgs.gov/sir/2010/5090/m/pdf/sir2010-5090M.pdf). This study gives details of stratiform copper mineralization occurrences elsewhere in the Sakukanskaya formation, and also within sandstones of other Lower Proterozoic formations of the Kodar-Udokan Area.

The qualified person for this report on the Unkur Project has not verified the information relating to Udokan and other deposits in the Kodar-Udokan Area, and this information is not necessarily indicative of the mineralization on the Unkur property.

## Interpretation and Conclusions

The results from the exploration carried out by Azarga Metals from August 2016 until February 2017 have confirmed the presence of significant copper-silver mineralisation in the Unkur project area.

The quality and quantity of data collected by Azarga Metals is a sufficient basis for reporting a maiden mineral resource estimation for the Unkur Project. The main mineralised domain modelled by SRK from Azarga Metals' drilling and trenching intersections is continuous for 3400 m along strike, and up to 550 m down dip, with a mean thickness of 19 m. This domain (Zone 1) is open in both directions along strike and down dip.

Several mineralised intersections have also been interpreted to define an approximately parallel zone of mineralisation, 100 to 150 m southeast of Zone 1. Potential remains for other new zones of mineralisation to be discovered by further drilling within the Unkur license area.

The current database for the project is adequate to support an overall Inferred mineral resource classification, but is not adequate to provide reliable local estimates. The main limitations on confidence are:

1) Drilling sections are 300 to 400 m apart, with one or two Zone 1 intersections per section.
2) Surveyed locations of drill hole collars and surface channel sampling locations are based on measurements from a hand-held GPS device. Based on comparing repeat measurements, the uncertainty attached to these measurements appears to be up to tens of meters.
3) No detailed topographic survey is yet available for the project.

## Recommendations

In the opinion of SRK, the potential of the Unkur Project is sufficient to justify additional exploration expenditures. SRK recommends that Azarga Metals' priorities should be to expand the resource inventory for the project, and collect the additional information that will be required for proceeding to preliminary economic assessment.

Exploration planning should be based on two phases of work.

The first phase of work, with an estimated budget of USD 815,000, should consist of:

1) Diamond core drilling (2,500m) on the same set of section lines already drilled by Azarga Metals. The main purpose of these holes will be to expand the resource inventory by testing for extensions of Zone 2 mineralisation. The holes should be planned to be deep enough to test for other parallel zones of mineralisation, stratigraphically below Zone 2.
2) A topographic survey of the entire license area, based on satellite data supplemented by control points surveyed on the ground.
3) Ground-based geophysics (magnetics and electrical tomography). The purpose of the geophysical surveys will be to provide targets, in addition to the strike extensions of Zone 1 and Zone 2 mineralisation, that can be tested by drilling during Phase 2.
4) Metallurgical testwork on core and reject sample material from the holes Azarga Metals drilled during the 2016/2017 exploration campaign.

The program for the second phase of work will be dependent on the results obtained from the first phase, but the main components of the second phase, with an estimated budget of USD 1,335,000, should be:

1) Diamond core drilling (7,500m) to test targets from the Phase 1.
2) Further metallurgical testwork, as required to characterise newly identified zones of mineralisation.
3) Preparation of an updated mineral resource estimation, and a preliminary economic assessment.

# Table of Contents

# List of Tables

# List of Figures

# Appendices

# 2 Introduction

The Unkur Project is an early stage copper-silver exploration project, located in the Kalarsky District, Zabaikalsky Region, Russia. The Kalarsky District is about 400 km northeast of the city of Chita. LLC Tuva-Cobalt holds a license for the right to explore and mine subsurface mineral resources of the Unkur Project. Azarga Metals Corp. holds its interest in the Unkur license through its 60% ownership of Azarga Metals Limited, which in turn indirectly owns 100% of LLC Tuva-Cobalt.

Azarga Metals Corp. commissioned SRK Consulting (Russia) Ltd. (SRK) to visit the property and prepare a maiden mineral resource estimation for the Unkur Project. The services were rendered between October of 2016 and April of 2017 leading to the preparation of an updated technical report. The previous technical report, also prepared by SRK, was filed in relation to an agreement between Azarga Metals Ltd. and European Uranium Resources Ltd., executed on March 1, 2016, whereby the shareholders of Azarga Metals Ltd. sold 60% of the issued shares to European Uranium Resources Ltd. in exchange for shares of European Uranium Resources Ltd. and deferred cash payments. Following this transaction, European Uranium Resources Ltd. was renamed as Azarga Metals Corp.

This technical report was prepared following the guidelines of the Canadian Securities Administrators' National Instrument 43-101 and Form 43-101F1.

This technical report summarizes the information available on the Unkur Project and presents the results of the maiden mineral resource estimate. In the opinion of SRK, this property warrants further exploration expenditures. A work program of gathering the data required for a preliminary economic assessments recommended.

## 2.1 Scope of Work

The scope of work, as defined in a contract of engagement executed on September 2, 2016 between Azarga Metals Corp. and SRK, includes the preparation of a mineral resource estimate and independent technical report in compliance with the National Instrument 43-101 and Form 43-101F1 guidelines. This work involves the following aspects:

- Site visit;
- Review of the exploration data and its quality;
- Modelling of geological and mineralisation domains;
- Preparation of a block model estimate of Cu and Ag grades;
- Preparation of the mineral resource statement;
- Compiling of the report.

## 2.2 Sources of Information

This report is based on:

- The database of sampling and logging information provided by Azarga Metals from their first campaign of drilling and trenching (August 2016 to February 2017);
- Discussions with personnel from Azarga Metals and their subcontractors;
- Observations made by SRK during two visits to site (December 10, 2014, and October 13, 2016);
- Observations made by SRK during a visit to SGS Laboratories in Chita, the primary laboratory for Azarga Metals' samples (October 14, 2016);
- A February 2015 report, by ZAO SGS Vostok Ltd., describing the results from metallurgical testwork done on a 350kg sample collected from an outcrop of oxidised mineralised material on the Unkur property;
- A two-volume report from the results of exploration undertaken by the Naminginskaya expedition team at the Unkur copper project in 1969-1971;

- A three-volume report from the results of exploration undertaken by the Lukturskaya expedition team at the Unkur copper project and Klyukvennoye deposit in 1975-1978; and
- Information obtained from the public domain.

## 2.3 Qualifications of SRK Group

The SRK Group comprises over 1,000 professionals, offering expertise in a wide range of resource engineering disciplines. The SRK Group's independence is ensured by the fact that it holds no equity in any project and that its ownership rests solely with its staff. This fact permits SRK to provide its clients with conflict-free and objective recommendations on crucial judgment issues. SRK has a demonstrated track record in undertaking independent assessments of Mineral Resources and Ore Reserves, project evaluations and audits, technical reports and independent feasibility evaluations to bankable standards on behalf of exploration and mining companies and financial institutions worldwide. The SRK Group has also worked with a large number of major international mining companies and their projects, providing mining industry consultancy service inputs.

## 2.4 Personal Inspection on the Property

Robin Simpson, the qualified person for this report, and a Principal Resource Geologist from SRK Consulting (Russia) Ltd, visited the site during October 13, 2016, accompanied by representatives of Azarga Metals. During this visit Azarga Metal's drilling and trenching teams were active, and the qualified person was able to observe the protocols in action for collecting, handling, analysing and storing samples.

The qualified person previously visited site during December 10, 2014. This earlier site visit included an inspection of outcropping copper-bearing horizons, and examination of historical drill core from the 1969-1971 and 1975-1978 exploration campaigns.

## 2.5 Declaration

SRK's opinion contained herein and effective March 31st, 2017, is based on information collected throughout the course of SRK's investigations. The information in turn reflects various technical and economic conditions at the time of writing this report. Given the nature of the mining business, these conditions can change significantly over relatively short periods of time. Consequently, actual results may be significantly more or less favourable.

This report may include technical information that requires subsequent calculations to derive sub-totals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, SRK does not consider them to be material.

SRK is not an insider, associate or an affiliate of Azarga Metals Corp., and neither SRK nor any affiliate has acted as advisor to Azarga Metals Corp., its subsidiaries or its affiliates in connection with this project. The results of the technical review by SRK are not dependent on any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings.

# 3 Reliance on Other Experts

SRK was informed by Azarga Metals Corp. that, as of the effective date of this report (March 31, 2017), there are no known litigations or legal impediments potentially affecting the Unkur Project.

SRK relies wholly on the legal information provided in the Share Purchase Agreement dated March 1, 2016, among European Uranium Resources Ltd., Azarga Metals Limited and the selling shareholders of Azarga Metals Limited. These sources of information pertain to the property ownership, terms of the purchase agreement, underlying interests such as Net Smelter Royalty and the obligations for maintaining the license with government agencies. These items are referenced in Section 4 of this report.

# 4 Property Location, Description and Licence

## 4.1 Location

The Unkur Project lies in the Kalarsky district of the Zabaikalsky administrative region, 15 km east of the Novaya Chara town (Figure 4-1 and Figure 4-2).


**Figure 4-1: Unkur Project Overview Location Map (compiled by SRK, 2015)**

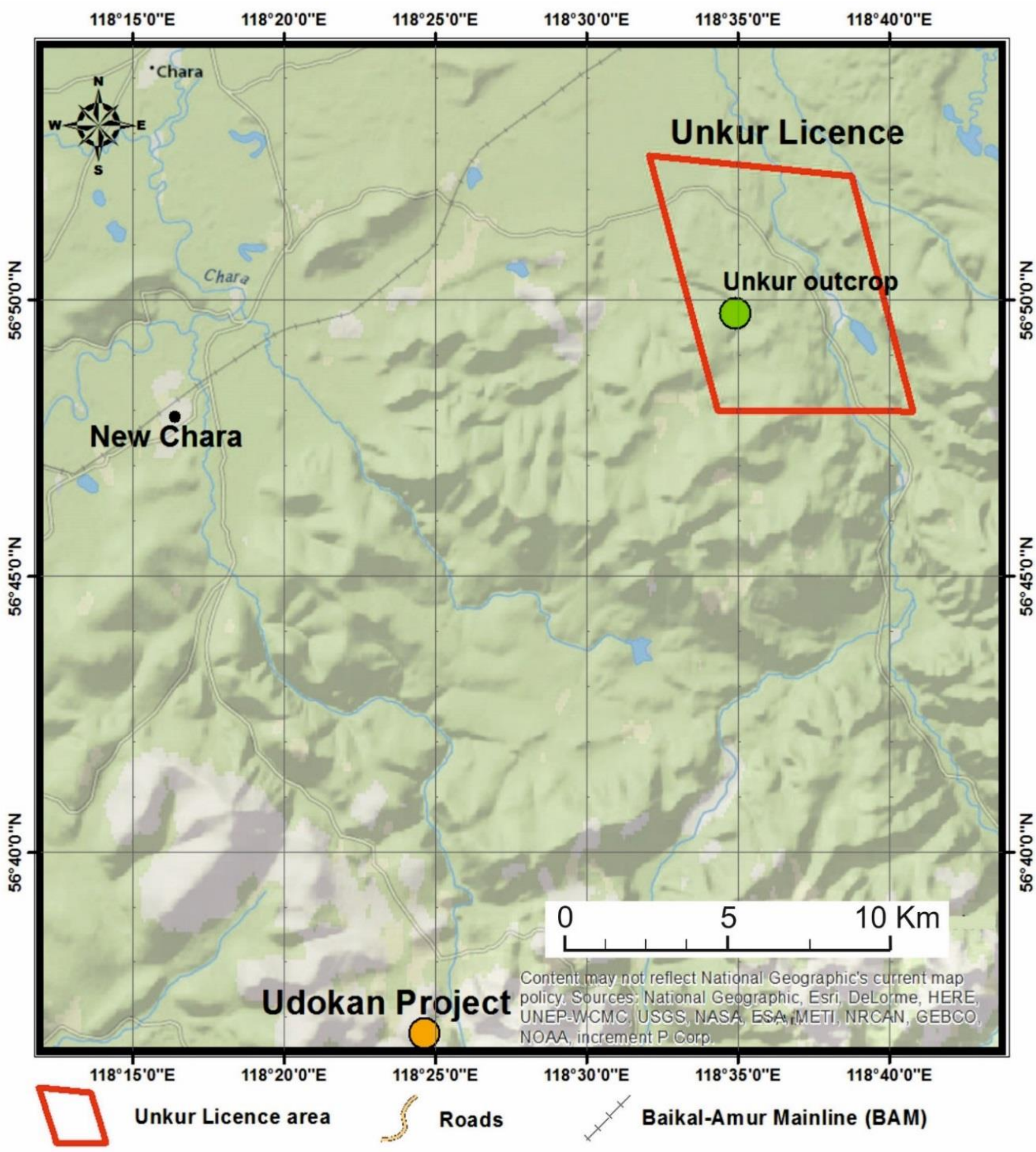



**Figure 4-2: Unkur Project Location Map (compiled by SRK, 2015)**

Deposits of nonferrous, ferrous and rare metals are found in the Kodar-Udokan Area as well as hard coal and industrial minerals.

The main commercial mineral is copper, which is confined to the deposits of the Udokan Series. The major undeveloped deposit is the Udokan deposit of copper-bearing sandstone. Other mines and unexploited deposits of the Kodar-Udokan Area include:

- The Chiney titanium magnetite iron ore deposit (Figure 4-1)
- The Apsat coal mine (Figure 4-1)
- Mining of industrial minerals, mainly sandstone and gritstone, at various locations.
- The Katuginskoye Project: rare metal deposits associated with intrusions of subalkalic metasomatically altered granites.

## 4.2 Licence Agreement

The subsoil license for the Unkur Project belongs to LLC Tuva-Cobalt, an affiliated company of Azarga Metals Corp. Azarga Metals Corp. holds its interest in the Unkur license through its 60% ownership of

Azarga Metals Limited, which in turn indirectly owns 100% of LLC Tuva-Cobalt. The license is based on License ЧИТ02522БР (geological study, exploration and production of copper, silver, and associated components for the Unkur Project). The License was awarded via a bidding process on August 26, 2014, held in Chita, and was registered on September 02, 2014 in the Department of Subsoil Use for Central and Siberian District of Russia (Tsentrsibnedra) in Krasnoyarsk.

The License covers an area of 53.9 km$^2$ and is valid through December 31, 2039.

The licence details and conditions are given in Table 4-1, and the coordinates of the licensed area are listed in Table 4-2.

**Table 4-1: License Details**

| Item | Description |
|---|---|
| License | ЧИТ02522БР |
| Name | Licence Agreement on conditions of subsoil use for mining of copper, silver, and associated minerals in the Unkur Project |
| Valid From | 02/09/2014 |
| Expiry | 31/12/2039 |
| Area | 53.9 km$^2$ |
| GKZ Resource Approval | Not included in the State Balance Sheet |
| The GKZ prognostic resources, 1988 | Prognostic Resources:<br>P1 – ore tonnage is 83,501 Kt, metal (Cu) content - 660 Kt, metal (Ag) content - 5703 t;<br>P2 – ore tonnage is 58,108 Kt, metal (Cu) content- 436 Kt, metal (Ag) content - 3969 t;<br>P3 – ore tonnage is 87533 Kt, metal (Cu) content - 674Kt, metal (Ag) content - 5979 t. |
| Conditions | Compliance with the Russian Legislation, advanced geological survey, full-extraction of on-balance mineral reserves/resources. |
| | Industrial and occupational safety. |
| | Environmental Protection. |
| | Social and economic development of region. |

**Table 4-2: License Coordinates**

| Point | Latitude (dd° mm' ss'') | Longitude (dd° mm' ss'') |
|---|---|---|
| 1 | 56 48 01N | 118 34 20E |
| 2 | 56 52 36N | 118 32 03E |
| 3 | 56 52 14N | 118 38 45E |
| 4 | 56 47 59N | 118 40 45E |

The subsoil user shall be guided by the Subsoil Law of the Russian Federation when undertaking exploration works.

## 4.3 Permit Acquisition and Legislative Requirements

The licence appears to cover all the existing resources of the deposit including an unexplored north-eastern part of the deposit; the licence covers all the potential resources of the deposit at depth.

## 4.4 Royalties, Rights, Payments and Agreements

The licence states the charges and taxes relating to subsoil use which include the following:

- mineral extraction tax as per Russian Federation Laws;
- water tax as per Russian Federation Laws;
- a single payment of RUR 20.856M for the right to use subsoil for mining copper and associated minerals;
- Other charges and taxes prescribed by the tax laws of the Russian Federation.

### 4.4.1 Exploration Fees

According to the license conditions the holder of the license (LLC Tuva-Cobalt) shall pay the following rates:

1. Early Stage Exploration: For the entire subsoil area, except for the deposit areas at the Exploration Stage, the rate for the 1st year is RUR 50 per $km^2$; then for years 2-5 the rate will be RUR 162/year per $km^2$; and from the 5th year RUR 225/year per $km^2$.

2. Exploration Stage: RUR 1,900 per $km^2$ for the 1st year, then; RUR 8,707/year per $km^2$ for the 2nd and 3rd years of the works.

### 4.4.2 Royalties

The royalties to be paid to the Russian Federation for extracting copper and silver are 8% and 6.5% respectively. In addition to this (and described in more detail in Item 4.6), the vendors who sold part of their shareholding to European Uranium Resources Ltd will retain a 5% net smelter return royalty.

### 4.4.3 Environmental Liabilities

According to the license agreement the subsoil user (LLC Tuva-Cobalt) is obliged to follow the statutory regulations of the Russian Federation on subsoil and environmental protection.

The subsoil user shall perform environmental monitoring (atmosphere, subsoil, waters, soil, biological resources) in the area of the mining enterprise influence.

There is no information available regarding any environmental liabilities to which the Unkur Project may be subject for. Any historical disturbance from exploration activities that may exist on site are outside of current Licensee liabilities according to existing legislation unless Licensee voluntarily accepts them.

### 4.4.4 Permits Required for the Proposed Work

The license is valid through December 31, 2039. Upon approval of detailed project development, the license validity period shall become the mine life of the deposit, which will be calculated based on the technical and economic justification for the deposit development.

The license for the right to explore and mine subsurface mineral resources contains the terms of development of the project and reporting documentation as well as of the exploration work:

1. Approval of a project design for geological investigation of subsurface mineral resources (early stage exploration) which has previously received a positive conclusion in accordance with Article 36.1 of the Subsoil Law of the Russian Federation.

2. Submission of the prepared documents based on geological study of the subsurface mineral resources to the State Appraisal of Reserves of Commercial Minerals in accordance with Article 29 of the Subsoil Law of the Russian Federation not later than 02/09/2020.

3. Approval of a project design for detailed exploration which has previously received a positive government conclusion in accordance with Article 36.1 of the Subsoil Law of the Russian Federation not later than 02/09/2021.

4. Submission of the prepared documents based on detailed exploration results to the State Appraisal of Reserves of Commercial Minerals in accordance with Article 29 of the Subsoil Law of the Russian Federation not later than 02/09/2024.

5. Preparation and approval of the technical project of deposit exploration arranged in accordance with Article 23.2 of the Subsoil Law of the Russian Federation not later than 02/09/2026.

6. Preparation and approval of the technical project of abandonment and suspension of workings, drill holes and other underground workings arranged in accordance with Article 23.2 of the Subsoil Law of the Russian Federation a year ahead of the planned completion of the deposit development.

7. Submission of the annual information report on the works carried out onsite not later than January 15 of the year following the reporting period. The order of presentation of these materials is determined by Federal Agency on Subsoil Use and its territorial bodies.

8. Submission of annual statistical reporting (5-GR, 70-TP, 71-TP, 2-LS, 2-GR, 7-GR forms etc.) within the prescribed time limits.

The dates of bringing the deposit into development and driving up to the rated capacity are determined in the project plan of the deposit development.

## 4.5 Surface Rights and Legal Access

Exploration and development of mineral deposits is generally not possible without the use of the ground surface for such purposes, i. e, without access to the relevant land plot. Under Russian law relevant subsoil use licences do not automatically entitle the companies to occupy the land necessary for their activities and associated industrial activities. The issue of obtaining the necessary land rights are addressed by companies separately to, and in parallel with, the obtaining of the subsoil licence. Land use rights are obtained for the parts of the licence area actually being used, including the plot being mined, access areas and areas where other mining-related activity is occurring.

Russian legislation on land does not definitively provide at what stage the subsoil user should initiate the procedure for obtaining land rights. Under existing subsoil legislation, the formalisation of a subsoil user's land rights for the purposes of geological exploration and subsoil use are carried out under the procedure stipulated by the Land Code. In practice, the procedure for obtaining land rights to a land plot required for exploration and mine development may take several months.

The process of obtaining land rights is governed by federal and regional legislation. Although regional legislation should not contradict Russian federal law, in practice, some parts do. This results in certain ambiguity and irregularity in the procedure of obtaining land rights. Under the Land Code, mining companies generally have either the right of ownership or lease with regard to a land plot in the Russian Federation.

The majority of land plots in the Russian Federation (including all of the license area for the Unkur Project) are owned by federal, regional or municipal authorities, which, through public auctions, tenders or private negotiations, can sell, lease or grant other rights of use over the land to third parties. The general principle, as fixed in the Land Codes, states that the land plots required for the performance of works associated with subsoil use out of lands in state or municipal ownership, should be granted for lease outside a tender or an auction. The Government establishes the procedure for calculation of the amount of rental payments for such land plots.

## 4.6 Obligations to Vendor

On March 1, 2016, European Uranium Resources Ltd and Azarga Metals Ltd executed a share purchase agreement whereby the six shareholders of Azarga Metals Ltd (the “Selling Shareholders”) sold 60% of the issued shares of Azarga Metals Ltd to European Uranium Resources Ltd in exchange for shares of European Uranium Resources Ltd and deferred cash payments. Subject to terms and conditions, the Selling Shareholders agreed to grant European Uranium Resources Ltd the right to purchase the remaining 40% of the shares of Azarga Metals Ltd (the “Call”) and European Uranium Resources Ltd granted the Azarga Metals Ltd Selling Shareholders the right to sell the remaining 40% of the shares of Azarga Metals Ltd to it (the “Put”). The fair value of that 40% interest will be negotiated at the time of exercise.

Azarga Metals Ltd (BVI) owns 100% of the issued shares of Shilka Metals LLC (Cyprus) which in turn owns 100% of the issued capital of Tuva-Cobalt (Russia). Tuva-Cobalt was awarded the Unkur mineral exploration and exploitation license via a bidding process on August 26, 2014 and is valid through December 31, 2039.

On closing European Uranium Resources Ltd issued the Selling Shareholders 15,776,181 common shares, approximately 37% of the number of shares as constituted after closing the transaction, the Private Placement, the Debt Settlement and the Consolidation (the “Consideration Shares”). In exchange for the Consideration Shares, the Selling Shareholders transferred 60% of the issued shares of Azarga Metals Ltd to European Uranium Resources Ltd. The Consideration Shares are restricted from trading for two years from issue date. European Uranium Resources Ltd was assigned existing loans made by the Selling Shareholders to Azarga Metals Ltd of up to US$800,000 that bear interest at the rate of 12% per annum, which can be capitalized or paid in cash (the “Debt”). The Debt must be paid within seven years from closing. The Selling Shareholders will retain a 5% net smelter return royalty (“NSR”) and their combined 40% interest in Azarga Metals Ltd will be free carried to initial production and profitability subject to the Put/Call Options. European Uranium Resources Ltd has the right to buy back up to 2% of the NSR at a cost of US$5 million per percentage point so that upon paying US$10 million the NSR will be reduced to 3%. In addition, European Uranium Resources Ltd agreed to make deferred cash payments to the Selling Shareholders of US$1,680,000 (the “Deferred Cash Payments”) beginning with US$80,000 payable on 1 June 2017, with a payment on each annual anniversary that increases by US$80,000 a year so that the final payment of US$480,000 will be due on 1 June 2022. In the event of a change of control of European Uranium Resources Ltd, the Debt and Deferred Cash Payments will become due and payable within five days.

European Uranium Resources Ltd undertook to spend a minimum of US$3,000,000 on exploration activities on the Unkur Project prior to 30 June 2019, and an additional US$6,000,000 between 1 July 2019 and 30 June 2023.

If at any time, a Resource (adding Measured, Indicated and Inferred of all combined deposits within the Unkur Project area) is estimated to contain copper and silver to the equivalent of 2 million tonnes or more of copper where Measured plus Indicated Resources comprise at least 70% of that estimate, taking the value of silver as copper equivalent (the “Bonus Payment Threshold”), an additional US$6,200,000 will be payable to the Selling Shareholders within 12-months’ notice that the Bonus Payment Threshold has been met.

On May 30, 2016, European Uranium Resources Ltd was renamed as Azarga Metals Corp.

## 4.7 Permits

No permitting is required until the project reaches the feasibility study stage. The exploration stage only requires observation of existing environmental laws and regulations.

The project is not in a protected woods territory and Azarga Metals Corp. expects that no tree cutting will be required for the purposes of exploration, so it should be possible for exploration to proceed without a forestry permit.

## 4.8 Other Factors or Risks

If the project proceeds to feasibility study stage or production, then the right to use the licensed area may also be suspended or restricted in the following cases:

1. Failure to submit the required documentation given in “Permits required for the proposed work” within 6 months of the specified deadlines.

2. Failure to make the regular payments specified in “Exploration Fees”.

3. Failure to comply with the project deadlines and production output requirements, as relating to the geological investigation of subsurface, deposit exploration and deposit development stages.

# 5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

## 5.1 Accessibility

The Unkur site is accessed from the Chara village and the Novaya Chara town by the year-round natural road passing along the Baikal-Amur Mainline (BAM). The road distance from the site to Novaya Chara is about 22 km, and to Chara is about 33 km.

In Chara there is an airport with a paved airstrip that accommodates regular flights from Chita, some 800 km to the southwest.

Novaya Chara railway station is accessed by the Baikal-Amur Mainline (BAM) from Bratsk (1,356 km) through the town of Severobaikalsk (637 km).

In winter snow roads are used to access the city of Chita and town of Taksimo.

## 5.2 Local Resources and Infrastructure

The district is economically poorly developed.

As of January 1, 2010, the estimated population of the Kalarsky district was 9,579 people within an area of some 56,000 km$^2$, including 4,354 people in Novaya Chara, 2,290 in Chara, 1,569 in the village of Kuanda, and 596 in the village of Ikabya. There are also several settlements of 100 to 300 inhabitants: Udokan, Chapo-Ologo, Kyust-Kemda, Nelyaty, and Sredny Kalar.

There is a federal electric power line of 100 MW passing through the north-eastern part of the licensed area.

## 5.3 Climate

The climate of the Project area is a harsh continental climate with very cold and long winters and short hot summers. During the cold period, the terrain is dominated by a stable Siberian anticyclone with significant temperature inversions. The air temperature varies depending on the relief. The average air temperature in January is minus 27.8°C at the upper elevations of the Project area, and minus 33.2°C in the Chara valley. The winter air temperature minimum is minus 57°C at lower levels and minus 47°C at altitude. The July air temperature maximum is plus 32°C and at the foothills it is plus 27°C. The cold and long winters (October to April) are characterised by high air pressure. Yearly precipitation distribution is very uneven. The first snow usually falls in mid-September. A stable snow cover is formed during the first half of October. The snow cover melts in the middle of April at lower elevations and in May at higher elevations.

## 5.4 Physiography

The Project area is located in the northern slopes of the Udokan Range in the catchment of the Kemen and Unkur Rivers which are right-bank tributaries of the Chara River. The area of the deposit is characterized by low and medium mountain relief with absolute elevations of 1,100-1,200 m, and local differences in elevation of 100-200 m; there are flat watersheds and smooth hillsides in the northern part of the area with 400 m elevations (Figure 5-1).

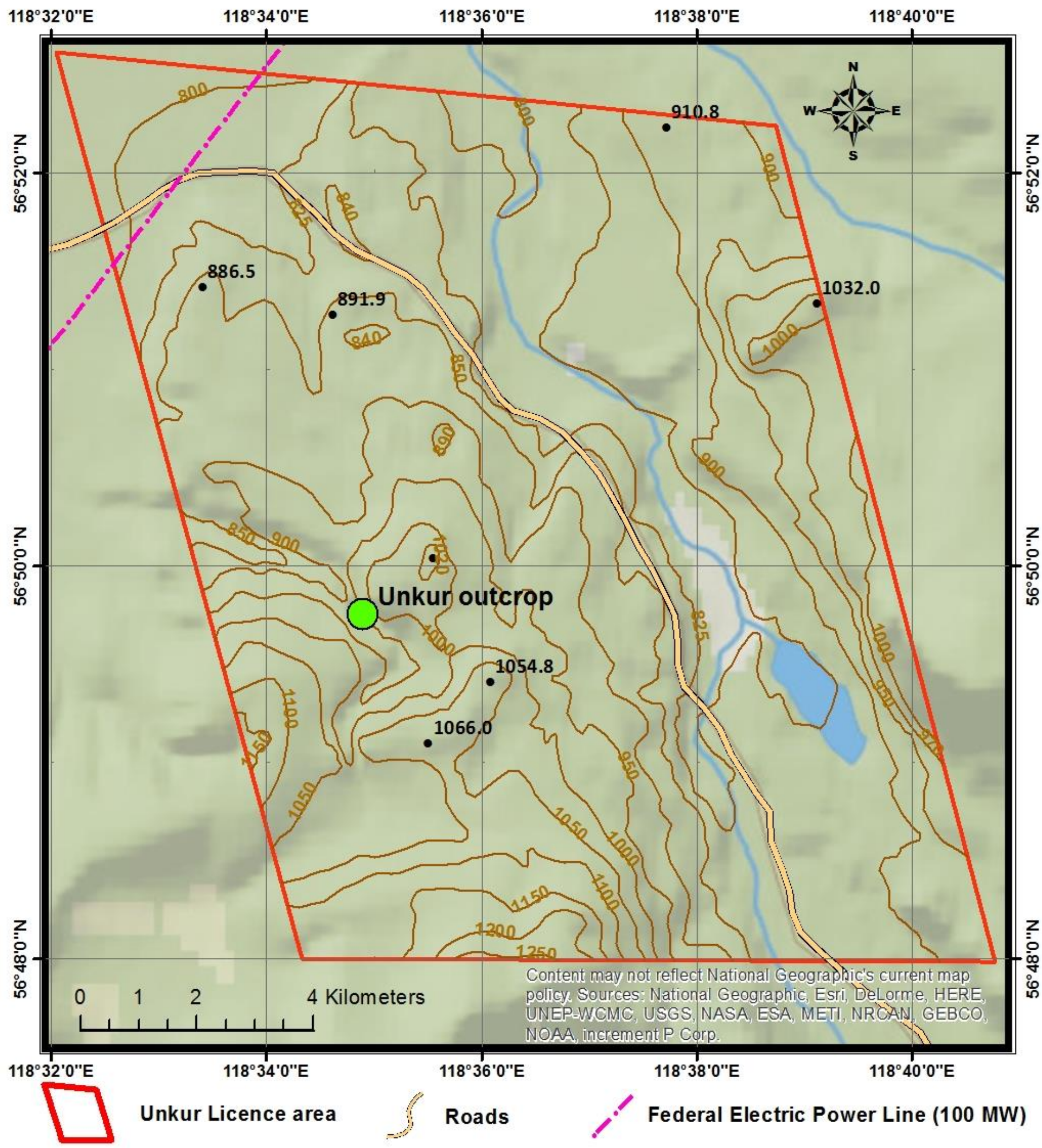



**Figure 5-1: Topography Map for the Unkur Project (compiled by SRK, 2015)**

## 5.5 Seismicity

The area of the deposit and adjacent areas is quoted as being 9 points on the 12 point Russian MSK-64 scale of seismicity used throughout the CIS. This constitutes a severe earthquake potential zone, with at least one catastrophic earthquake likely to occur over a 25-year period.

## 5.6 Vegetation

The deposit and surrounding area is covered by taiga vegetation (swampy coniferous forest), as is typical between the tundra and steppes of Siberia. The main forest-forming species is Dahurian larch.

# 6 History

## 6.1 Historical Exploration

### 6.1.1 Discovery and Initial Work

Unkur copper mineralization was discovered by geologists of the All-Union Aerogeological trust in 1962 during the course of 1:1,200 000 geological mapping (Shulgina et al., 1962). The mineralized layer was observed within a canyon of the Unkur River and traced for 1 km through limited outcrops of copper-bearing sandstone. In these exposures, the thickness of the layer varied from about 5-8 m. Based on the chemical assays of channel and chip samples an average copper grade of 1% was determined. It was established that the mineralization is stratabound within the Lower Sakukan subformation.

In 1963 the Udokan expedition team (a stated-owned company that includes Lukturskaya, Naminginskaya, and other exploration teams), carried out trenching every 200-300 m for 1.2 km to further define the copper mineralization zone. Sampling from the trenches showed mineralized intervals of 10-12 m thick with an average copper grade of 1.02%. Also in 1963, the Udokan team carried out magnetic and electric geophysical surveys over limited areas of the south-eastern syncline at 100 m spacing between profiles and 20 m spacing between measurement points. The magnetic survey identified distinct magnetic suites, but did not directly reveal the zone of copper mineralization.

In 1966 a group of geologists from A.P. Karpinsky Russian Geological Research Institute (VSEGEI) visited the Unkur site. Based on a number of lithological characteristics the sediments hosting the mineralized layer were classified as shallow-marine and deltaic strata.

### 6.1.2 The 1969-1971 Campaign

The studies mentioned above formed the basis for carrying out substantial prospecting works at the Unkur Project, at 250-500 m profile spacing, from 1969-1971 by the Naminginskaya Exploration Team. These studies (Table 6-1) included drilling, mapping and geophysics.

**Table 6-1: Exploration Works on the Unkur Project, 1969-1978**

| Period | Unit | 1969-1971 | 1975-1978 |
|---|---|---|---|
| Core drilling | m | 5,549.1 | 1,154 |
| Trench volume | $m^3$ | 20,524.3 | 19,144 |
| Mapping traverses | km | 50 | |
| Core sampling | samples | 194 | 36 |
| Trench sample length | m | 62.7 | 192 |
| Geochemical sampling | samples | 370 | 580 |
| Chemical analysis | samples | 2,486 | 100 |
| Combined sampling for silver grade | samples | 8 | 11 |
| Composite sampling | samples | 51 | |

From the 1969-1971 works the geological setting of the mineralized area, and the internal structure and geochemical characteristics of mineralization became better understood. Based on the new drilling and trenching data the copper-bearing horizon of 20-50 m thick was traced from southeast to northwest for 4-6 km to a depth of 350 m. The average copper grade for the mineralized zone was determined as 0.75%. Geophysical methods identified the copper-bearing horizon for a further 4km northwest under the moraine sediments 150-180 m thick. Based on the results from the 1969-1971 works an estimate of copper and silver resources was prepared by geologists of the Naminginskaya Exploration Team.

### 6.1.3 The 1975-1978 Campaign

From 1975-1978 detailed exploration works, at a 25 m profile spacing, were carried out by geologists of the Lukturskaya Exploration Team (Berezin G., 1978) in order to assess the potential of the Klyukvenny copper-bearing deposit, southeast of the Udokan deposit, and the potential of the Luktursky gabbroid massif, which borders the northwest flank of the Unkur deposit. The Klyukvenny and Luktursky deposits fall outside the licensed area owned by Azarga Metals, but secondary to the focus on Klyukvenny and Luktursky, further sampling and geophysical assessments took place on the Unkur deposit. The Unkur works included drilling of 4 core holes. The aim of this drilling was to test the lateral extents of the deposit. Only one of these holes (C-102) intersected the copper-bearing horizon, at a depth of 250 m.

The summary of the exploration works from the 1968-1971 and 1975-1978 programs is given in Table 6-1. Figure 6-1 is a map of drill holes and trenches for all the campaigns, and shows the profiles of geophysical surveys. The surface position of the copper-bearing horizon, derived from mapping, drilling and trenching, is shown in this figure as a green line.

## 6.2 Drilling

Historical drilling at the Unkur Project was mostly carried out during the 1969-1971 campaign (Table 6-2).

SRK notes that the reports from the 1969-1971 and 1975-1978 campaigns list no coordinates for drillhole collars. Instead, the drill holes are depicted on maps and sections. The historical collars have not been found; therefore, it is not possible to verify these locations. SRK has derived the location data by scanning and georeferencing the historical hard copy maps. SRK estimates that the x and y collar coordinates derived in this manner could have an uncertainty of up to 100 m.

Historical drillhole details are presented in Table 6-3 and Table 6-4.

**Table 6-2: Unkur Project Diamond Drilling**

| Type | 1969-1971 | 1975-1978 |
|---|---|---|
| Core drilling (m) | 5549 | 1154 |

**Table 6-3: Summary of Unkur Drill holes, 1969-1978**

| Hole ID | Azimuth | Dip | Depth | Easting* | Northing* | Elevation* | Line | Date | Core Recovery, % |
|---|---|---|---|---|---|---|---|---|---|
| | | | (m) | (m) | (m) | (m) | | | |
| C-103 | - | -90 | 202 | 595890.5 | 6300076 | 901 | 1 | 1971 | 72 |
| C-104 | - | -90 | 296.9 | 596476.49 | 6299524.8 | 941 | 2 | 1971 | 88 |
| C-105 | - | -90 | 341.9 | 596956.84 | 6298968.8 | 962 | 2 | 1971 | |
| C-107 | - | -90 | 148.7 | 597525.52 | 6298474.8 | 1057 | 4 | 1971 | 76 |
| C-108 | - | -90 | 329.6 | 597662.1 | 6298595 | 1040 | 4 | 1971 | |
| C-22 | - | -90 | 12.5 | 598067.96 | 6297739.7 | 1043 | 5 | 1971 | |
| C-110a | - | -90 | 265 | 598326.75 | 6298167.7 | 1007 | 5 | 1971 | |
| C-110 | - | -90 | 192 | 598342.43 | 6298070.1 | 1014 | 5 | 1971 | |
| C-112 | - | -90 | 250 | 598897.99 | 6297426.3 | 1015 | 6 | 1971 | |
| C-111 | - | -90 | 285 | 599062.06 | 6297496.6 | 977 | 6 | 1971 | 31 |
| C-102 | - | -90 | 101.2 | 595772.25 | 6300834 | 916 | 7 | 1971 | 50 |
| C-118 | - | -90 | 274 | 595781.58 | 6300379.9 | 927 | 8 | 1971 | 58 |

| Hole ID | Azimuth | Dip | Depth (m) | Easting* (m) | Northing* (m) | Elevation* (m) | Line | Date | Core Recovery, % |
|---|---|---|---|---|---|---|---|---|---|
| C-117 | - | -90 | 231 | 595899.77 | 6300502.8 | 926 | 8 | 1971 | |
| C-123 | - | -90 | 284 | 595613.32 | 6301181 | 905 | 9 | 1971 | |
| C-119 | - | -90 | 219.7 | 596024.93 | 6301372 | 886 | 9 | 1971 | |
| C-122 | - | -90 | 254.7 | 595355.37 | 6301621.9 | 898 | 10 | 1971 | |
| C-121 | - | -90 | 21 | 595505.35 | 6301762.8 | 892 | 10 | 1971 | |
| C-102 | - | -90 | 272 | 595772.25 | 6300834 | 916 | | 1978 | 50 |
| C-126 | - | -90 | 262 | 595471.39 | 6301091.7 | 911 | | 1978 | |
| C-128 | - | -90 | 345 | 595274.25 | 6301539.5 | 899 | | 1978 | |
| C-130 | - | -90 | 275 | 595550.09 | 6301142.9 | 907 | | 1978 | |
| Total | | | 4863.2 | | | | | | |

Note:
* Coordinates derived by SRK from historical plans, Pulkovo 1942 datum, Zone 20.

A total of 8 drill holes intersected significant copper mineralization in the bedrock. The deepest mineralized intersection is from hole C-104, from a down hole depth of 242.4 m.

Core drilling during 1969-1971 campaign aimed to assess the copper-bearing horizon, under the moraine sediments. All these drill holes are vertical.

As part of the 1969-1971 campaign, a set of “mapping” holes were drilled to 30-40 m depth. The profile spacing for this group of holes was 400 m, with a distance between holes of 15–20 m. This drilling was carried out by UPB-25 rigs using a single-tube core barrel. A hard metal bit (76 mm diameter) was used for drilling through the sedimentary cover, and then a diamond bit (59 mm diameter) for the bedrock. The total length of the mapping hole drilling was 1,200 m.

A deeper set of drill holes were drilled in 1969-1971 to define copper mineralization to 200-350 m depth. This single-tube drilling was carried out by ZIF-300, ZIF-650 and SBA-500 rigs. The distance between the profiles of these drillholes was 400-800 m, and the distance between holes was 80-200 m. A 146 mm diameter bit was used for the sedimentary cover, a 90 mm bit was used for bedrock, and a 76 mm bit was used for the mineralized zone. The core recoveries for the drillholes which intersected mineralization are shown in Table 6-3.

A deviation survey was carried out for all drillholes. The dip deviations from vertical did not exceed 1-2°.

From 1969-1978, 56 drill holes were drilled in the Project area. The drilling method was single-tube core barrel. The average length-weighted core recovery from the mineralized intersections was 65.2%.

The mineralized zone in the area covered by the historical drilling generally dips to the northeast at 40-60°, therefore the vertical drill holes were not at the optimum orientation for testing this zone.

A total of 11 composite samples were made from the core sample duplicates in order to determine the grades of associated elements (primarily silver). Results are presented in Table 6-5.

**Table 6-4: Assay Results for Core Sampling of Mineralized Intervals**

| Hole-ID | From | To | Sample-ID | Sample length, m | Cu grade, % |
|---|---|---|---|---|---|
| C-1 | 18.0 | 24.4 | 2 | 6.4 | 0.5 |
| C-1 | 24.4 | 30.0 | 3 | 5.6 | 0.3 |
| C-1 | 30.0 | 35.7 | 4 | 5.7 | 0.9 |
| C-12 | 8.0 | 10.1 | 9 | 2.1 | 1.7 |
| C-12 | 10.1 | 12.0 | 10 | 1.9 | 1.6 |
| C-12 | 12.0 | 13.4 | 11 | 1.4 | 1.6 |
| C-12 | 13.4 | 16.7 | 12 | 3.3 | |
| C-12 | 16.7 | 19.0 | 13 | 2.3 | |
| C-12 | 19.0 | 21.0 | 14 | 2.0 | 0.7 |
| C-13 | 19.0 | 23.2 | 19 | 4.2 | 0.9 |
| C-13 | 23.2 | 27.4 | 20 | 4.2 | |
| C-13 | 27.4 | 33.3 | 21 | 5.9 | |
| C-13 | 33.3 | 38.0 | 22 | 4.7 | 1.8 |
| C-103 | 88.0 | 90.0 | 131 | 2.0 | 0.7 |
| C-103 | 90.0 | 92.5 | 132 | 2.5 | 0.3 |
| C-103 | 92.5 | 93.6 | 133 | 1.1 | 0.4 |
| C-103 | 93.6 | 97.0 | 134 | 3.4 | 1.3 |
| C-103 | 97.0 | 98.5 | 135 | 1.5 | 0.7 |
| C-104 | 242.4 | 245.4 | 182 | 3.0 | 0.6 |
| C-104 | 245.4 | 248.6 | 183 | 3.2 | 0.9 |
| C-106 | 152.0 | 154.7 | 156 | 2.7 | 0.9 |
| C-107 | 85.6 | 87.5 | 165 | 1.9 | 0.3 |
| C-107 | 87.5 | 89.5 | 166 | 2.0 | 0.2 |
| C-107 | 89.5 | 91.5 | 167 | 2.0 | 0.7 |
| C-118 | 136.4 | 138.9 | 241 | 2.5 | 1.4 |
| C-118 | 138.9 | 140.4 | 242 | 1.5 | 2.4 |
| C-118 | 140.4 | 141.7 | 243 | 1.3 | 1.3 |
| C-118 | 141.7 | 143.1 | 244 | 1.4 | 0.8 |
| C-118 | 143.1 | 145.1 | 245 | 2.0 | 0.7 |
| C-118 | 145.1 | 146.3 | 246 | 1.2 | 0.4 |
| C-118 | 146.3 | 148.3 | 247 | 2.0 | 2.3 |
| C-118 | 148.3 | 151.1 | 248 | 2.8 | 1.3 |
| C-118 | 151.1 | 153.4 | 249 | 2.3 | 1.1 |
| C-118 | 153.4 | 155.2 | 250 | 1.8 | 0.3 |
| C-118 | 155.2 | 160.0 | 251 | 4.8 | 1.1 |
| C-118 | 160.0 | 163.5 | 252 | 3.5 | 2.5 |
| C-118 | 163.5 | 164.2 | 253 | 0.7 | 0.5 |
| C-118 | 164.2 | 167.5 | 254 | 3.3 | 3.3 |
| C-118 | 167.5 | 169.6 | 255 | 2.1 | 2.4 |
| C-118 | 169.6 | 171.6 | 256 | 2.0 | 3.1 |

| Hole-ID | From | To | Sample-ID | Sample length, m | Cu grade, % |
|---|---|---|---|---|---|
| C-118 | 171.6 | 173.8 | 257 | 2.2 | 1.8 |
| C-118 | 173.8 | 175.7 | 258 | 1.9 | 2.1 |
| C-118 | 175.7 | 178.0 | 260 | 2.3 | 3.5 |
| C-118 | 196.0 | 200.5 | 266 | 4.5 | 1.7 |
| C-118 | 200.5 | 203.6 | 267 | 3.2 | 3.3 |
| C-118 | 203.6 | 205.6 | 268 | 2.0 | 1.5 |
| C-118 | 205.6 | 207.6 | 269 | 2.0 | 2.6 |
| C-111 | 240.0 | 242.9 | 202 | 2.9 | 0.7 |
| C-111 | 242.9 | 243.9 | 203 | 1.0 | 0.3 |
| C-111 | 243.9 | 245.2 | 204 | 1.3 | 0.6 |

**Table 6-5: Results from 1975-1978 composite sampling for silver**

| Hole-ID | Sample | Silver grade, g/t |
|---|---|---|
| C-103 | 1 | 135.0 |
| C-107 | 2 | 11.2 |
| C-106 | 3 | 164.6 |
| C-104 | 4 | 20.0 |
| C-111 | 5 | 21.4 |
| C-118 | 6 | 41.6 |
| C-118 | 7 | 95.0 |
| C-118 | 8 | 87.0 |
| C-102 | 9 | 76.8 |
| C-102 | 10 | 32.8 |
| C-102 | 11 | 56.0 |
| Average | | 67.4 |

## 6.3 Sample Preparation and Analyses

Sampling of historical drill holes and trenches was performed by geologists of the Naminginskaya and Lukturskaya Parties of the Udokanskaya expedition. The intervals selected for sampling included the mineralized zone, as identified by the geologists, and the host rock for 2-4 m either side.

The average sample length for the exploration drillholes (200-350 m deep) was 2 m, but varied to fit lithology and mineralization intensity boundaries. Intersections of reasonably intact core were manually halved: one half was used as a sample, and the other half was stored as a duplicate. Frequently though, the core returned from drilling was very broken, with poor recovery, and for these intersections all the available chips were included in the sample.

Sample lengths for the mapping drillholes (hole depths of up to 30 m) were typically close to 6 m, but the exact sampling boundaries were chosen with regard to mineralization intensity zones, as identified by the geologists. The longer length of the samples from mapping drill holes was adopted to compensate for the smaller core diameter (26-28 mm) compared to the exploration drill hole diameter (59 mm), in order to obtain comparable sample weights.

Samples were prepared by the Central Chemical Laboratory, Chita. The historical information available for the Project does not include a description of sample preparation procedures and equipment. Trench, core and composite samples (composed of several core samples) were analysed for copper; geochemical samples were submitted for a semiquantitative spectral analysis for 10 elements. Composite samples were fire assayed for gold and silver and analysed by spectral analysis for 36 elements.

No information on the certification of the Central Chemical Laboratory is available.

### 6.3.1 Quality Control Programs

Quality control on the historical sample preparation and analytical testwork of the Unkur samples was not done to presently accepted international best practises.

During the 1969-1971 campaign, the Central Chemical Laboratory inserted its own duplicate samples, at a rate of 17% of the total primary sampling. This limited set of results does not show a significant problem with precision.

No quality control samples were analysed for the Unkur Project from the 1975-1978 campaign.

## 6.4 Geophysical Surveys

Ground geophysical surveys at the Unkur Project were carried out in 1963 and during the 1969-1972 and 1975-1978 exploration campaigns. Geophysical methods included electric logging (induced polarization, dipole electric profiling), time-variable natural magnetic field, magnetic and gravity survey.

In order to study physical properties of the copper-bearing horizon, samples were taken from outcrops and drillhole core. These samples were used to determine degrees of magnetization, polarizability, resistivity, and specific gravity.

Based on geological description of outcrops, trenches and drillhole core, the geological unit underlying the copper-bearing horizon was identified as highly pyritized. Disseminated pyrite will potentially act as a geophysical marker, for induced polarization in particular, that may identify the base of the copper-bearing horizon.

The results from magnetic and polarizability surveys are shown in Figure 6-2 and Figure 6-3.

Cumulative data on gravity, magnetic, and electric survey helped determine trends for fold hinges at the north-western and south-eastern margins of the deposit, and defined a series of northeast- and northwest-striking faults which break the Unkur Syncline into several blocks.

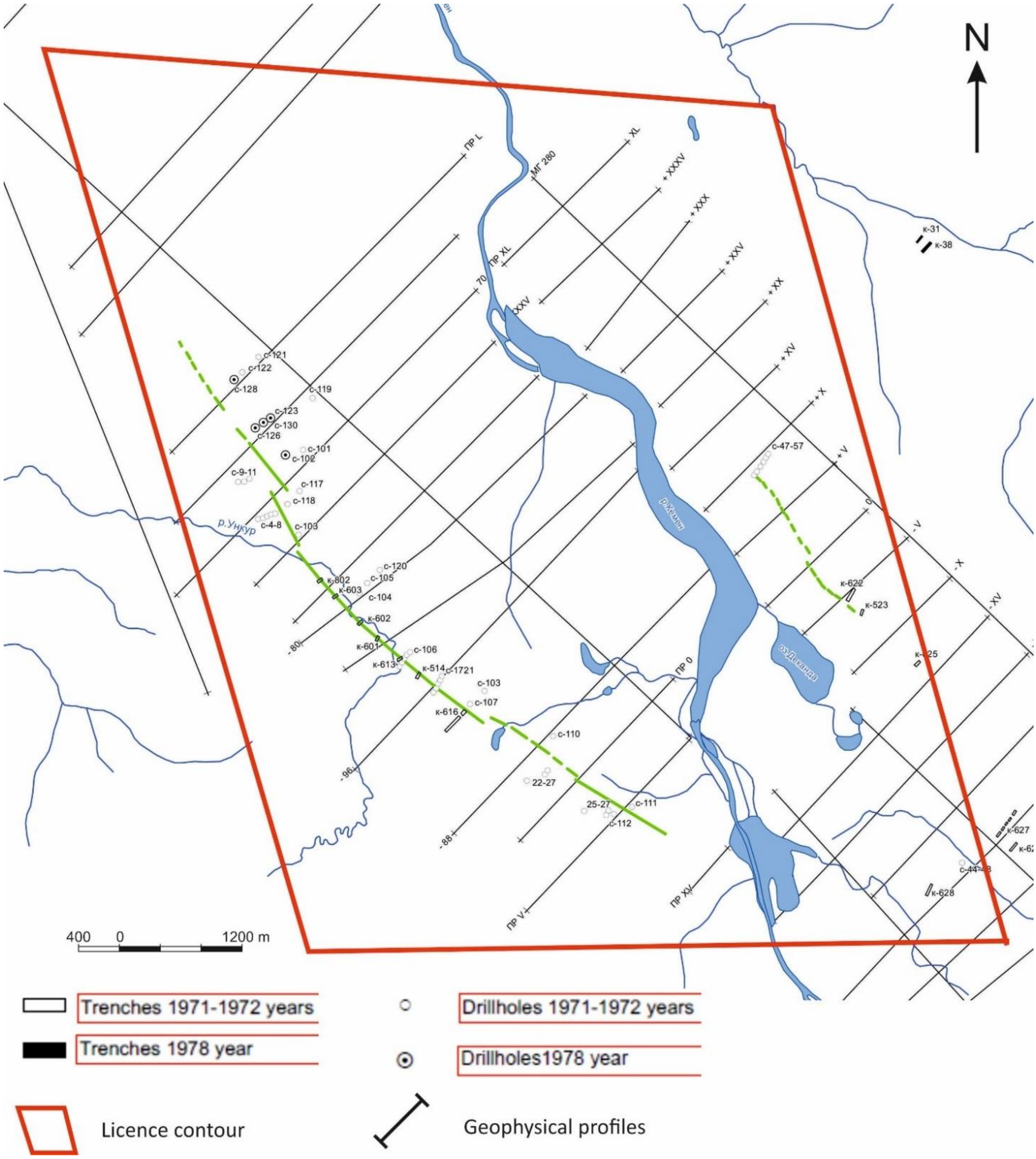



**Figure 6-1: Unkur Project Drillholes, Trenches and Geophysical Survey Profiles (illustration provided by LLC GeoExpert Ltd., 2014)**

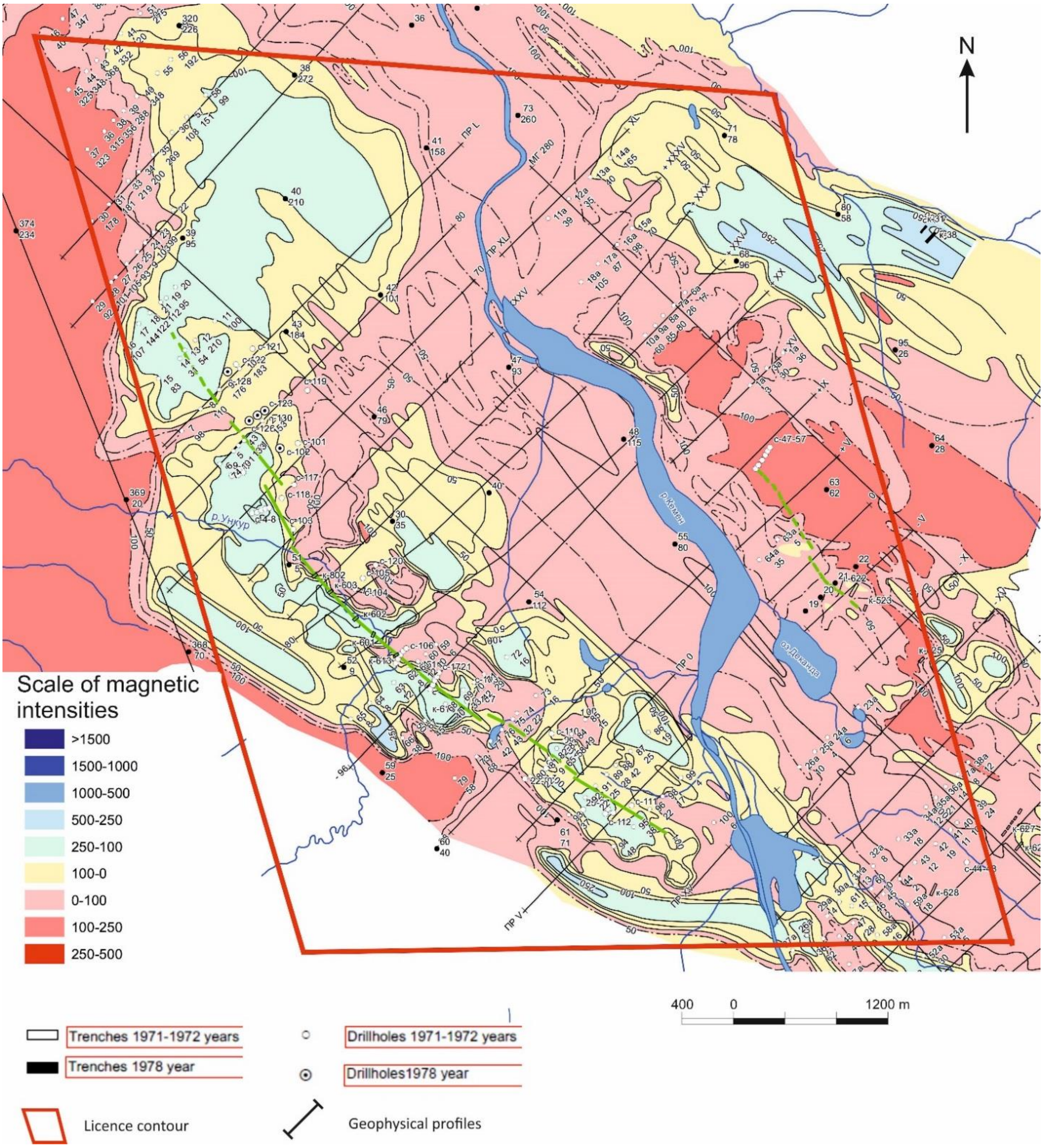



**Figure 6-2: Unkur Project Area Magnetic Survey (illustration provided by LLC GeoExpert Ltd., 2014)**

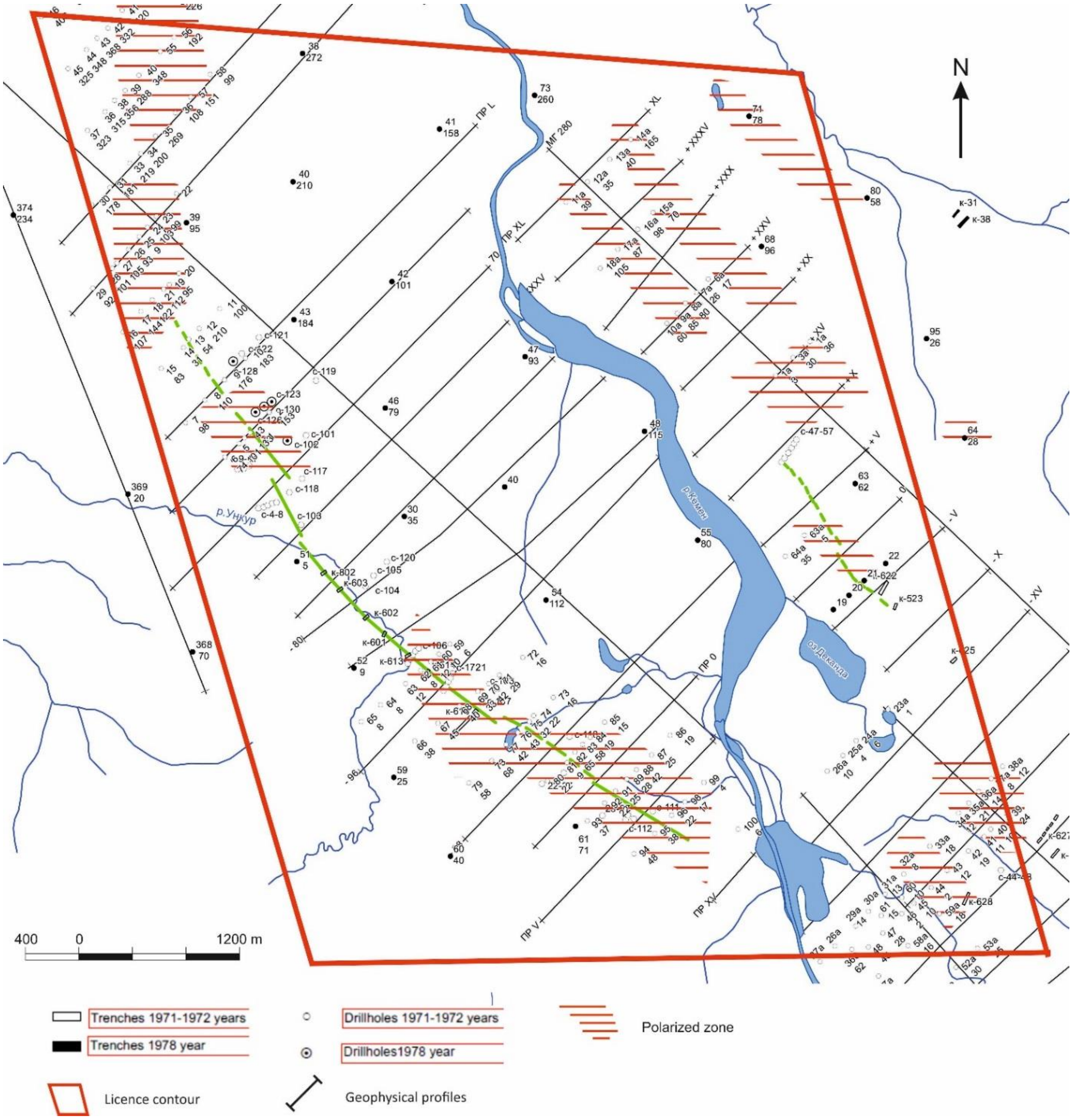



**Figure 6-3: Zones of High Polarizability (illustration provided by LLC GeoExpert Ltd., 2014)**

## 6.5 Historical Estimates

Four historical estimations of copper and silver mineralization for the Unkur Project have been prepared: Mulnichenko (1972), Berezin (1979), a 1988 estimate for the licence agreement, and a 2014 estimate by the Central Geological Research Institute. These estimates are all based on polygonal methodology, and were prepared in accordance with the procedures and definitions of the Soviet Union resource/reserve estimation and reporting system. The qualified person has not done sufficient work to classify the historical estimates as current mineral resources or mineral reserves, and the issuer is not treating the historical estimates as current mineral resources or mineral reserves.

Historical mineral resource estimates presented in this section have been superseded by the mineral resource estimate discussed in Item 14. The historical estimates presented in this section are relevant to provide context but should not to be relied upon.

National Instrument 43-101 requires mineral resource reporting to adhere to the resource category definitions of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) in the *Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines*. The categories in the Soviet resource/reserve system are incompatible with these definitions, and the estimation methods mandated by the Soviet system are different to the geological modelling and geostatistical estimation methods the qualified person would recommend as optimal for the Unkur deposit. Furthermore, the poor quality of the core remaining from the previous exploration programs, and the difficulty of doing detailed verification of historical results, means that any future program of resource definition drilling is likely to replace rather than build on the historical drilling data. Therefore, the historical estimates reported here should be regarded as an indication of exploration potential, instead of an inventory that will necessarily be converted into mineral resources.

### 6.5.1 Resource/reserve classification system of the Soviet Union

The summary of the Soviet resource/reserve categories below is quoted from Henley (2004). Note that Prognostic Resources in the 1960 version of the classification system were a single category; this category was split into three after the 1980 revision to the classification system.

**Category A**: The reserves in place are known in detail. The boundaries of the deposit have been outlined by trenching, drilling, or underground workings. The quality and properties of the ore are known in sufficient detail to ensure the reliability of the projected exploitation.

**Category B**: The reserves in place have been explored but are only known in fair detail. The boundaries of the deposit have been outlined by trenching, drilling, or underground workings. The quality and properties of the ore are known in sufficient detail to ensure the basic reliability of the projected exploitation.

**Category C1**: The reserves in place have been estimated by a sparse grid of trenches, drill holes or underground workings. This category also includes reserves adjoining the boundaries of A and B reserves as well as reserves of very complex deposits in which the distribution cannot be determined even by a very dense grid. The quality and properties of the deposit are known tentatively by analyses and by analogy with known deposits of the same type. The general conditions for exploitation are known. The ore tonnage is derived from estimates of strike length, dip length and average thickness of the ore body. Allowance for barren blocks may be made statistically.

**Category C2**: These reserves are based on an extremely loose exploration grid, with little data. The limits of the orebody are defined mainly by extrapolation within known geological structures, and from comparison with other similar deposits in the vicinity. The grade and mineral properties of the orebody are determined from core samples and comparison with similar mineral deposits in the area. The reserves have been extrapolated from limited data, sometimes only a single hole. This category includes reserves that are adjoining A, B, and C1 reserves in the same deposit.

**Prognostic Resources** are estimated for mineralization outside the limits of areas that have been explored in detail and are often based on data from trenches and from geochemical and geophysical surveys.

**Category P1**: Resources in the P1 category may extend outside the actual limits of the ore reserves defined in the C2 category. The outer limits of P1-type resources are determined indirectly by extrapolating from similar known mineral deposits in the area. P1 is the main source from which C2 reserves can be increased.

**Category P2**: These resources represent possible mineral structures in known mineral deposits or ore-bearing regions. They are estimated based on geophysical and geochemical data. Morphology, mineral composition and size of the orebody are estimated by analogy with similar mineralized geologic structures in the area.

**Category P3**: Any potential ore-bearing deposits are classified as resources in the P3 category. The presence of these resources relies on the theoretical definition of a "favourable geological environment". Resource figures are derived from figures of similar deposits in the region.

### 6.5.2 The 1972 Estimate

The results of the estimation based on the 1972 data are presented in Table 6-6. Prognostic silver resources were estimated within the copper mineralization domain. Average silver grades were determined based on the chemical assays of eight composite samples. The arithmetic mean of these samples is 73.3 g/t, and this grade was applied to all the blocks. Therefore, the prognostic resources of silver amount to 10.1 Kt Ag.

**Table 6-6: Results from the 1972 estimate for the Unkur Project (Mulnichenko V., 1972), classified according to the Soviet Union resource/reserve classification system of 1960**

| Category | Block No. | Zone Thickness, m | Tonnes, Kt | Average Cu Grade, % | Contained Metal, Kt |
|---|---|---|---|---|---|
| C2 | Block 1 | 12.4 | 77,760 | 0.80 | 622 |
| | Block 2 | 4.3 | 9,978 | 0.60 | 60 |
| **Total, C2 Category** | | **9.8** | **87,738** | **0.78** | **682** |
| Prognostic resources | Block 3 | 12.4 | 33,849 | 0.80 | 271 |
| | Block 4 | 8.3 | 16,409 | 0.75 | 123 |
| **Total, prognostic resources** | | **10.7** | **50,258** | **0.78** | **394** |
| **Total** | | **10.1** | **137,996** | **0.78** | **1,076** |

This estimate should not to be relied upon as it has been superseded by the mineral resource discussed in Item 14 of this report.

### 6.5.3 The 1979 Estimate

Upon completion of the second phase of exploration works for the Unkur Project carried out in 1979, the second resource/reserve estimate for the Unkur deposit was performed with regard to the new drilling data (Table 6-7). Prognostic silver resources were estimated within the copper mineralization domain. Average silver grades were determined based on the chemical assays of eleven composite samples. The arithmetic mean of these samples is 68.3 g/t, and this grade was applied to all the blocks. Therefore, the prognostic resources of silver amount to 9.7 Kt Ag.

**Table 6-7: Results from the 1979 estimate for the Unkur Project (Berezin G., 1979), classified according to the Soviet Union resource/reserve classification system of 1960**

| Category | Block No. | Zone Thickness, m | Tonnes, Kt | Average Cu Grade, % | Contained Metal, Kt |
|---|---|---|---|---|---|
| C2 | Block 1 | 12.9 | 91,820 | 0.80 | 725 |
| | Block 2 | 4.3 | 9,978 | 0.60 | 60 |
| **Total, C2 Category** | | **8.6** | **101,798** | **0.77** | **785** |
| Prognostic resources | Block 3 | 12.9 | 24,685 | 0.80 | 195 |
| | Block 4 | 8.3 | 16,409 | 0.75 | 123 |
| **Total, prognostic resources** | | **10.6** | **41,095** | **0.77** | **318** |
| **Total** | | **10.1** | **142,893** | **0.77** | **1,103** |

This estimate should not to be relied upon as it has been superseded by the mineral resource discussed in Item 14 of this report.

### 6.5.4 The 1988 Estimate

In 1980 the Soviet resource/reserve classification system was updated. The changes primarily affected the definitions of the C2 resource category and prognostic resources: under the new system, the C2 category was grouped with estimated reserves, and the prognostic resources were divided into three categories: P1, P2, and P3. In 1988 the Unkur deposit was re-estimated and re-classified in accordance with the new classification system. A consequence of this revision was the entire inventory was classified as prognostic resources (Table 6-8).

For the 1988 estimate, a 0.4% Cu grade threshold was used for defining the resource domain, compared to the 0.6% Cu threshold used for the 1972 and 1979 estimates.

**Table 6-8: Results from the 1988 estimate for the Unkur Project (source: Unkur Licence Agreement), classified according to the Soviet Union resource/reserve classification system of 1980**

| Category | Component | Tonnes, Kt | Average Grade | Metal Contained |
|---|---|---|---|---|
| P1 | Copper | 83,500.9 | 0.79% | 660 Kt |
| | Silver | | 68.3 g/t | 5,703 t |
| P2 | Copper | 58,107.7 | 0.75% | 436 Kt |
| | Silver | | 68.3 g/t | 3,969 t |
| P3 | Copper | 87,532.5 | 0.77% | 674 Kt |
| | Silver | | 68.3 g/t | 5,979 t |

This estimate should not to be relied upon as it has been superseded by the mineral resource discussed in Item 14 of this report.

### 6.5.5 The 2014 Estimate

The most recent assessment of the prognostic copper and silver resources for the Unkur Project was by the geologists of the Central Geological Research Institute (TsNIGRI). The results of this estimate are presented in Table 6-6. The data supporting the 2014 estimate are the same as for the 1979 and 1988 estimates (there have been no material additions to the supporting data since 1978); the resource/reserve reporting system is the same as was in place for the 1988 estimate; the threshold for defining the resource domain (0.4% Cu) is also the same as used for the 1988 estimate, but the estimated tonnes and metal in 2014 were an order of magnitude lower than in the 1988 estimate.

The differences between the prognostic resource statements of 1988 and 2014 are due to different interpretations of how the Russian resource/reserve reporting system should be applied to the Unkur deposit. The main reasons for the substantially lower tonnage of the 2014 estimate are:

1) The 1988 estimate included a substantial portion of P3 material, representing mineralization on the northeast limb of the Unkur Syncline. All of this northeast limb material was omitted from the 2014 estimate.

2) From the southwest limb of the Unkur Syncline, the P2 category of the 1988 estimate included about 1,000 m of interpolation along strike, between areas covered by drilling and trenching, and about 1,000 m extrapolation along strike to the northwest. This along strike interpolation and extrapolation was not included in the 2014 estimate.

3) For the 2014 estimate, extrapolation down dip was limited to 300 m below surface, on the assumption that this would be the maximum depth of open pit mining. A greater depth limit, of 1,000 m below surface, was used to constraint the 1988 and earlier estimates, on the basis that the deposit could potentially be mined by underground methods.

**Table 6-9: Results from the 2014 estimate for the Unkur Project (Volchkov and Nikeshin, 2014), classified according to the Russian resource/reserve classification system of 1980**

| Category | Block No. | Component | Tonnes, Kt | Average Grade | Metal Contained |
|---|---|---|---|---|---|
| P1 | 1 | Copper | 16,516.5 | 0.90% | 148.6 Kt |
| | 2 | | 3,964 | 0.65% | 25.8 Kt |
| Total P1 | | Copper | 20,480.5 | 0.85% | 174.4 Kt |
| | | Silver | | 77.96 g/t | 1,600 t |

This estimate should not to be relied upon as it has been superseded by the mineral resource discussed in Item 14 of this report.

# 7 Geological Setting and Mineralization

## 7.1 Regional Geology

The Unkur Project is situated on the southern Siberian platform in the Kodar-Udokan structural zone. Within this zone, Archaen, Lower-Proterozoic, Vendian, Lower-Cambrian, Mesozoic and Cenozoic formations are present.

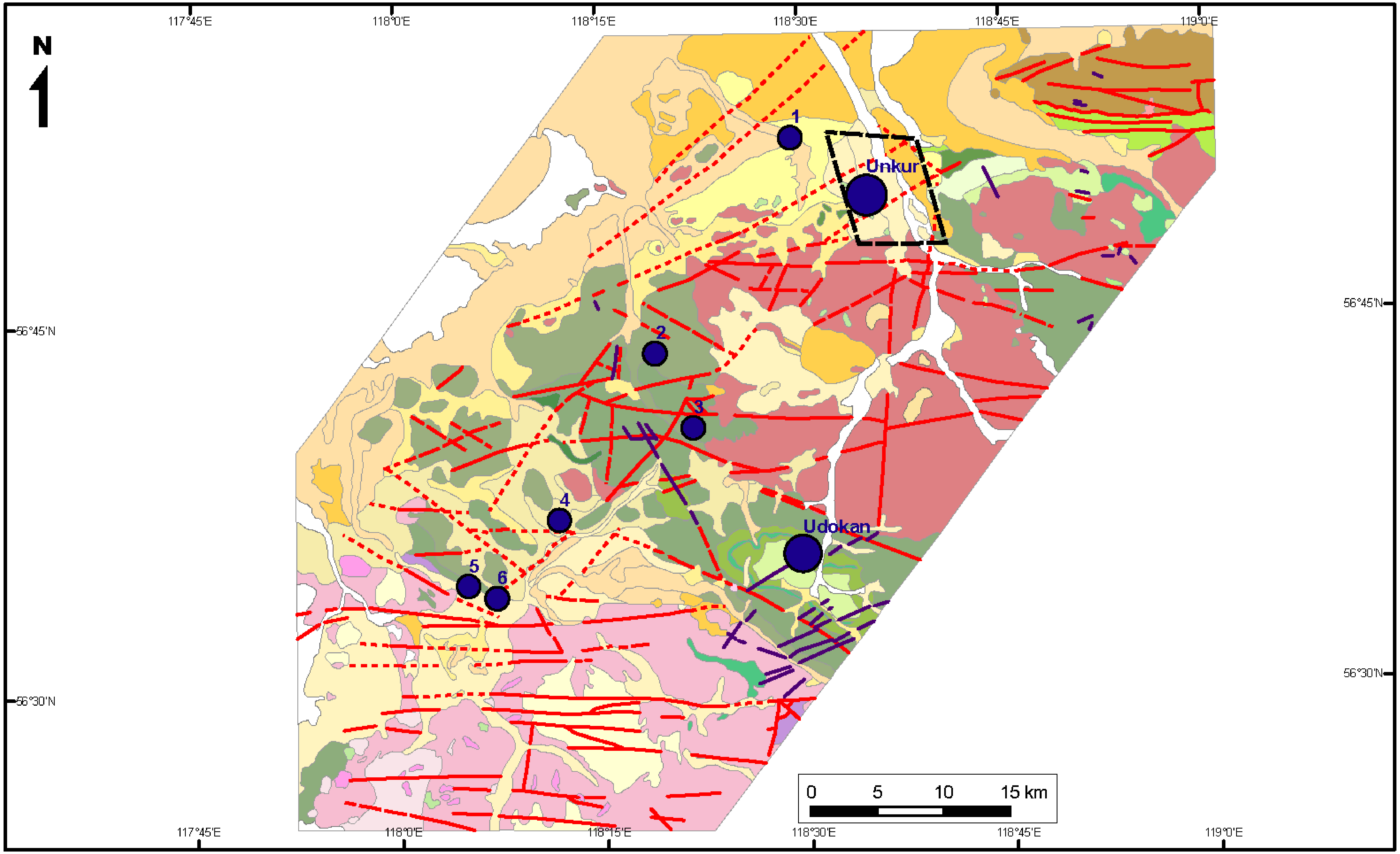
The bedrock in the vicinity of the Project is dominated by Lower-Proterozoic, weakly metamorphosed terrigenous-sedimentary rocks. This sedimentary succession is intruded by Early-Proterozoic, Proterozoic and Mesozoic igneous complexes.

## 7.2 Local Geology

Locally, the geology is composed of Lower Proterozoic metamorphosed sediments of the Udokan Series, Lower Proterozoic granitoids of the Chuisko-Kodarsly complex, gabbroid massifs and dykes of the Late Proterozoic Chiney complex, and Quaternary alluvial and glacial cover (Figure 7-1).

The sediments of the Udokan series were deposited in a shallow marine environment. In ascending stratigraphic order, the formations of the series are named as the Ikabyinskaya, Inyrskaya, Chitkandinskaya, Alexandrovskaya, Butunskaya, and Sakukanskaya. The overall thickness of the series is 5,350 m.

The copper-bearing horizon is confined to sediments of the Lower subformation of the Sakukanskaya formation. This subformation is a 500 m thick package of alternating pinkish-grey medium-grained sandstones and grey to black siltstones.




| FEBRUARY 2015 | U6304 | UNKUR TECHNICAL REPORT | |
|---|---|---|---|
| srk consulting | | Regional Geology | |

P:\U6304 RU0465 Unkur 43-101\Project\CAD\GeologyMap.mxd

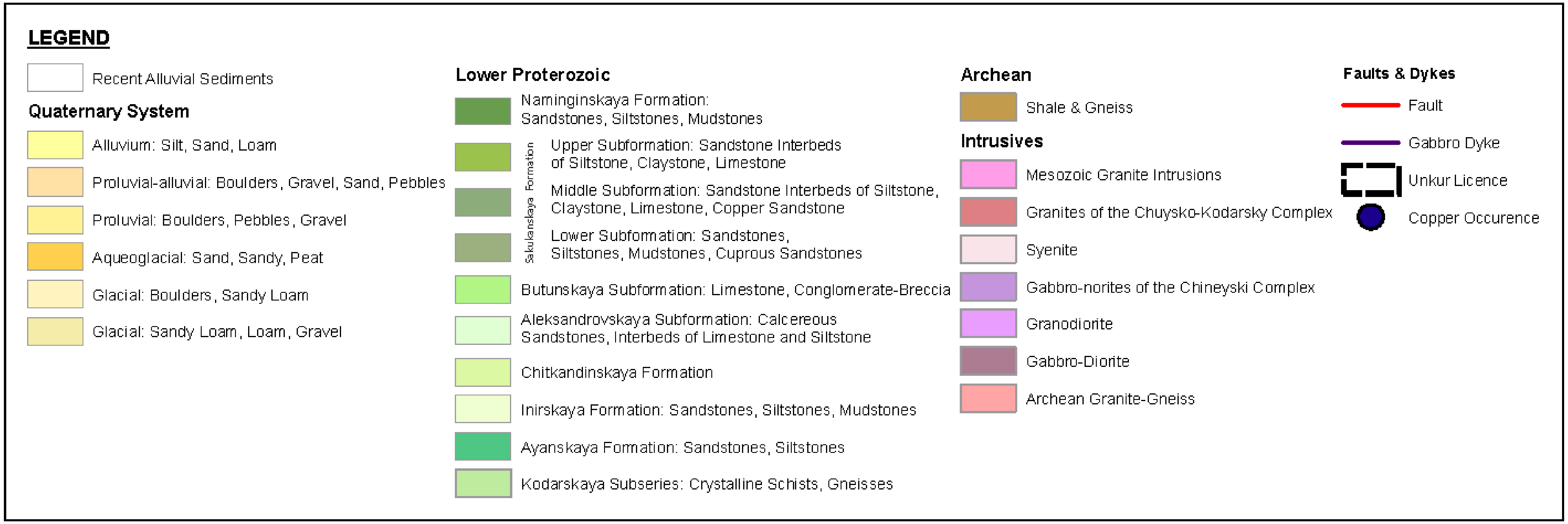



**Figure 7-1: Regional Geology Setting (modified by SRK from Mulnichenko, 1972). In addition to the Unkur and Udokan deposits, the other copper occurrences shown on the map are: Luktursky (1); Nirungnakanskaya group (2 and 3); Ingamakitskaya group (4, 5 and 6)**

## 7.3 Property Geology

### 7.3.1 Udokan Series Formations

In the vicinity of the Unkur deposit, the sediments of the Udokan Series are folded into a broad, doubly-plunging syncline, with an approximately vertical axial plane striking northwest (Figure 7-2). The northwest-southeast extent of this synclinal structure is about 12 km.

Three of the Udokan Series formations have been identified within the Unkur Project area: Alexandrovskaya, Butunskaya and Sakukanskaya

The rocks of the Alexandrovskaya formation are exposed in the south-western limb of the syncline, and comprise a package of interstratified siltstone and argillites, with quartzites about 1m thick occurring every 25-30 m. The formation is characterized by a magnetic low. Based on geophysical data, the thickness of the formation in the project area is about 450-600 m.

The upper part of the Butunskaya formation is exposed in the canyon of the Unkur river, and occurs as a package of alternating siltstone and fine-grained sandstone. The formation is characterized by a magnetic high. Based on the geophysical data, the thickness of the formation in the project area is 500-600 m.

The Sakukanskaya formation hosts copper mineralization and occupies most of the Unkur Project area. In the east and northeast this formation is intruded by the Chuisko-Kodarsly granitoids of the Kemensky massif. The Sakukanskaya formation is mainly medium-grained grey sandstone.

Of the Sakukanskaya subformations, the Middle and Lower have been identified in the project area. The Lower subformation characterized by grey and pinkish-grey sandstones alternating with grey and black siltstone, and is 1,000 to 1,200 m thick. The Middle subformation mainly consists of grey and pinkish-grey sandstones interlayered with calcareous sediments. Rough cross-bedding is characteristic of the sandstone. The overall thickness of the Middle subformation is about 1,000 m.

### 7.3.2 Structure

As noted above, the major structure of the deposit is a syncline with a northwest-striking axial plane. The southwest limb of the fold dips to the northeast at 40-60° and is complicated by higher order folding.

The Butunskaya and Sakukanskaya formations outcrop in the northeast limb of the fold, and dip 15-30° southwest, increasing to 35-60° closer to the axial plane.

To the southeast the syncline gradually flattens. In the northwest, geophysical evidence implies the syncline is cut by a branch of the Kemensky Fault.

The Kemensy Fault is one of three large northwest-striking faults. The other in this group is the Burunginsky Fault. The displacement in vertical direction on these major faults does not exceed 300 m.

The Unkur Syncline is also cut by the Charskaya northeast-striking fault system. Displacements on these faults do not exceed 150-200 m.

All the faults have undergone tectonic-magmatic re-activation at various stages. There is no reliable information on the cross-cutting relationships between faults.

### 7.3.3 Intrusive Rocks

The Udokan Series formations are intruded by gabbro-diorite dykes of the Chineisky complex. Dyke thicknesses range from metres to tens of meters, with observed strike lengths of 200-1,000 m. The dykes strike northeast and northwest, corresponding to the strikes of the two main fault systems.

### 7.3.4 Quaternary Cover

Glacial sediments cover most of the project area and form numerous moraines. The average thickness of the moraine cover is 40 m; however, this cover increases to 180-200 m thickness in both the northwest and southeast of the project area.

Recent alluvial sediments have been deposited by the Unkur and Kemen Rivers. These sediments are composed of gravel and sandy soil and form 5-20 m high terraces above flood-plains.

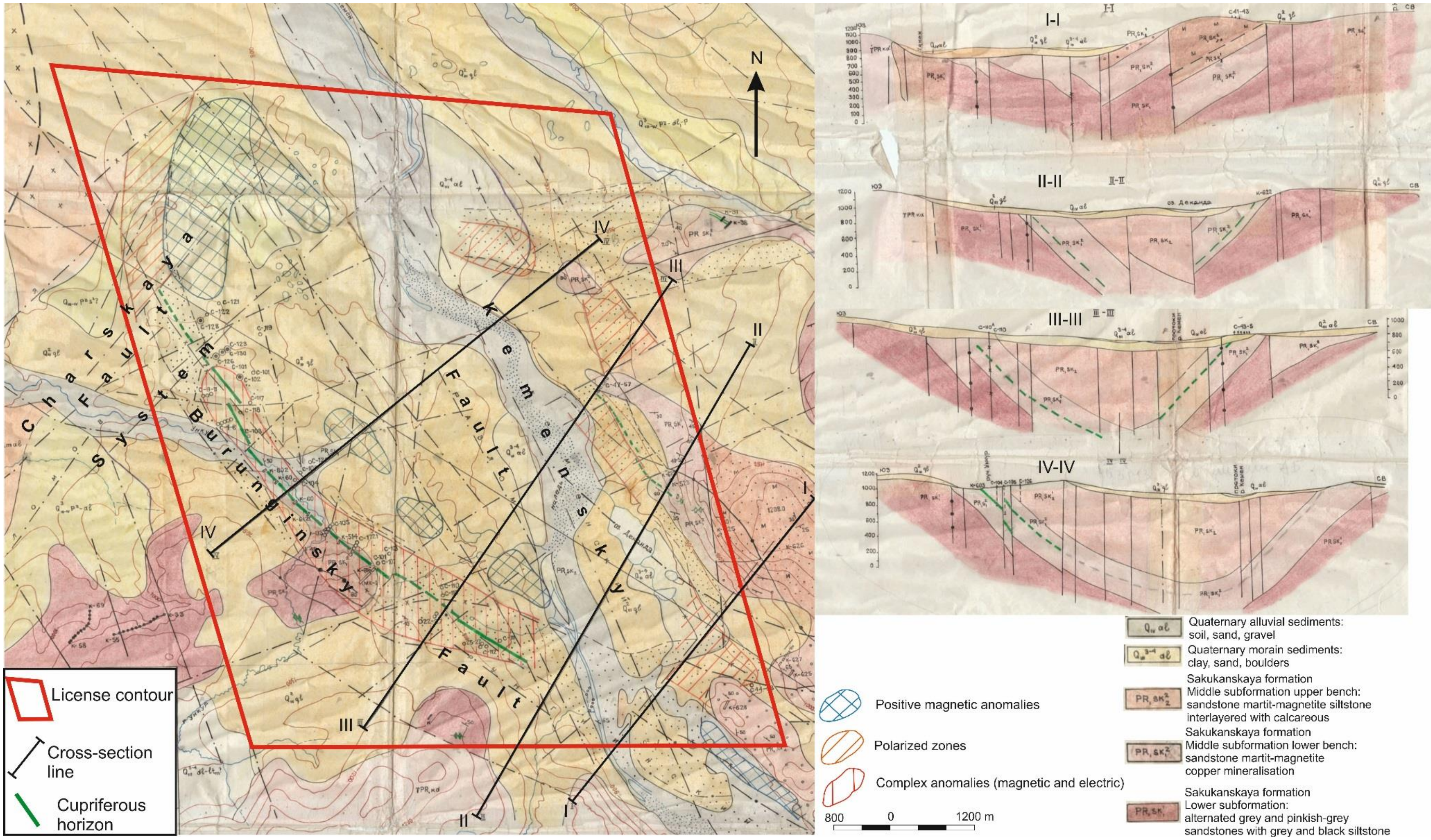



**Figure 7-2: Property Geology (modified by SRK from Berezin, 1979)**

## 7.4 Mineralization

The main copper-bearing horizon (Zone 1) was initially identified and traced in the south-western limb of the Unkur syncline. It is confined to weakly metamorphosed deposits of the Lower Sakukanskaya subformation. Stratigraphically, the position of the copper-bearing horizon is 80-100 m above the base of the Sakukanskaya formation. Copper oxide minerals among Pleistocene sediments are a possible indicator of the location of the horizon on the opposite (northeast) limb of the Unkur syncline.

The Zone 1 horizon dips northeast at 45-60° (Figure 7-3), and has been traced along the strike for 4.6 km, including a 3 km length of drill hole and trench intersections. The maximum drillhole intersection depth is 300 m. The true thickness of the horizon ranges from 7-50 m.

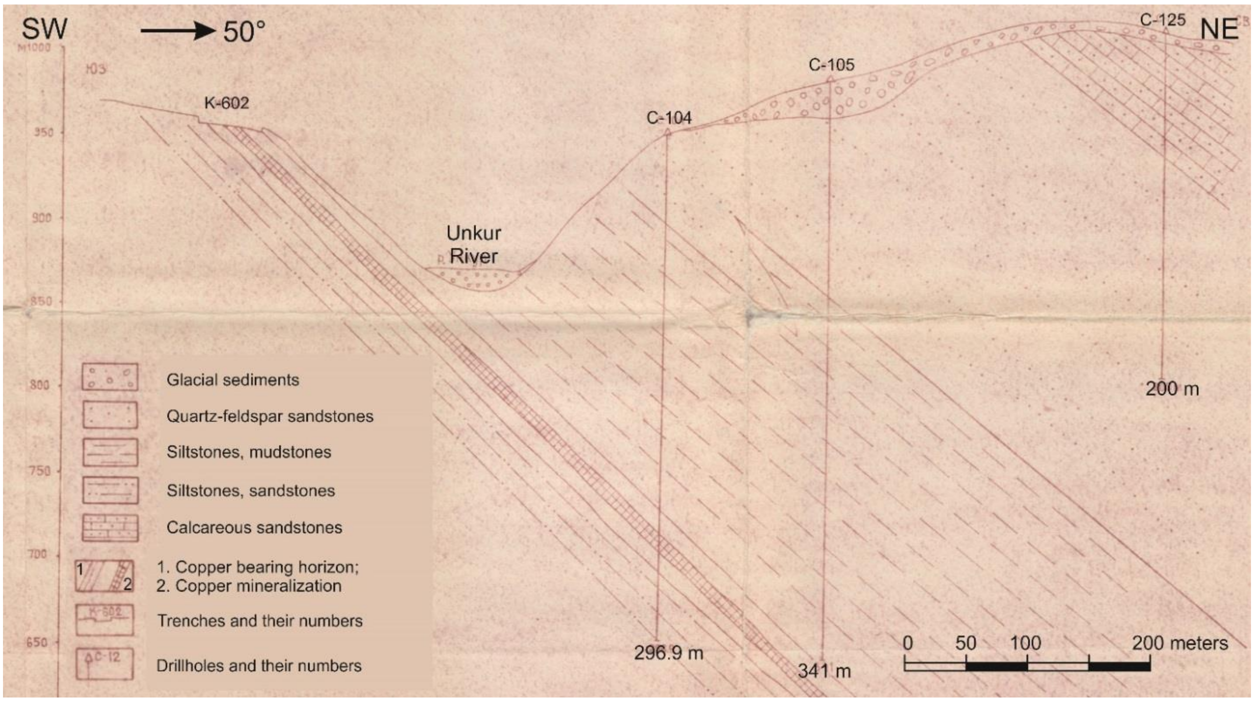



**Figure 7-3: Typical Geological Cross-Section, Central Part of the Unkur Project (modifed by SRK from Mulnichenko, 1972)**

The main copper-bearing horizon is composed of carbonate and non-carbonate sandstone and siltstone. A rhythmical-layered structure is characteristic of the horizon. This rhythmicity is from the alternation of carbonate and non-carbonate sandstones and siltstones. The true thickness of the layers varies from 1 to 40 m.

From geophysical methods, the copper-bearing horizon has been traced under moraine sediments for 4 km. It is characterized by high polarizability.

Radioactivity of the Udokan Series in the Unkur area is low.

The recent sampling by Azarga Metals has not defined a consistent, continuous high grade zone within the overall mineralised zone, but there is a general tendency for the highest grades (>0.5% Cu) to be concentrated near the centre of intersections instead of at the edges. At a larger scale, the northern part of the deposit (north of 6302300N) tends to be higher grade than the southern part, and the relatively high grade and thick intersection in drill hole AM-001 coincides with a change in strike, from approximately northwest-southeast, to approximately north-south (Figure 9-1).

Sulphide copper minerals comprise chalcopyrite, pyrite, bornite, chalcocite and covellite. Oxide minerals include malachite and brochantite. Accessory minerals include magnetite, magnetite, hematite and ilmenite.

A hypogene zonation is noted in the distribution of the copper minerals: a chalcopyrite-pyrite-bornite association is found in the centre; either side of this there is a monomineral chalcopyrite association, and then a distal pyrite association at the edges of the mineralized zone.

The weathered zone is poorly developed, to a depth of 5-10 m from surface. Copper oxide minerals are also observed at deeper levels in fractured zones.

The mineralized zone is displaced by northeast-striking fault and breccia zones. The displacements are typically 20-70 m, but for some faults displacements are as much as 150 m.

Below the copper-bearing horizon are pyritized calcareous sandstones and siltstones; above the horizon are sandstones and siltstones of the upper part of the Lower Sakukanskaya subformation.

Based on samples collected by Azarga Metals from drill holes, trenches and outcrops, a second mineralised horizon (Zone 2) has been identified to the west, stratigraphically 100 to 150 m below Zone 1. The sparse information available so far for Zone 2 suggest that this zone has a similar orientation, thickness, intensity and mineralogy to Zone 1.

# 8 Deposit Types

The Unkur deposit is interpreted as a sediment-hosted stratiform copper deposit. This geological model is considered appropriate for the deposit because of the following observations:

1. There is a clear stratigraphic control on copper mineralization, which is confined to the upper part of the Lower Sakukanskaya subformation.
2. Several sedimentary features (such as cross-bedding, wave rippling and desiccation cracks) imply a shallow and relatively low-energy depositional environment. This facies type is a key requirement for many models of other stratiform copper deposits.
3. Absence of obvious igneous or structural first order controls on mineralization. The faulting in the Unkur Project area generally appears to be post-mineralization.
4. A simple copper mineral composition, which is characteristic of sandstone-hosted copper deposits.

The nearby Udokan copper deposit is also an example of a sediment-hosted stratiform copper deposit. Globally, other prominent examples of this deposit type are the Dzhezkazgan copper deposits in Kazakhstan, the Zambian copper belts, and the Kuperschiefer in Central Europe.

# 9 Exploration

## 9.1 Channel sampling of trenches and outcrops

Azarga Metals collected channel samples from two exposures of the mineralised zone in the bank of the Unkur River, and from four sites of historical trenching that were cleared to re-expose the bedrock. In total, 67 meters of samples were collected from the outcrops, and 186 meters from the trenches. The locations of these sampling sites are shown in red (trenches) and blue (outcrops) in Figure 10-2. Sampling was done on one-meter lengths, with a nominal width of 5 cm and depth of 3 cm. Sample locations were derived based on several hand-held GPS measurements along each sampling profile.

The outcrop channel samples were approximately orientated along the strike of the mineralisation, and the irregular outcrop surface meant that it was difficult to obtain a consistent sample width and depth. For the resource estimation, the outcrop sampling was used as a guide for projecting the interpreted mineralisation contacts to surface, but the outcrop samples themselves were not directly used for the geostatistical estimation of grade.

The trenches are oriented on azimuths approximately perpendicular to the mineralisation. The trench sampling information was merged into the drill hole database, effectively as a set of horizontal drill holes. Three of the trenches intersected copper-silver mineralisation (Table 9-1). None of the samples from trench K801 returned results indicating significant copper-silver mineralisation. The channel samples from the trenches, which the qualified person considers to be similarly reliable and representative as samples obtained from drill core, were used for both modelling the contacts of the mineralisation domains, and for the geostatistical grade estimation within these domains.

**Table 9-1: Trench intersections used for mineral resource estimation**

| Trench ID | Zone intersected | From m | To m | Length m | Cu % | Ag ppm | True Thickness m |
|---|---|---|---|---|---|---|---|
| K601 | Zone 2 | 0 | 10 | 10 | 0.73 | 2.07 | 8.7 |
| K615 | Zone 1 | 8 | 17 | 9 | 0.30 | 14.03 | 6.9 |
| K616 | Zone 1 | 18 | 29 | 11 | 0.41 | 6.32 | 8.1 |

## 9.2 Ground Magnetic Survey

Approximately 130 line kilometres of detail ground magnetics data were collected during Azarga Metals' first phase exploration program (Figure 9-1). The results show that copper-silver mineralisation is associated with a strong magnetic signature and that ground magnetics may be useful targeting tool on the project.

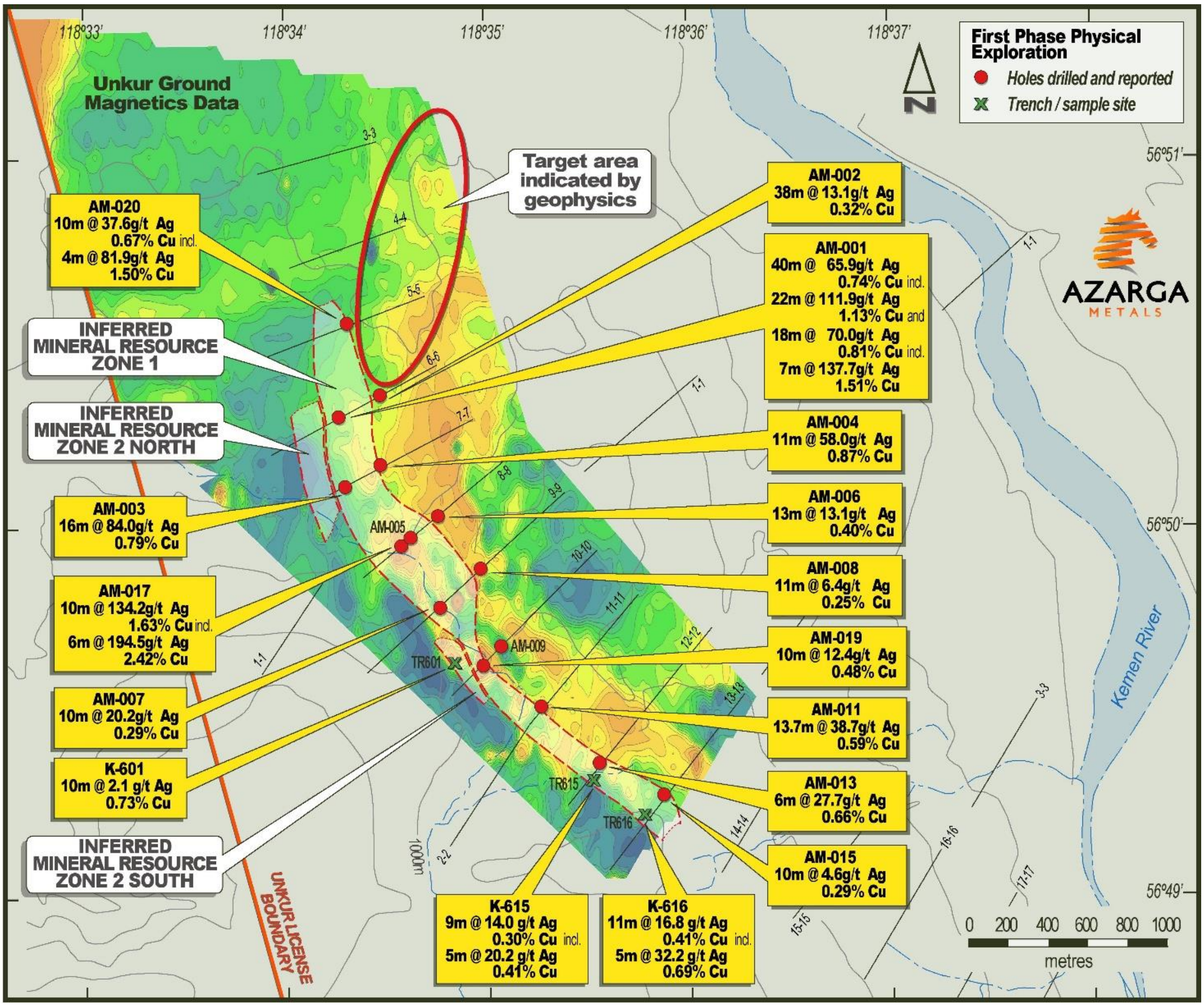



**Figure 9-1: Ground magnetic survey results with selected drill holes overlaid, and targets for future exploration phases highlighted (Source: Azarga Metals, 2017)**

# 10 Drilling

The main source of information for the mineral resource estimate presented in this report is 4,580 meters of diamond core drilling (from 16 drill-holes) completed during Azarga Metals' exploration campaign from August 2016 until February 2017. Section lines for drilling are spaced approximately 300m apart. Where there are two Zone 1 intersections on the same drill section, the spacing between intersections is typically 200m to 300m.

## 10.1 Type and extent

Summary information for individual holes and intersections is listed in Table 10-1 and Table 10-2. Figure 10-2 shows a plan of the collar locations, and representative sections are presented in Figure 10-3, Figure 10-4 and Figure 10-5.

The holes were drilled by two Christensen CS14 rigs. Core was collected on 3 m drilling lengths, using a double tube core barrel. Drilling through the loose sediments of the moraine was done at PQ diameter. The hole diameter was reduced to NQ, or (less frequently) HQ, for drilling the bedrock. Hole collars were surveyed using a hand-held GPS device. The down hole orientation was surveyed using an IMMN-42 magnetometric inclinometer.

## 10.2 Factors that could materially affect the accuracy and reliability of results

SRK has considered drilling, sampling and recovery factors that could materially affect the results from Azarga Metals' sampling. The core from the mineralised zones is often very broken, so it is often not practical to estimate recovery by piecing together the fragments and measuring the length. Instead, recovery can be estimated based on sample weight. The mean weight of 1 meter half core samples from the Zone 1 domain is 2.2 kg (Figure 10-1). The theoretical weight of a 1 meter half core sample, at NQ diameter, with a density of 2.67, is 2.4 kg. Therefore, the average recovery from the mineralised zone is approximately 90%. Given the style and grade of mineralisation at Unkur, SRK considers this recovery to be sufficient for the samples to support mineral resource estimation.

## 10.3 SRK Comments

In the opinion of SRK, the sampling procedures used by Azarga Metals are consistent with generally accepted industry best practice. All drilling sampling was conducted under the direct supervision of appropriately qualified geologists. Accordingly, there are no known drilling, sampling or recovery factors that could materially impact the accuracy and reliability of the results.

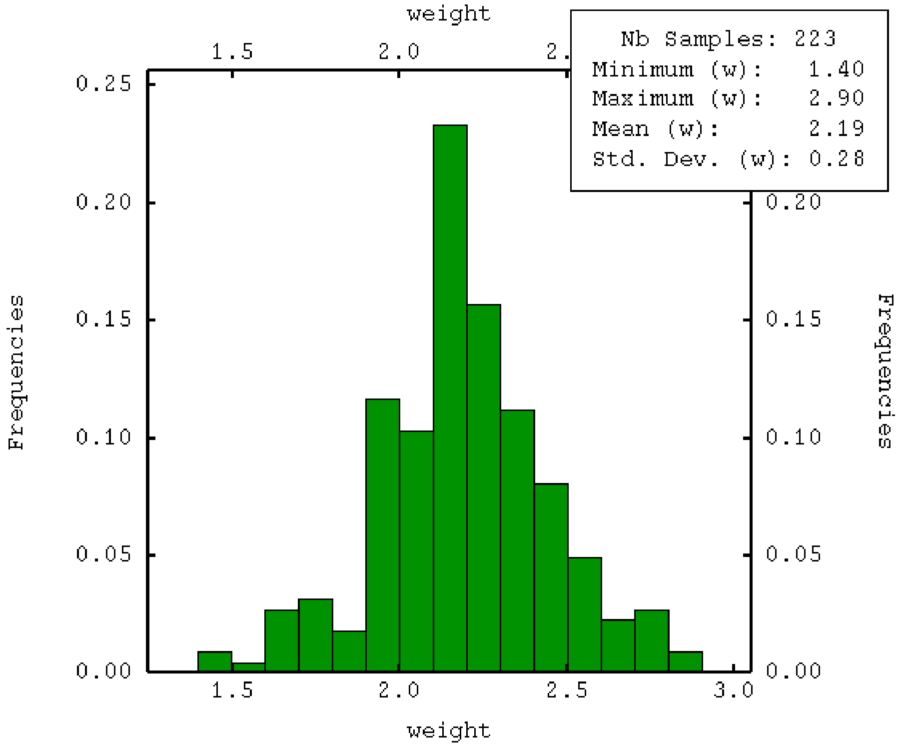



**Figure 10-1: Histogram of sample weights for 1 meter samples from Zone 1 mineralised domain**

**Table 10-1: Drill hole location, maximum depth, and orientation**

| Hole ID | Collar coordinates (Pulkovo 42 datum, Zone 20) | | | Maximum depth (m) | Starting dip | Starting azimuth |
|---|---|---|---|---|---|---|
| | x | y | z | | | |
| AM-001 | 20595871 | 6303108 | 930 | 400.5 | -69 | 241 |
| AM-002 | 20596077 | 6303227 | 919 | 520.5 | -70 | 248 |
| AM-003 | 20595911 | 6302753 | 931 | 100.0 | -72 | 242 |
| AM-004 | 20596093 | 6302871 | 936 | 382.9 | -70 | 242 |
| AM-005 | 20596247 | 6302510 | 914 | 160.0 | -71 | 241 |
| AM-006 | 20596388 | 6302620 | 955 | 572.0 | -69 | 221 |
| AM-007 | 20596411 | 6302155 | 928 | 80.0 | -70 | 222 |
| AM-008 | 20596611 | 6302365 | 1008 | 601.3 | -72 | 228 |
| AM-009 | 20596725 | 6301968 | 983 | 238.0 | -69 | 224 |
| AM-011 | 20596936 | 6301672 | 952 | 178.5 | -68 | 223 |
| AM-013 | 20597233 | 6301394 | 996 | 100.0 | -68 | 220 |
| AM-015 | 20597567 | 6301246 | 1042 | 201.0 | -68 | 217 |
| AM-017 | 20596211 | 6302467 | 916 | 277.5 | -71 | 230 |
| AM-018 | 20595635 | 6302977 | 938 | 256.6 | -73 | 241 |
| AM-019 | 20596639 | 6301879 | 939 | 226.7 | -69 | 224 |
| AM-020 | 20595906 | 6303578 | 903 | 284.9 | -70 | 249 |

**Table 10-2: Drill hole intersections used for mineral resource estimation**

| Hole ID | From | To | Length (m) | Composite Grades | | True Thickness (m) |
|---|---|---|---|---|---|---|
| | | | | Cu (%) | Ag (ppm) | |
| AM-001* | 82.5 | 125.5 | 33.0 | 0.83 | 79.81 | 20.1 |
| AM-002 | 432.5 | 472.5 | 40.0 | 0.31 | 12.77 | 33.8 |
| AM-003** | 40.5 | 77.5 | 37.0 | 0.43 | 39.63 | 26.9 |
| AM-004*** | 319.5 | 358.5 | 31.0 | 0.44 | 27.23 | 23.7 |
| AM-006 | 440.5 | 456.5 | 16.0 | 0.34 | 11.02 | 14.4 |
| AM-007 | 47.0 | 60.0 | 13.0 | 0.25 | 17.12 | 10.9 |
| AM-008 | 352.3 | 364.3 | 12.0 | 0.24 | 6.02 | 9.9 |
| AM-011 | 145.5 | 153.9 | 8.4 | 0.92 | 61.73 | 7.3 |
| AM-013 | 70.0 | 78.0 | 8.0 | 0.53 | 22.62 | 6.8 |
| AM-015 | 135 | 145.0 | 10.0 | 0.29 | 4.55 | 8.7 |
| AM-017 | 189.5 | 202.5 | 13.0 | 1.28 | 103.91 | 9.8 |
| AM-019 | 39.0 | 49.0 | 10.0 | 0.48 | 12.39 | 8.6 |
| AM-020 | 227.0 | 241.0 | 14.0 | 0.51 | 28.44 | 10.6 |
| Zone 2 (N) | | | | | | |
| AM-001 | 311.5 | 346.5 | 35.0 | 0.47 | 43.49 | 24.5 |
| AM-019 | 106.0 | 119.0 | 13.0 | 0.17 | 4.99 | 9.1 |

* AM-001 mineralisation begins at base of moraine, possibly intersection has been truncated by glacial erosion. Composite excludes barren zone from 104.5 to 114.5.

** AM-003 mineralisation begins at base of moraine, possibly intersection has been truncated by glacial erosion.

*** AM-004 composite excludes barren zone from 335.5 to 343.5.

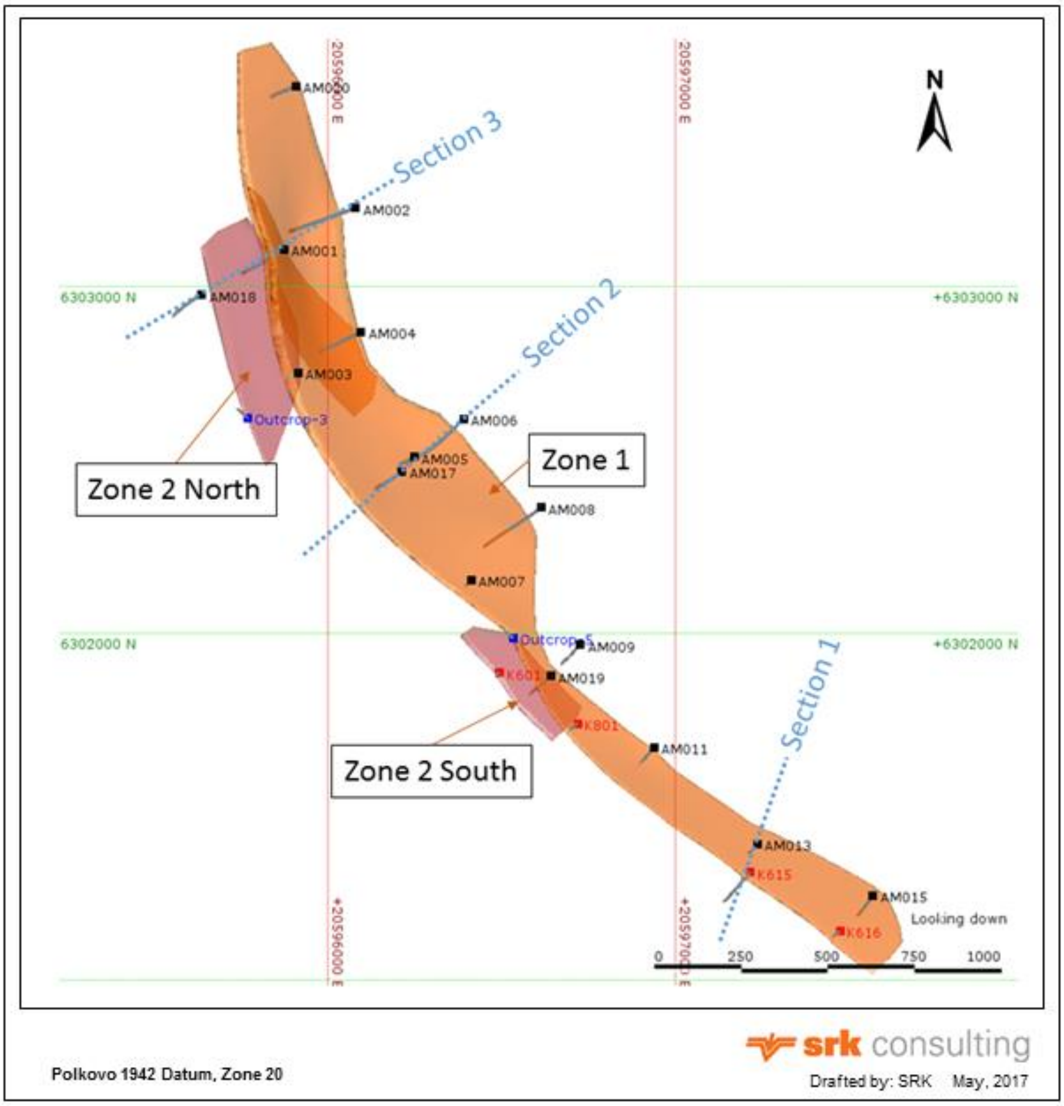



**Figure 10-2: Plan showing collar locations and drill hole traces in relation to modelled mineralisation domain (authored by SRK, 2017)**

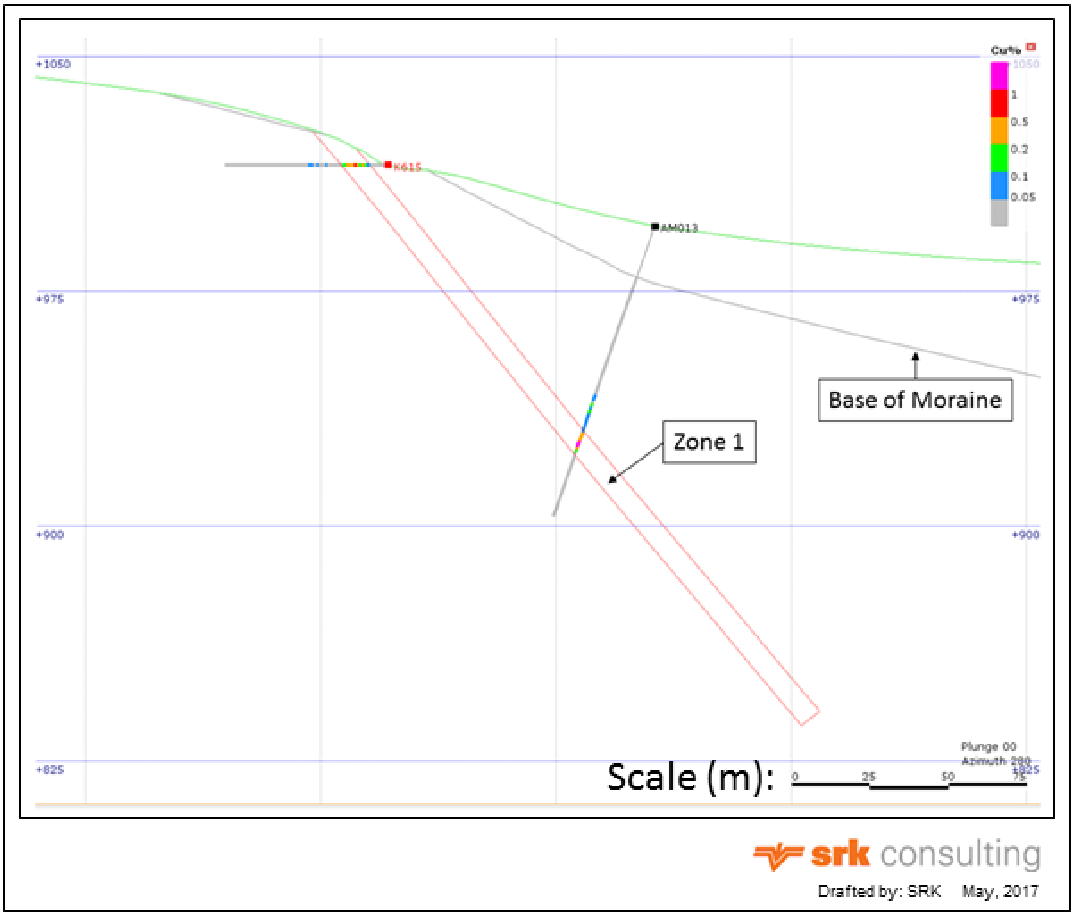



**Figure 10-3: Vertical cross section 1. View looking northwest. Section width 50m (authored by SRK, 2017)**

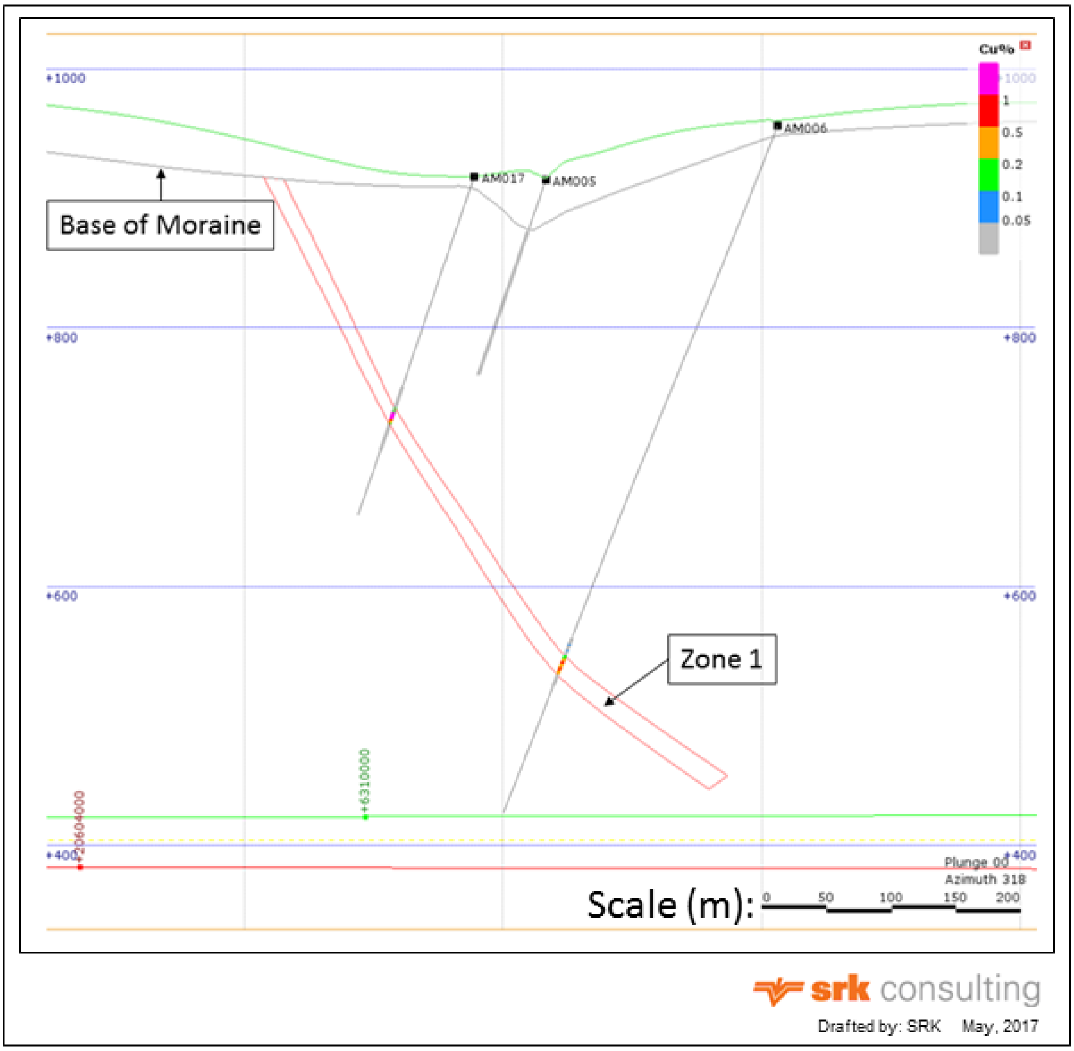



**Figure 10-4: Vertical cross section 2. View looking northwest. Section width 50m (authored by SRK, 2017)**

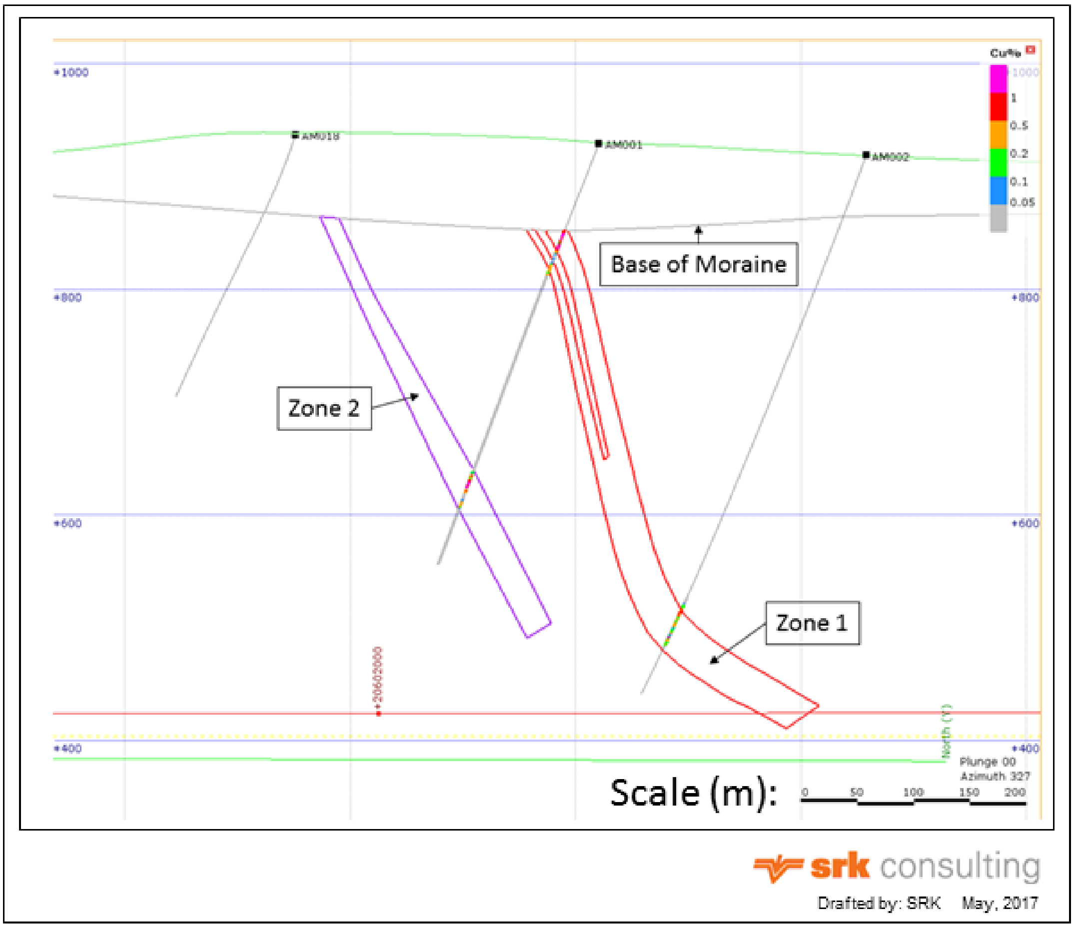



**Figure 10-5: Vertical cross section 3. View looking west-northwest. Section width 50m (authored by SRK, 2017)**

# 11 Sample Preparation, Analyses, and Security

## 11.1 Sample preparation on site

Core trays were transported from the rigs to Azarga Metals' exploration camp. This transportation distance was up to three kilometres. All core was digitally photographed. Intervals identified by the geologists as likely to be mineralised were selected for sampling, and the sampling interval was extended for at least 10 meters beyond the limits of the identified mineralisation. Hand-held XRF measurements were used as a further check, to ensure that all mineralised zones were identified for sampling. Several hand-held XRF readings of copper content were taken within each meter of core. XRF copper readings were used as a logging tool, not in the resource estimate calculations.

Core selected for sampling was cut with a core saw. Sample lengths were nominally 1.0 m, but adjustments to the lengths were made in order to honour geological boundaries. The minimum sample length was 0.4 m and the maximum length was 1.3 m. Half-core from the intervals selected for sampling was dispatched by road to SGS Laboratories in Chita. Trays of the retained half core were closed with covers, marked, and stored at Azarga Metals' exploration camp.

## 11.2 Sample preparation and analysis at laboratory

The primary laboratory used for analysing Azarga Metals' samples is SGS Vostok Limited in Chita. The laboratory is independent from Azarga Metals, and has ISO/IEC 17025 certification for the specific procedures used.

Samples received by SGS were dried at 105 ± 5˚C. Samples up to 4 kg were then crushed to 85% passing 2 mm, and ground to 90% passing 0.7 mm. Sieving checks were done on 3 – 5% of the samples. Samples more than 4 kg went through the same crushing stage, but were split to 4 kg before proceeding to the grinding stage.

A subsample of 0.5 to 1.0 kg was collected using a rotary splitter. This subsample went through a further stage of fine grinding, to 95% passing 75 µm. A 50% split of this subsample (250 to 500 g) was used for analysis.

SGS analysed the samples for copper and silver. The copper content was determined by SGS method ICP90A (sodium peroxide fusion, then inductively coupled plasma - atomic emission spectroscopy). The silver content was determined by SGS method AAS12E (two acid digest, then atomic absorption spectroscopy).

## 11.3 Quality control / Quality assurance

### 11.3.1 Certified reference materials

Among the samples submitted to SGS for analysis, Azarga Metals included control samples from four different certified reference materials ("CRMs"). These CRMs were prepared by laboratory Udokanskaya Med, and certified by the institute VIMS. The results from these samples are summarised in Table 11-1. Compared to the 1,799 primary samples analysed by SGS, the 73 analyses of CRMs represent a submission rate of 4%.

The set of results from analyses of the CRMs do not show any biases significant enough to cause material concerns about the suitability of the assay database for mineral resource estimation.

**Table 11-1: Summary of results from analyses of certified reference materials**

| Quality Control Sample ID | Certified Value | Number of analyses by SGS | Mean SGS analysis | Median SGS analysis | Minimum SGS analysis | Maximum SGS analysis |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| 29-13 | 0.62% Cu 4.65 g/t Ag | 14 | 0.60% Cu 4.3 g/t Ag | 0.61% Cu 4.5 g/t Ag | 0.54% Cu 0.3 g/t Ag | 0.62% Cu 5.0 g/t Ag |
| 30-13 | 1.62% Cu 12.4 g/t Ag | 14 | 1.59% Cu 11.7 g/t Ag | 1.60% Cu 11.6 g/t Ag | 1.49% Cu 11.1 g/t Ag | 1.69% Cu 12.6 g/t Ag |
| 31-13 | 2.62% Cu 22.7 g/t Ag | 20 | 2.57% Cu 21.4 g/t Ag | 2.58% Cu 21.3 g/t Ag | 2.38% Cu 20.3 g/t Ag | 2.69% Cu 22.7 g/t Ag |
| 32-13 | <0.02% Cu <0.2 g/t Ag | 25 | 0.01% Cu 0.3 g/t Ag | 0.01% Cu 0.2 g/t Ag | 0.01% Cu 0.2 g/t Ag | 0.01% Cu 0.9 g/t Ag |

### 11.3.2 Check assays by an umpire laboratory

From the pulps prepared by SGS, 90 samples were submitted to ALS laboratories in Chita. ALS is independent from Azarga Metals and has ISO/IED 17025 certification for the specific procedures used. These check assays represent a submission rate of 5% (compared to the 1799 primary samples). The ALS analytical method was ME-ICP41 (nitric aqua regia digestion, then inductively coupled plasma - atomic emission spectroscopy). In the results received by Azarga Metals, only the copper content was reported.

The paired ALS and SGS results are plotted in Figure 11-1. For SGS results above 1.5%, several of the corresponding ALS results are notably lower, and for two samples the differences are large. A possible explanation for this difference is that the nitric aqua regia digestion used by ALS is a less complete sample decomposition method than the sodium peroxide fusion used by SGS.

The difference between the ALS and SGS results should be monitored as further samples are collected from future exploration campaigns, but, from the current set of check assays, SRK's opinion is that the differences are neither sufficiently large nor frequent to inhibit using the assay database for mineral resource estimation.

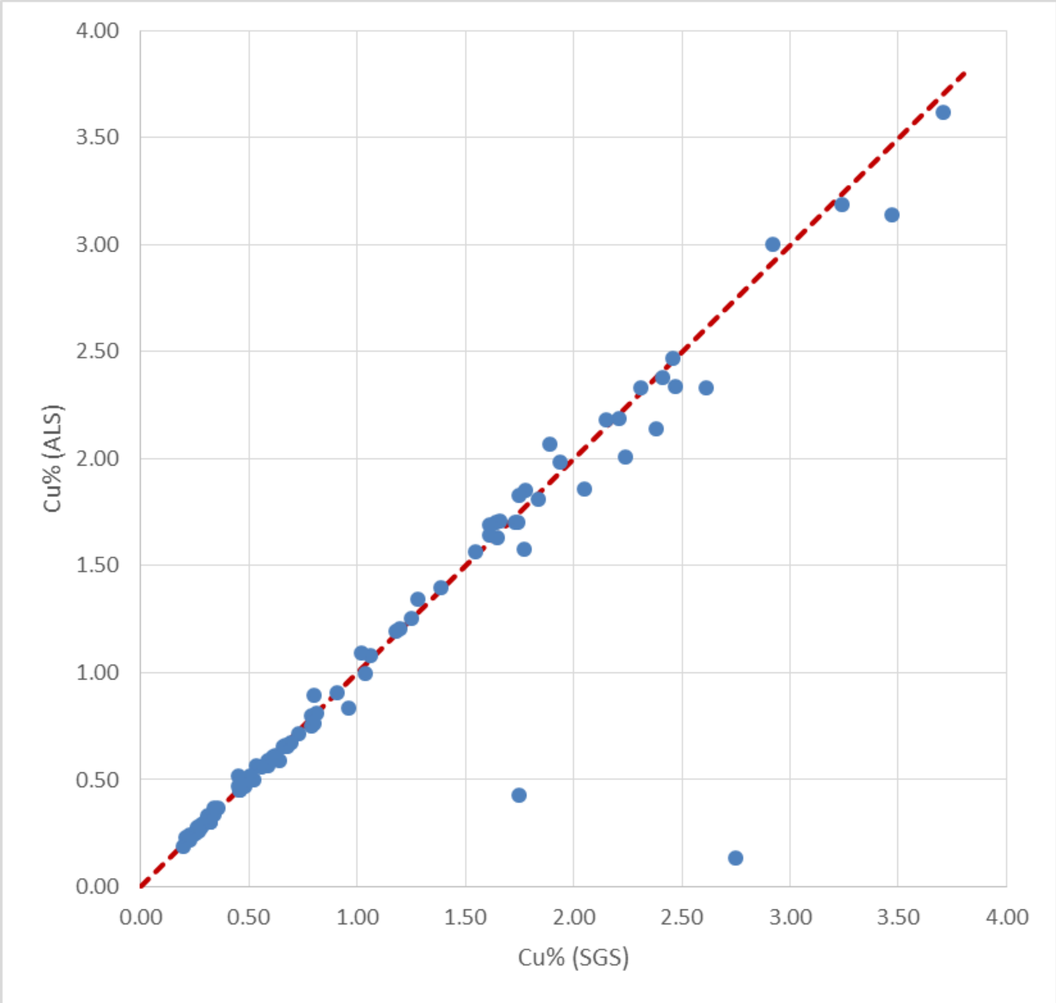



**Figure 11-1: ALS check assays on pulp samples from SGS**

## 11.4 SRK Comments

In SRK's opinion, the sample preparation, security and analytical procedures used by Azarga Metals are consistent with generally accepted industry best practices and are, therefore, adequate for the purpose of mineral resource estimation.

# 12 Data Verification

## 12.1 Data verification by the qualified person

The qualified person visited site on December 10, 2014, and October 13, 2016. The 2016 visit included a visit to the primary assay laboratory (SGS in Chita) the following day.

The qualified person has verified the database the mineral resource estimate is based on. This verification was done by personal inspection of drill core, drill sites and trenches during the 2016 site visit, by analysing the results from quality control samples, and by checking database content against primary data sources and historical information.

## 12.2 Limitations on data verification

During the 2014 site visit, SRK visited an old core storage facility (Figure 12-1) and inspected the state of the historical core (Figure 12-2). The historical sampling could not be verified because of the poor condition of the core, due to poor recovery during drilling, deterioration of the core and core trays over the subsequent four decades, and collapse of the core storage shed. Also, it appears that the intervals of most interest (the mineralised intersections) were generally entirely consumed by sampling during the historical exploration programs.

Because of the limitations on the confidence in the quality of the historical data, this information was not used by SRK to prepare the mineral resource estimation.

**Figure 12-1: Old Core Storage, the Unkur Project (source: SRK, December 2014)**

**Figure 12-2: Core Recovered from hole C-118 (source: SRK, December 2014)**

## 12.3 Adequacy of data for the purposes used in this technical report

The quantity and quality of data collected by Azarga Metals are sufficient to support estimation of mineral resources.

# 13 Mineral Processing and Metallurgical Testing

## 13.1 Background

This review is based upon the metallurgical testwork results presented in the ZAO SGS Vostok Ltd. report, Project No. SA-1175-MIN-HT-14 “Metallurgical Testwork on Oxide Ore Sample of the Unkur Deposit” dated February 2015.

The testwork was conducted on a single, 350 kg sample of the oxide Cu-bearing ore of the Unkur deposit, identified as sample TP-1. The qualified person observed this sample being collected from an outcrop in the Unkur River bed (the same outcrop described in Item 12.1). In SRK’s opinion, this sample can reasonably be considered as representative of the oxide portion of the deposit, but it must be noted that the weathered zone is poorly developed, to a depth of only 5-10m, and some characteristics of the oxide are likely not representative of the much larger fresh rock component of the deposit.

The testwork included:

- Fractional size analysis of the whole ore;
- Mineralogical analysis;
- Chemical analysis;
- Grinding kinetics tests;
- Gravity, flotation testing;
- Acidic hydrometallurgical leaching testing; and
- Diagnostic leaching of copper.

Mineralogical and petrographic tests were conducted at the Mineralogical Institute of Ural Department of Russian Academy of Science (UrO RAN).

## 13.2 Sample Characteristics

The copper and silver deportment by size fraction, in the sample crushed to -1.7 mm, is presented in Table 13-1. In general, terms the contained grade of both metals is consistent across all size fractions with a slight increase in grade of both metals in the minus 75 to 53 µm and minus 53 µm size fractions.

This deportment is consistent with the mineralogical observations.

**Table 13-1: Distribution of copper and silver between size fractions (at 1.7 mm)**

| Size Fraction | Mass Yield | | Assay, %, g/t | | Distribution, % | |
|---|---|---|---|---|---|---|
| mm | g | % | Cu | Ag | Cu | Ag |
| -1.7+1.18 | 175.03 | 17.50 | 1.27 | 27.60 | 16.62 | 17.68 |
| -1.18+0.600 | 331.00 | 33.10 | 1.28 | 27.30 | 31.69 | 33.08 |
| -0.600+0.425 | 113.84 | 11.38 | 1.23 | 25.80 | 10.47 | 10.75 |
| -0.425+0.212 | 124.30 | 12.43 | 1.22 | 25.30 | 11.34 | 11.51 |
| -0.212+0.106 | 82.18 | 8.22 | 1.21 | 24.10 | 7.44 | 7.25 |
| -0.106+0.075 | 27.47 | 2.75 | 1.35 | 25.60 | 2.77 | 2.57 |
| -0.075+0.053 | 22.99 | 2.30 | 1.47 | 28.10 | 2.53 | 2.36 |
| -0.053 | 123.19 | 12.32 | 1.86 | 32.80 | 17.14 | 14.79 |
| Head Calculated | 1000.00 | 100.00 | 1.34 | 27.32 | 100.00 | 100.00 |
| Head Direct | | | 1.31 | 28.20 | | |

### 13.2.1 Chemical Analysis

The sample was analysed and the chemical analyses is presented in Table 13-2.

The ore sample contained 1.31% Cu and 28.2 g/t Ag (average).

The oxide copper mineralisation represents over 95% of the contained copper and the relatively low sulphur values for both $S_{Total}$ and $S_{Sulphide}$ confirm the relatively low amount of copper suphide minerals in this sample of oxide ore.

The Cao and MgO content together with the relatively high LOI values are significant since they are indicative of the presence of carbonate in the sample. This is detrimental to acid leaching in terms of the propensity to increase acid consumption.

**Table 13-2: Chemical Analysis of sample TP-1**

| Element | Method | Unit | Assay | Element | Method | Unit | Assay |
|---|---|---|---|---|---|---|---|
| Cu total | AAS72C | % | 1.31 | Mo | ICP90AM | ppm | <10 |
| Cu oxide | AAS72C | % | 1.25 | P | ICP90AM | % | 0.12 |
| Ag | AAS12EM | g/t | 28.2 | Pb | ICP90AM | ppm | <20 |
| Au | FAA303M | g/t | 0.03 | Sb | ICP90AM | % | <0.005 |
| C | CSA01VM | % | 0.74 | Sc | ICP90AM | ppm | 11 |
| S total | CSA06VM | % | 0.02 | Sn | ICP90AM | ppm | <50 |
| S sulphide | CSA08VM | % | 0.01 | Sr | ICP90AM | ppm | 70 |
| Al | ICP90AM | % | 6.45 | Ti | ICP90AM | % | 0.26 |
| As | ICP90AM | % | <0.003 | V | ICP90AM | ppm | 80 |
| Ba | ICP90AM | ppm | 720 | W | ICP90AM | ppm | <50 |
| Be | ICP90AM | ppm | <5 | Y | ICP90AM | ppm | 17 |
| Ca | ICP90AM | % | 2.54 | Zn | ICP90AM | % | 0.01 |
| Cu | ICP90AM | % | 1.3 | Al2O3 | ICP95AM | % | 11.8 |
| Cd | ICP90AM | ppm | <10 | CaO | ICP95AM | % | 3.79 |
| Cr | ICP90AM | ppm | 190 | Fe2O3 | ICP95AM | % | 4.61 |
| Co | ICP90AM | ppm | 10 | K2O | ICP95AM | % | 4.01 |
| Fe | ICP90AM | % | 3.19 | MnO | ICP95AM | % | 0.16 |
| K | ICP90AM | % | 3.33 | MgO | ICP95AM | % | 2.33 |
| La | ICP90AM | ppm | 30 | Na2O | ICP95AM | % | 1.8 |
| Li | ICP90AM | ppm | 20 | P2O5 | ICP95AM | % | 0.3 |
| Mg | ICP90AM | % | 1.39 | SiO2 | ICP95AM | % | 65.4 |
| Mn | ICP90AM | ppm | 1250 | TiO2 | ICP95AM | % | 0.46 |
| Ni | ICP90AM | % | 0.004 | LOI* | ICP95AM | % | 5.42 |

*Note: LOI – Loss on ignition

### 13.2.2 Mineralogy

Mineralogical examination of +1mm fraction of the crushed sample indicated that the ore is a mixture of fine-grained sandstones and siltstones with disseminated impregnation of iron oxides and oxide copper minerals. The ratio of the fine-grained sandstones and siltstones is approximately 3:1.

The mixed sample contains abundant quartz, albite, mica (muscovite and biotite), calcite, and traces of chlorite. The accessory minerals are zircon, apatite, barite, and titanium oxides. Small amounts of sulphide minerals (bornite, chalcosite, covellite, chalcopyrite, pyrite) are present together with small amounts of silver and silver sulphide. The main copper oxide minerals are in the form of carbonates, malachite and azurite. Copper silicate, chrysocolla, is also present.

The fine-grained sandstone (75%) contains abundant quartz and plagioclase and the intergrain cement is micaceous and contains carbonate minerals. The structure is fine-grained, the microtexture is massive and porous. These sandstones contain poorly disseminated iron oxides and rinds, films and impregnations of copper oxides such as malachite, azurite and copper silicate. The iron oxides are hematite, magnetite and martite. Zircon is also present. The fine grain sandstones are rich in copper salts and contain 5–10% by volume of malachite. Small amounts of copper sulphide minerals, bornite, chalcosite, covellite, chalcopyrite are present together with some pyrite. These are present in interstices of the gangue minerals and form rare disseminated impregnation in sandstones or individual inclusions in magnetite and hematite.

The siltstone (25%) is fine-grained and the texture is massive and weakly layered. The siltstone contains disseminated impregnation of iron oxides (from individual grains to 2% of the volume). The siltstone contains rinds, films and fine veinlets of copper minerals, usually malachite (from individual grains to 1–2% of the volume). The primary iron oxide is hematite, with small amounts of magnetite. The iron oxide grain size varies from 1 to 30 μm and occasionally up to 0.2 mm.

The hematite and magnetite both contain 2 to 30 μm inclusions of the sulphide minerals present. The intergrowths are generally complex. Hematite is partially rimmed by green Cu mineral films. The hematite grain size varies from 5–10 μm to 70 μm–0.1 mm. The magnetite crystal size is 50 μm to 0.15 mm, and 1 mm in intergrowths with gangue minerals.

Pyrite is disseminated and present as individual free grains in gangue minerals.

The main copper bearing minerals are malachite $Cu_2(CO_3)(OH)_2$ and azurite $Cu_3(CO_3)_2(OH)_2$ and occur as rinds, thin films and impregnation in the fine-grained sandstone and siltstone, sometimes as veinlets and stringers in siltstones and sometimes as rims around the grains of magnetite and hematite. The malachite veinlets are 10–50 μm thick. The azurite is often intergrown with malachite. Some of the malachite contains admixture of zinc and lead. In some instances, azurite contains a small amount of lead.

Small amounts of copper and lead arsenates are present sometimes with rare earth elements, (REE), Nd and Y.

Silver is found as silver sulphide and native silver. Silver sulphide $Ag_2S$ occurs as inclusions and emulsions in malachite, or with fine native silver inclusions. Native silver Ag occurs as fine (0.5 μm) inclusions in silver sulphide and in malachite.

The SGS report states that the textural and structural features and mineralogical composition of the Unkur ores are similar to those of the Udokan ores and for metallurgical purposes the ores are characterized as mixed carbonate-sulphide.

The main conclusion from the mineralogy is that while the copper minerals should be readily extracted by acid leaching, the predominance of the two copper carbonates, malachite and azurite, will result in high acid consumption. Some of the sulphides will be recoverable by flotation but the relatively fine grain size and the presence of abundant copper oxides will probably result in low recoveries and poor grades, and sulphidisation will be required to recover oxide copper minerals by this means.

### 13.2.3 Testwork results

A 350 kg mass of sample was received. The top size of material in the sample was 260 mm. The sample was stage crushed, screened and split for analysis and testing.

### 13.2.4 Diagnostic Acid Leaching

A diagnostic leach test was used to identify the deportment of copper between different minerals. The results are given in Table 13-3. The majority of the copper is associated with malachite and azurite, copper carbonate minerals. While this means that the copper can be readily leached in acid conditions, the acid consumption will be high due to the carbonate – acid reaction. Insoluble copper in the form of sulphides, chalcosite, covellite, bornite and chalcopyrite represent less than 2% of the copper mineralisation and copper silicates, predominantly chrysocalla, represents approximately 3% of the contained copper.

The low copper sulphide content is also significant in terms of beneficiation and is not ideal for recovery by flotation. The oxide copper minerals will require pre-treatment to improve their floatability characteristics.

**Table 13-3: Diagnostic Copper Leaching**

| Cu Deportment | Cu Grade % | Cu Distribution % |
|---|---|---|
| Cu Soluble (Chalcanthite) | 0.0002 | 0.02 |
| Cu Oxide (Malachite, Azurite) – Carbonate | 1.183 | 95.40 |
| Cu Secondary (Chalcosite, Covellite, Bornite) | 0.007 | 0.56 |
| Cu Primary (Chalcopyrite) | 0.013 | 1.05 |
| Cu Silicate (Chrysocolla) | 0.037 | 2.97 |
| Cu Total | 1.24 | 100.00 |

### 13.2.5 Gravity Concentration

Gravity concentration tests were conducted on 10 kg ore charges of the -1.7 mm crushed head sample TP-1 ground to $P_{80}$ passing 600, 212, 75 and 53 µm. The gravity flowsheet included centrifugal Knelson separation followed by Mozley table upgrading. The test results indicated the low effectiveness of gravity concentration for processing of the oxide ore sample tested. The metal recovery and concentrate grade values were low. In all cases the Cu recovery to was <2% at a grade of 1.7 to 2.4% Cu. The Ag recovery was also low, <3.5% at a concentrate grade of 88 to 133 g/t.

These results were not unexpected based on the mineralogical examination performed. Further gravity concentration tests were not performed and, based on the sample tested, this method of concentration is not suitable for treatment of this ore.

### 13.2.6 Flotation Tests

Ten laboratory flotation tests (F1-F10) were conducted to investigate the recovery of both copper sulphides and oxide copper minerals. The flotation testing flowsheet is shown in Figure 13-1.

Testing included staged flotation of the sulphide and oxide minerals, flotation with and without sulphidisation of oxide minerals with $Na_2S$ to promote better flotation, and various reagent regimes. In general tests were conducted at 80% passing 75 µm.

The flotation results are presented in Table 13-4.

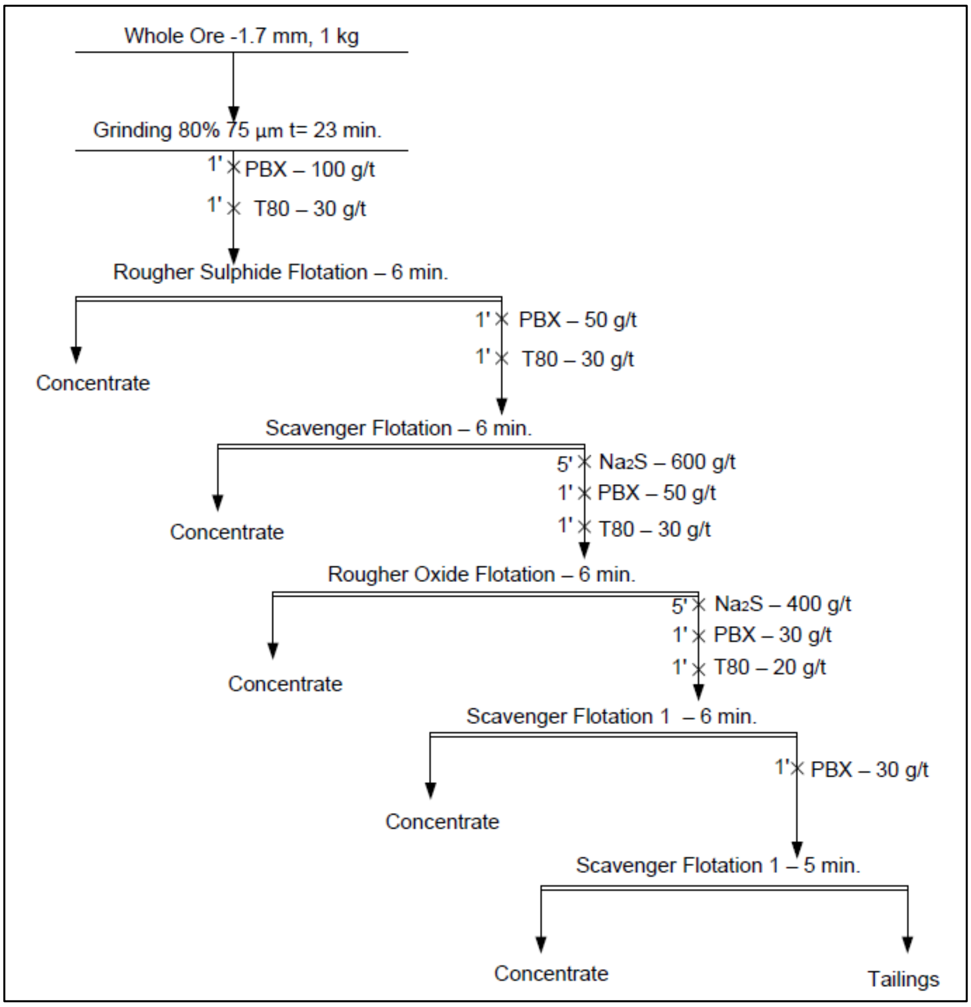



**Figure 13-1: Flotation testwork flowsheet (Source: SGS Mineral Services Report, 2015)**

The main conclusions from the flotation testwork were as follows:

- A two-stage flotation flowsheet is preferred;
- Preliminary sulphidisation of the oxide copper minerals with staged addition of sodium sulphide is required for the effective flotation of these minerals;
- Flotation recoveries for copper and silver are low and the best recoveries for copper and silver were 40–43% Cu and 66–70% Ag;
- The bulk rougher concentrate produced under the best conditions tested contained 5.4–6.9% Cu and 175–260 g/t Ag.

The flotation concentrates and the flotation tailings were used for further acid leaching tests.

Further metallurgical testwork would be required to improve the results and to optimise the conditions.

**Table 13-4: Flotation testwork results**

| Test No. | Products | Yield | | Grade, %, g/t | | Recovery, % | | Test Parameters |
|---|---|---|---|---|---|---|---|---|
| | | g | % | Cu | Ag | Cu | Ag | |
| F-1 | Roug Sulph. Flot. Conc. | 17.37 | 1.75 | 3.03 | 586.0 | 4.06 | 34.86 | Basic Flowsheet (Sulphide+Oxide Flotation) |
| | Scav. Sulph. Flot. Conc. | 13.23 | 1.33 | 2.67 | 117.0 | 2.73 | 5.30 | |
| | Rougher Oxide Flot. Conc. | 20.66 | 2.08 | 16.40 | 252.0 | 26.16 | 17.83 | |
| | Scav. Oxide Flot. Conc. I | 17.03 | 1.71 | 5.12 | 116.0 | 6.73 | 6.77 | |
| | Scav. Oxide Flot. Conc. II | 11.05 | 1.11 | 2.74 | 52.4 | 2.34 | 1.98 | |
| | Tailings | 915.84 | 92.03 | 0.82 | 10.6 | 57.98 | 33.25 | |
| | Whole Ore | 995.18 | 100.00 | 1.30 | 29.3 | 100.00 | 100.00 | |
| | | | | | | | | |
| F-2 | Rougher Flot. Conc. 1 | 13.91 | 1.40 | 12.80 | 844.0 | 13.98 | 38.07 | Rougher Flota-tion Kinetics with Preliminary Sul-phidization of the Oxide Minerals) |
| | Rougher Flot. Conc. 2 | 16.14 | 1.62 | 4.46 | 161.0 | 5.65 | 8.43 | |
| | Rougher Flot. Conc. 3 | 12.04 | 1.21 | 3.28 | 99.2 | 3.10 | 3.87 | |
| | Rougher Flot. Conc. 4 | 17.51 | 1.76 | 2.66 | 64.8 | 3.64 | 3.68 | |
| | Rougher Flot. Conc. 5 | 17.09 | 1.78 | 2.21 | 43.9 | 3.07 | 2.52 | |
| | Scav. Flot. Conc. | 22.58 | 2.27 | 7.27 | 153.0 | 12.89 | 11.20 | |
| | Tailings | 895.21 | 89.96 | 0.82 | 11.1 | 57.65 | 32.23 | |
| | Whole Ore | 995.10 | 100.00 | 1.30 | 30.99 | 100.00 | 100.00 | |
| | | | | | | | | |
| F-3 | Rougher Flot. Conc. I | 50.19 | 5.04 | 8.31 | 346.0 | 32.42 | 57.06 | Flotation with Sulfhydryl (PBX) and Oxyhydryl (OIH) Collectors |
| | Rougher Flot. Conc. II | 82.81 | 8.32 | 1.36 | 38.3 | 8.76 | 10.42 | |
| | Scav. Flot. Conc. | 50.30 | 5.05 | 1.39 | 30.4 | 5.44 | 5.02 | |
| | Tailings | 812.48 | 81.59 | 0.84 | 10.3 | 53.35 | 27.50 | |
| | Whole Ore | 995.78 | 100.00 | 1.29 | 30.56 | 100.00 | 100.00 | |
| | | | | | | | | |
| F-4 | Rougher Flot. Conc. | 39.50 | 3.98 | 3.32 | 196 | 10.06 | 26.84 | Flotation with Oleic Acid with-out Preliminary Sulphidization |
| | Scav. Flot. Conc. | 30.09 | 3.03 | 2.80 | 94.4 | 6.46 | 9.85 | |
| | Taioings | 982.30 | 92.97 | 1.18 | 19.8 | 83.48 | 63.31 | |
| | Whole Ore | 991.89 | 100.00 | 1.30 | 29.08 | 100.00 | 100.00 | |
| | | | | | | | | |
| F-5 | Concentrate | 7.78 | 0.78 | 2.20 | 207 | 1.32 | 5.48 | Rougher+Cleane r Flotation with Leic Acid and Silicic Acid |
| | Middling 2 | 21.56 | 2.17 | 3.88 | 158 | 6.43 | 11.59 | |
| | Middling 1 | 39.23 | 3.95 | 2.62 | 86.3 | 7.90 | 11.52 | |
| | Scav. Flot. Conc. | 17.41 | 1.75 | 2.49 | 88.9 | 3.33 | 5.27 | |
| | Tailings | 908.19 | 91.35 | 1.16 | 21.4 | 81.02 | 66.14 | |
| | Whole Ore | 994.17 | 100.00 | 1.31 | 29.56 | 100.00 | 100.00 | |
| | | | | | | | | |
| F-6 | Concentrate | 8.76 | 0.88 | 3.52 | 302 | 2.33 | 8.97 | As above (ad-justed) |
| | Middling 2 | 11.84 | 1.19 | 3.78 | 180 | 3.38 | 7.23 | |
| | Middling 1 | 39.24 | 3.94 | 2.21 | 88.1 | 6.54 | 11.72 | |
| | Scav. Flot. Conc. | 29.02 | 2.91 | 2.90 | 101 | 6.35 | 9.94 | |
| | Tailings | 906.97 | 91.08 | 1.19 | 20.2 | 81.40 | 62.14 | |
| | Whole Ore | 995.83 | 100.00 | 1.33 | 29.61 | 100.00 | 100.00 | |
| | | | | | | | | |
| F-7 | Rougher Flot. Conc. I | 33.89 | 3.49 | 10.05 | 398 | 29.30 | 49.94 | Two-stage Flota-tion: Stage 1 60% passing 75 µm, Stage 2 80% passing 53 µm |
| | Rougher Flot. Conc. II | 23.10 | 2.38 | 4.02 | 197 | 7.65 | 16.86 | |
| | Scav. Flot. Conc. | 15.61 | 1.61 | 2.06 | 55.8 | 2.65 | 3.23 | |
| | Tailings | 898 | 92.52 | 0.82 | 9.0 | 60.40 | 29.94 | |
| | Whole Ore | 970.6 | 100.00 | 1.25 | 27.81 | 100.00 | 100.00 | |
| F-8 | Rougher Flot. Conc. | 24.32 | 2.44 | 12.50 | 535 | 22.96 | 43.97 | Flotation with PBX and MIBC (with $Na_2S$) |
| | Scav. Flot. Conc. | 13.64 | 1.37 | 5.41 | 154 | 5.57 | 7.10 | |
| | Tailings | 958.97 | 96.19 | 0.99 | 15.1 | 71.47 | 48.93 | |
| | Whole Ore | 996.93 | 100.00 | 1.33 | 29.68 | 100.00 | 100.00 | |
| | | | | | | | | |
| F-9 | Rougher Flot. Conc. | 30.52 | 3.07 | 10.90 | 452 | 25.29 | 48.36 | Flotation with PAX and MIBC (with $Na_2S$) |
| | Scav. Flot. Conc. | 17.46 | 1.76 | 5.09 | 118 | 6.76 | 7.22 | |
| | Tailings | 945.70 | 95.17 | 0.94 | 13.4 | 67.95 | 44.42 | |
| | Whole Ore | 998.68 | 100.00 | 1.32 | 28.71 | 100.00 | 100.00 | |
| | | | | | | | | |
| F-10 | Rougher Flot. Conc. | 55.99 | 5.62 | 7.29 | 299 | 30.73 | 59.76 | Flotation with A 5100 and MIBC (with $Na_2S$) |
| | Scav. Flot. Conc. | 13.09 | 1.31 | 5.51 | 124 | 5.43 | 5.79 | |
| | Tailings | 927.89 | 93.07 | 0.91 | 10.4 | 63.84 | 34.45 | |
| | Whole Ore | 996.97 | 100.00 | 1.33 | 28.10 | 100.00 | 100.00 | |

### 13.2.7 Hydrometallurgical Testing

The hydrometallurgical testing included acid leaching of the whole ore and the flotation concentrate and cyanidation of the final tailings to recover silver.

The outline flowsheet of the tests is shown in Figure 13-2.

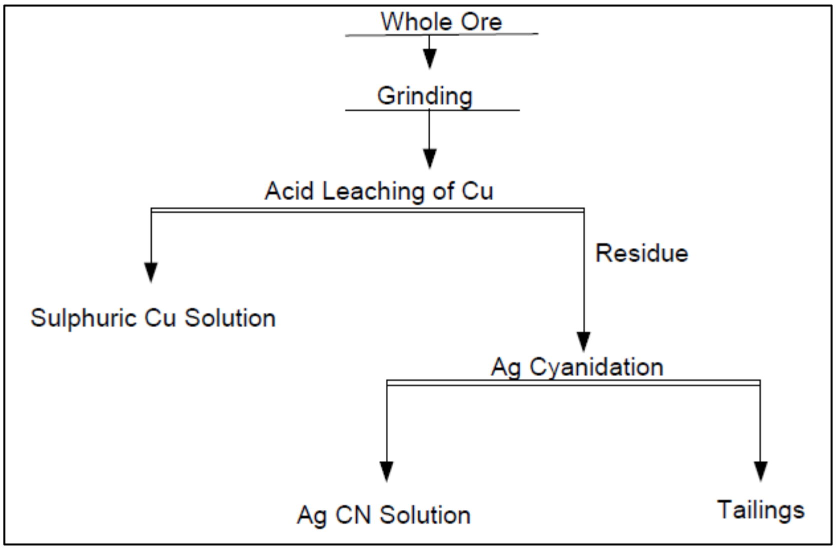



**Figure 13-2: Hydrometallurgical testing flowsheet (Source: SGS Mineral Services Report, 2015)**

#### Whole ore leaching

Nine whole ore sulphuric acid leach tests were performed considering particle size, pulp solids concentration, leach residence time, pH and acid addition.

The best result achieved copper extraction of 95.8% from a feed ground to 80% passing 75 µm, using a leach residence time of 2 hours, at pH 2 and 33% w/w solids concentration. The acid consumption was high at 90.52 kg/tonne of feed. SGS reported that 78% of the acid used was consumed by gangue carbonate minerals.

Tests showed that coarser grinding, higher pH, reduced acid addition and higer pulp densities resulted in lower copper extraction.

It is noted that the conditions were not optimised.

#### Cyanidation of Silver from whole ore leach residues

Bottle roll cyanidation tests were performed on the acid leaching residues from the whole ore leaching tests. The following test parameters were used:

- NaCN concentration 0.2% (2 g/L);
- Pulp density 33% (L:S = 2:1);
- pH 10.5–11.0;
- Cyanidation leach time 48 h.

The CN solutions and residues were analysed for Ag and the cyanide consumption was calculated based on additions and residual cyanide in solution.

The silver extraction to the cyanide solution varied from 91.6% to 97.9% with 3.88 to 0.84 kg/$t_{ore}$ CN added.

Silver extraction from the acid leach residue from the best copper leaching test was 96% and the cyanide consumption was 0.84 kg/t ore.

The lime (CaO) consumption during cyanidation was 1.75 kg/t. The neutralisation requirements of the acidic residue prior to alkaline cyanide leaching were not reported.

### Combined flowsheet

A combined flowsheet included bulk flotation of copper and silver followed by hydrometallurgical processing of the flotation concentrate to extract copper and silver was also evaluated. The main testwork flowsheet is given in Figure 13-3. A second test was performed incorporating concentrate cleaning prior to acid leaching. This test resulted in lower copper and silver recoveries.

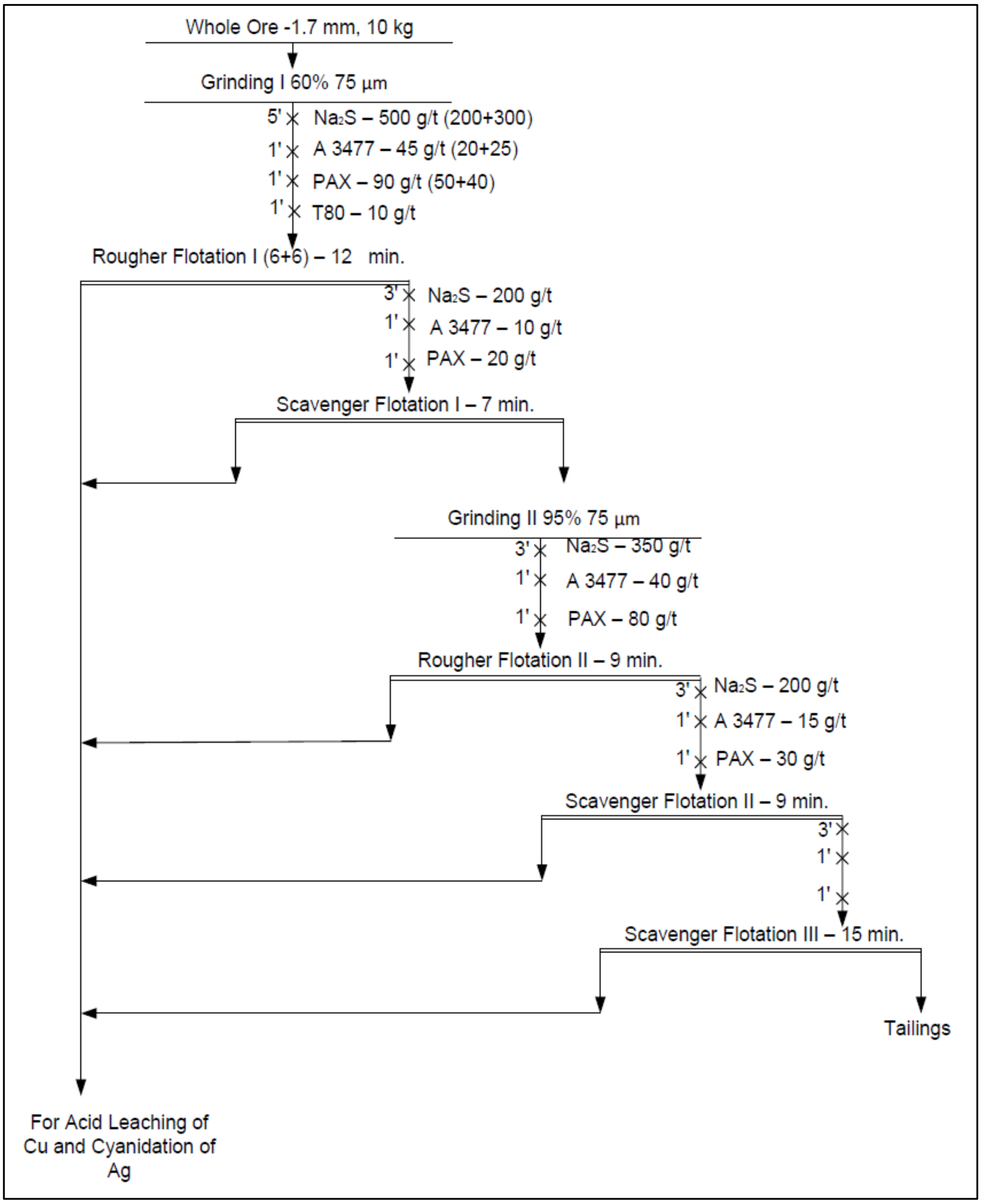



**Figure 13-3 Combined flowsheet testing regime (test OF-1) (Source: SGS Mineral Services Report, 2015)**

The bulk flotation test results, OF-1 and OF-2, for the combined circuit are presented in Table 13-5. The reduced recovery of both copper and silver due to the concentrate cleaning stage in test OF-2 is clearly evident. The copper and silver recoveries reporting to the uncleaned concentrate (test OF-1) were 41.5 and 74.6% respectively.

**Table 13-5: Combined flowsheet – bulk flotation results**

| Test No. | Product | Yield | | Grade, %, g/t | | Recovery, % | |
|---|---|---|---|---|---|---|---|
| | | g | % | Cu | Ag | Cu | Ag |
| OF-1 | Concentrate | 956.0 | 9.56 | 5.55 | 250.0 | 41.50 | 74.60 |
| | Tailings | 9044.0 | 90.44 | 0.827 | 9.0 | 58.50 | 25.40 |
| | Whole Ore | 10000.0 | 100.00 | 1.28 | 32.04 | 100.00 | 100.00 |
| | | | | | | | |
| OF-2 | Concentrate | 197.0 | 1.97 | 9.97 | 685.5 | 15.23 | 48.73 |
| | Middling | 582.69 | 5.83 | 5.31 | 103.0 | 23.99 | 21.66 |
| | Tailings | 9220.31 | 92.20 | 0.85 | 8.9 | 60.78 | 29.61 |
| | Whole Ore | 10000.00 | 100.00 | 1.29 | 27.71 | 100.00 | 100.00 |

The acid leach test results L-10 and L-11 on the flotation concentrates from the bulk flotation tests OF-1 and OF-2 are presented in Table 13-6. The copper recoveries from concentrate are in excess of 94% in both cases but the overall copper extraction based on the whole ore are relatively low, 39.3% for the uncleaned bulk flotation concentrate, test L-10. The acid consumption figures back calculated to a fresh ore basis are significantly reduced from the whole ore figures, 16.3 kg/t for the uncleaned bulk flotation concentrate, test L-10.

**Table 13-6: Combined flowsheet – bulk flotation concentrate acid leach test results**

| Test No. | Product | Yield, mL, g | Cu Grade, mg/L, % | Cu Recovery, % | | $H_2SO_4$ | | Parameters |
|---|---|---|---|---|---|---|---|---|
| | | | | Conc. | Whole ore | kg/t conc. | kg/t ore | |
| L-10 | Solution | 1523 | 25708.09 | 94.69 | 39.30 | 170.38 | 16.29 | pH = 2, 33% Solids, t = 2 h |
| | Residue | 664.7 | 0.330 | 5.31 | 2.20 | | | |
| | Test OF-1 Conc. | 750.0 | 5.512 | 100.00 | 41.50 | | | |
| | | | | | | | | |
| L-11 | Solution | 376 | 44026.1 | 94.53 | 14.40 | 286.41 | 5.64 | pH = 2, 33% Solids, t = 2 h |
| | Residue | 138.6 | 0.690 | 5.47 | 0.83 | | | |
| | Test OF-2 Conc. | 185.0 | 9.455 | 100.0 | 15.23 | | | |

The silver recovery from the tailings from the uncleaned bulk flotation concentrate acid leach test (OF-1 & L-10) are presented in Table 13-7. Silver extraction is in excess of 95% and the cyanide consumption is low.

**Table 13-7: Cyanidation of Silver from the Acid Leach Residue of Test OF-1 & L-10**

| Product | Yield, mL, g | Ag Grade, mg/L, g/t | Recovery, % | | NaCN Added | | Parameters |
|---|---|---|---|---|---|---|---|
| | | | Conc. | Whole Ore | kg/t conc. | kg/t ore | |
| Solution | 1292 | 126.8 | 95.25 | 71.06 | 3.0 | 0.29 | NaCN – 0.2%, 33% Solids, pH 10.5-11.0, t = 48 h |
| Conc. CN Residue | 625 | 13.2 | 4.75 | 3.54 | | | |
| Acid Leach Residue | 630 | 282.1 | 100.00 | 74.60 | | | |

The combined flowsheet demonstrates that the lower acid consumptions are achievable based on treating flotation concentrates instead of whole ore, albeit at the expense of copper recovery, reducing from 93% for whole ore leaching to approximately 39%. The overall silver recovery on a whole ore basis is reduced from 96% to 71%.

## 13.3 Flowsheet Options

Three flowsheets have been considered for the processing of the Unkur oxide ore.

- Flowsheet I – two-stage grinding-flotation flowsheet;
- Flowsheet II –whole ore hydrometallurgical processing including acid leaching of copper followed by cyanidation of Ag from the acid leach residues.
- Flowsheet III – combined flowsheet including flotation of the ore and hydrometallurgical processing of the flotation concentrate by acid leaching to extract copper followed by cyanidation of Ag from the acid leach residues.

The copper and silver recovery figures and the reagent consumptions are shown in Table 13-8 for each flowsheet.

**Table 13-8: Metallurgical Test Results for Various Flowsheets**

| | Recovery, % | | Consumption, kg/t | |
|---|---|---|---|---|
| | Cu | Ag | $H_2SO_4$ | NaCN |
| **Flotation only** | | | | |
| Flowsheet I | 41.5 | 74.6 | -- | -- |
| **Hydrometallurgical Processing** | | | | |
| Flowsheet II – 1 (pH=1.5) | 98.38 | 97.86 | 92.35 | 1.26 |
| Flowsheet II – 2 (pH=2.0) | 95.88 | 95.97 | 90.52 | 0.84 |
| **Combined Flowsheet** | | | | |
| Flowsheet III | 39.30 | 71.10 | 16.29 | 29.00 |

None of the flowsheets have been optimised either technically or economically.

## 13.4 Conclusions

Testwork has been done on a single metallurgical sample from the Unkur project. This sample was collected from an outcrop of oxide ore. The analysis showed that over 95% of the copper and silver could be recovered by whole ore hydrometallurgical processing, including acid leaching of copper followed by cyanidation of Ag from the acid leach residues. Carbonate minerals present in this sample resulted in a relatively high acid consumption.

The single sample tested is unlikely to be representative of the entire deposit. Item 18 of this report (recommendations for the next phase of work) includes a program of further metallurgical testing, based on multiple composite samples made up from drill core.

# 14 Mineral Resource Estimates

The mineral resource statement for the Unkur project is presented in Table 14-1. This mineral resource estimate is the first estimate for the Unkur project to be reported in accordance with Canadian Securities Administrators' National Instrument 43-101 reporting guidelines and following the 2014 CIM *Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines*. The author is not aware of any environmental, permitting, legal, title, taxation, socio-economic, political, marketing, or other relevant issues that pose a material risk to mineral resources described below.

**Table 14-1: Unkur Cu-Ag project mineral resource statement as at March 31, 2017**

| Domain | Classification | Million tonnes | Cu % | Ag ppm | Cu Eq % | Cu Metal (Mlb) | Ag Metal (Moz) |
|---|---|---|---|---|---|---|---|
| Zone 1, near surface | Inferred | 23 | 0.54 | 40 | 0.93 | 270 | 29 |
| Zone 2 North, near surface | Inferred | 9 | 0.47 | 43 | 0.89 | 90 | 12 |
| Zone 2 South, near surface | Inferred | 1 | 0.42 | 4 | 0.46 | 10 | 0.2 |
| *Total near surface* | *Inferred* | *33* | *0.52* | *39* | *0.90* | *380* | *41* |
| | | | | | | | |
| Zone 1, underground | Inferred | 8 | 0.53 | 34 | 0.86 | 100 | 9 |
| Zone 2 North, underground | Inferred | 1 | 0.47 | 43 | 0.89 | 10 | 2 |
| *Total underground* | *Inferred* | *10* | *0.52* | *35* | *0.87* | *110* | *11* |
| | | | | | | | |
| **Zone 1** | **Inferred** | **31** | **0.54** | **38** | **0.91** | **370** | **38** |
| **Zone 2** | **Inferred** | **11** | **0.46** | **38** | **0.84** | **120** | **14** |
| **TOTAL** | **Inferred** | **42** | **0.52** | **38** | **0.90** | **480** | **52** |

Notes: (1) CIM Definition Standards were followed for mineral resources; (2) Reporting of near surface mineral resources is constrained by a conceptual pit shell; (3) Mineral resources are not mineral reserves and do not have demonstrated economic viability; (4) Mineral resources are reported at a cut-off grade of 0.3% copper equivalent for near surface and 0.7% copper equivalent for underground; (5) Copper and silver equivalent grades were estimated using USD3/lb copper price, USD20/oz silver prices, and assuming 100% recovery for both; the equivalence formula is Cu eq = Cu + (0.009722 x Ag); (6) Numbers may not add due to rounding.

## 14.1 Exploration database

The estimate is based on 4,580 meters of diamond drilling (from 16 drill-holes) and 186 meters of channel sampling (from four trenches), completed during Azarga Metals' exploration campaign from August 2016 until February 2017. Historical sampling did not directly inform the estimation, although the conceptual framework for preparing the estimation, including assumptions made about the orientation and continuity of mineralisation, was influenced by a review of the historical data.

Drill hole collar and trench locations and intersections are tabulated in Items 9 and 10 of this report.

## 14.2 Domain modelling

The main identified zone of copper-silver mineralization (Zone 1) is intersected by 13 drill-holes, two trenches and one sampled outcrop.

Leapfrog Geo software was used to construct a wireframe interpretation of Zone 1, at a nominal threshold of 0.10% copper. The domain was extrapolated up to 150m along strike and down dip, beyond the limits of the sampling information.

The modelled domain has a strike length of 3,400 meter northwest-southeast, and a down dip extent of up to 550 meters, but this zone is open down dip and along strike in both directions. The Zone 1 domain generally dips 50 to 60 degree to the east or northeast, and has an average true thickness of 19m.

Approximately parallel to Zone 1, and 100 to 150m southwest, a second zone of mineralization has been interpreted, from two drill intersections, one trench intersection, and one outcrop. This second zone is stratigraphically below Zone 1. The Zone 1 and Zone 2 domains are shown in plan view in Figure 10-2.

The Zone 1 and Zone 2 mineralisation is assumed to be very continuous, based on the interpreted mineralisation style, and on the set of intersections obtained so far by Azarga Metals and from historical exploration. For two holes though, an absence of mineralisation implies that there can be local disruptions to continuity. Hole AM-009 did not encounter Zone 1 mineralisation at the expected location, and therefore the down-dip extrapolation of the mineralised zone is significantly restricted around northing 6301900. Hole AM-008 continued for over 200m below Zone 1, but did not intersect Zone 2, and therefore Zone 2 North and Zone 2 South are not modelled as one connected zone.

The exact reasons for these discontinuities are unclear, but may be due to faulting, folding or primary sedimentary characteristics of the mineralised horizon.

The Lower Proterozoic sedimentary rocks that host mineralization are partly covered by Quaternary moraine. The thickness of the moraine cover over the northern part of the mineralization domain is up to 100 meters. The moraine cover generally is thinner to the south, and mineralization in the southern part of Zone 1 and Zone 2 is exposed by trenching. A base of moraine surface was modelled from the logging information recorded by Azarga Metals' geologists.

Topography was modelled based on drill collar locations, and using additional elevation information digitized from topographic maps.

Cross sections of the modelled Zone 1 and Zone 2 domains are shown in Figure 10-3 to Figure 10-5.

## 14.3 Geostatistical grade estimation

Copper and silver grades within the Zone 1 mineralized domain were estimated by 2D Ordinary Kriging. A single 2D composite was generated for each intersection. The true thickness assigned to each composite was calculated based on the local orientations of the drill intersection and the Zone 1 wireframe. Statistical analysis, variogram modelling, and grade estimation was done using Isatis software.

Based on a review the high grade tails of the copper and silver grade distributions (Figure 14-1 and Figure 14-2), and assessment of how the highest grades were distributed spatially, SRK chose not to apply any grade capping to either the samples or the composites.

For the 2D kriging, the search ellipse radii were 700m x 700m. The average number of intersections used per estimate was 6, the minimum was 2, and the maximum was 9.

The semi-variogram model used for estimates of Cu accumulation, Ag accumulation and thickness had a nugget proportion of 15%, a single structure with the remaining 85% of variance, and range of 750m in all directions. Experimental and modelled semi-variograms are shown in Figure 14-3, Figure 14-4 and Figure 14-5.

The block size for 2D Kriging was 100 meters north-south and 100 meters vertically (Table 14-2). The results of the estimation were copied into a 3D block model, with sub-blocking down to 1.5625 meters, in order to achieve a good fit to the relatively narrow mineralization wireframe. The 3D block model was constructed using Geovia Surpac software.

The copper and silver grades for Zone 2, which contains fewer intersections than Zone 1, were estimated by a simple average of sample grades for the northern and southern portions.

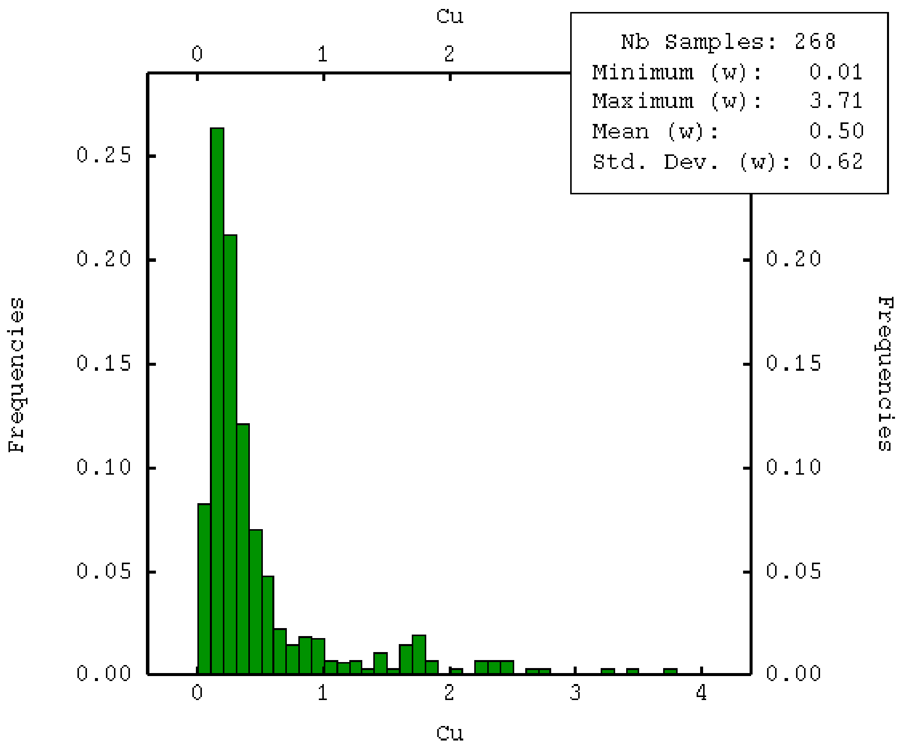



**Figure 14-1: Cu sample grades from Zone 1**

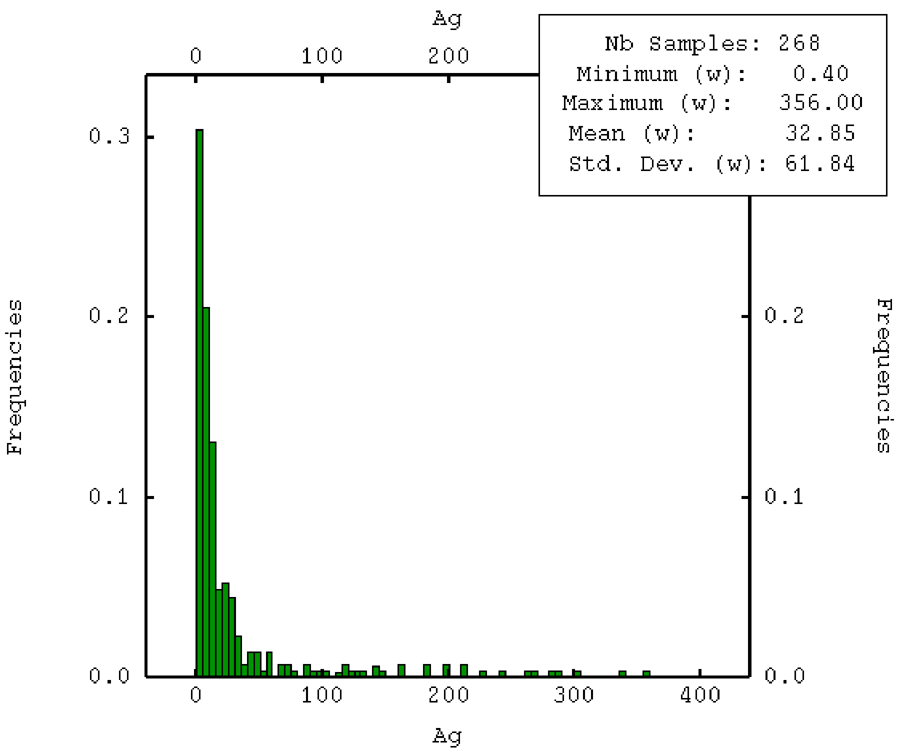



**Figure 14-2: Ag sample grades from Zone 1**

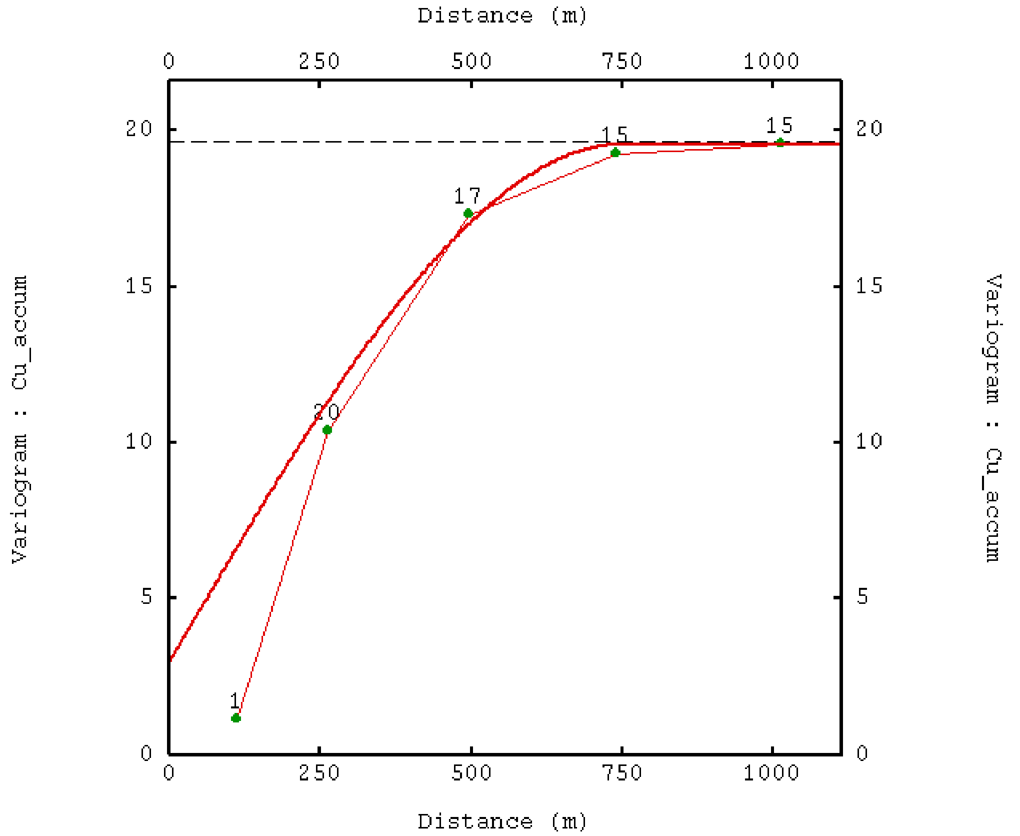



**Figure 14-3: 2D semi-variogram model for Cu accumulation, Zone 1**

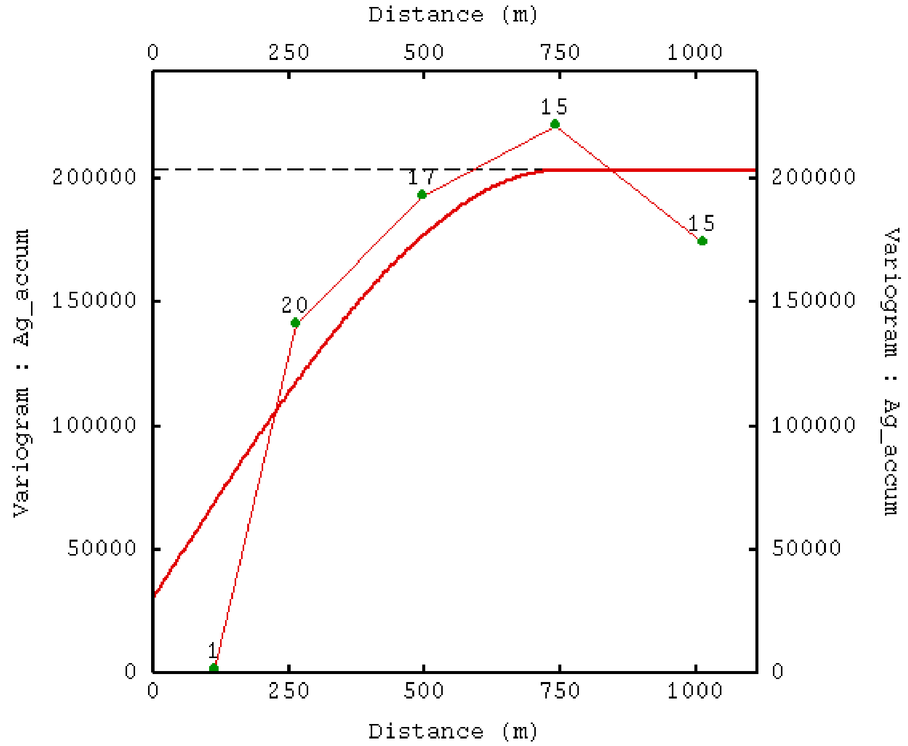



**Figure 14-4: 2D semi-variogram model for Ag accumulation, Zone 1**

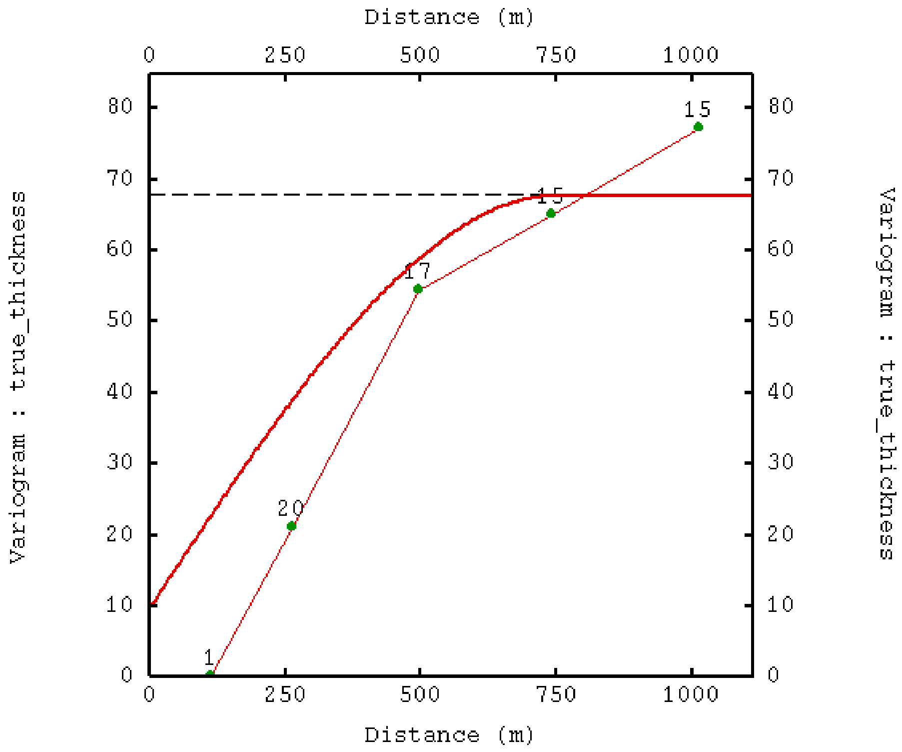



**Figure 14-5: 2D semi-variogram model for thickness, Zone 1**

**Table 14-2: Block model dimensions**

| | X | Y | Z |
|---|---|---|---|
| Minimum Coordinates | 20595000 | 6300500 | 300 |
| Maximum Coordinates | 20598200 | 6304300 | 1200 |
| Estimation Block Size | 100 x 100 (2D, north x elevation) | | |
| Sub-blocking | 1.5625 | 1.5625 | 1.5625 |

## 14.4 Density

For the mineralized domains and the host rocks, a dry bulk density value of 2.67 t/m$^3$ was used for converting volumes into tonnages. This factor is the average value of samples collected by Azarga Metals, and is consistent with density factor used for the historical estimates. A dry bulk density factor of 2.0 t/m$^3$ was assumed for the moraine material in the block model.

## 14.5 Validation

The estimate was validated by visual and statistical checks of the block model against the sampling information, and against the composite and wireframe files created during the modelling process.

## 14.6 Classification

Block model quantities and grade estimates for Unkur were classified according to the CIM *Definition Standards for Mineral Resources and Mineral Reserves* (May 2014). The portion of the mineralization model that met the CIM definition of a mineral resource ("…reasonable prospects for eventual economic extraction") was established by using NPV Scheduler software to generate a pit shell to constrain reporting of the open-pit resource. The input parameters for the pit shell are shown in Table 14-3. Within the pit, no mineralized blocks have an estimated grade of less than 0.4% (copper equivalent), and no further cut-off grade was applied. The intersection of the conceptual pit shell with the Zone 1 mineralisation is shown in Figure 14-6.

Below the pit, a cut-off grade of 0.7% (copper equivalent) was applied to define an underground component of the mineral resource. This cut-off was estimated using the same parameters in Table 14-3, but assuming 20% dilution and an underground mining production cost of US$20 per tonne.

All mineral resources were classified as Inferred, based on the intersection spacing relative to the interpreted continuity, and potential complexity, of mineralisation and geology.

**Table 14-3: Input parameters for pit shell to constrain reporting of mineral resource**

| Parameters | Units | Amount |
|---|---|---|
| *Geotechnical* | | |
| Moraine Slope | Deg | 30 |
| Bedrock Slope | Deg | 45 |
| *Mining Factors* | | |
| Dilution (at 0 grade) | % | 5 |
| Recovery | % | 95 |
| *Processing* | | |
| Recovery Cu | % | 90 |
| Recovery Ag | % | 90 |
| *Operating Costs* | | |
| Mining Cost - Waste | US$/t | 1.20 |
| Mining Cost - Mineralised | US$/t | 1.50 |
| Incremental Mining Cost | US$/m | 0.005 |
| Reference Level | Z Elevation | 1000 |
| Processing | US$/t | 10.00 |
| G&A | US$/t | 2.00 |
| Royalty, Selling Cost Cu | % | 8.0 |
| Royalty, Selling Cost Ag | % | 6.5 |
| *Metal Price* | | |
| Copper | US$/lb | 3 |
| Silver | US$/oz | 20 |

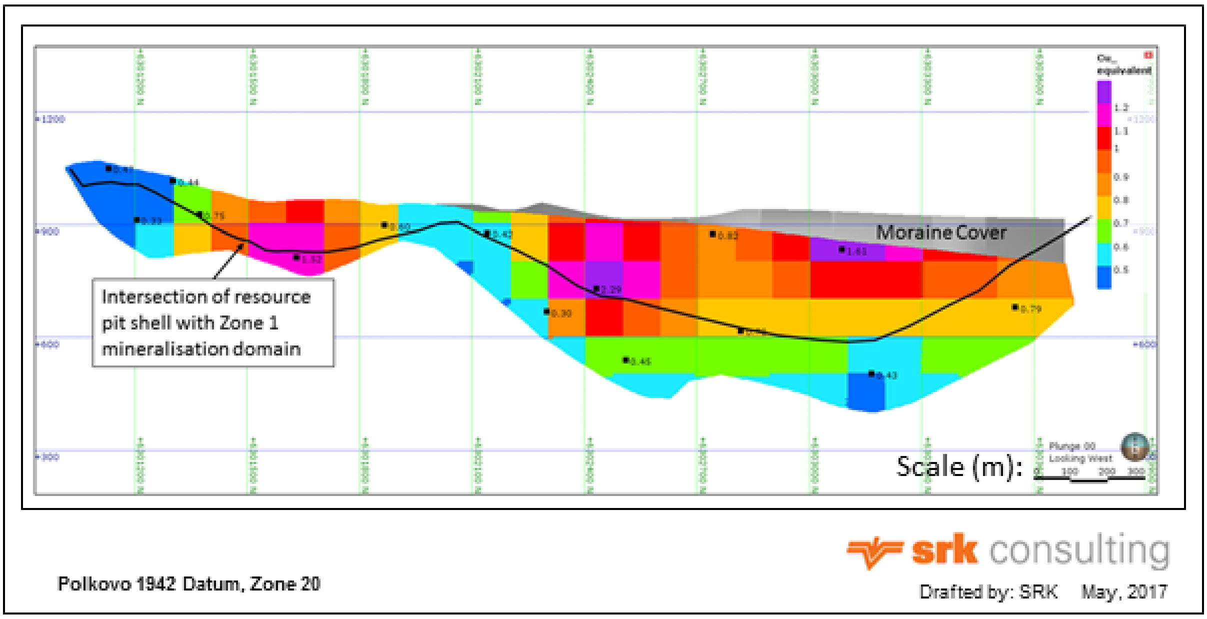



**Figure 14-6: Long section view, looking west, of intersection between conceptual pit shell and Zone 1 mineralisation, and showing pierce points and Cu equivalent grades for drill hole and trench intersections**

# 15 Adjacent Properties

The Udokan copper deposit is located 25 km south of the licensed area of the Unkur Project. Similar to Unkur, the copper mineralization of the Udokan deposit is confined to sediments of the Sakukanskaya formation. For Udokan though, the mineralization is in the Upper subformation, whereas the Unkur mineralization is in the Lower subformation.

Information regarding Udokan is publically available on the Baikal Mining Company (Baikal) website (http://www.bgk-udokan.ru/en/). Mineral Resources and Ore Reserves for Udokan have been prepared according to the definitions and standards of the JORC Code (2012 edition). The reported Mineral Resources for Udokan are given in Table 15-1. The feasibility study for Udokan was completed in February 2014, and, according to the project execution dates presented by Baikal, mining will commence in 2021.

The results and mineral resources reported for Udokan are not necessarily indicative of mineralization on the Unkur property and the author has not been able to verify the information.

**Table 15-1: Mineral Resources for Udokan, as of March 2014, compiled from figures publically reported on the Baikal website**

| Resource Category | Mt | Cu grade (%) | Ag grade (g/t) | Cu metal (Mt) | Ag metal (Moz) |
|---|---|---|---|---|---|
| Measured | 339 | 1.03 | 8.9 | 3.5 | 97 |
| Indicated | 1,483 | 1.01 | 11.1 | 14.9 | 531 |
| Measured and Indicated | 1,822 | 1.01 | 10.7 | 18.4 | 628 |
| Inferred | 932 | 0.89 | 14.3 | 8.3 | 428 |
| Total | 2,754 | 0.97 | 11.9 | 26.7 | 1,056 |

# 16 Other Relevant Data and Information

This section presents analysis of the Unkur Project's mining license agreement, environmental and social requirements, description of key environmental permits and studies required by national legislation and international practice for project development stages as well as recommendations for further works. The project is considered to be at an early development stage thus information regarding environmental and social setting was obtained through publicly available data and data of state authorities.

## 16.1 Environmental and Social Setting

The Unkur Project is located in the northern part of Zabaikalsky Region within the Kalarsky District. The Kalarsky District is located at a significant distance from Chita and does not have a direct rail or road connection to the city. The administrative centre of the Kalarsky district is the village of Chara. The urban settlement (town) of Novaya Chara and nine rural settlements (villages) are located in the Kalarsky District. The population of the district is approximately 9,000 with population density of about 50 times below the Russian average. More than half of the population lives in settlements located along the Baikal-Amur Railway line (BAM). The majority of the population are Russians. Evenks (Indigenous people of North) comprise about 5%.

The Unkur Project is located approximately 22 km to the east of the Novaya Chara town and village of Chara (Figure 16-1). The Chara River is the main watercourse in the Kalarsky District and the deposit area is drained by the Chara's tributary Kemen River. The Kemen River inflows into the Chara River below the Novaya Chara town and Chara village.

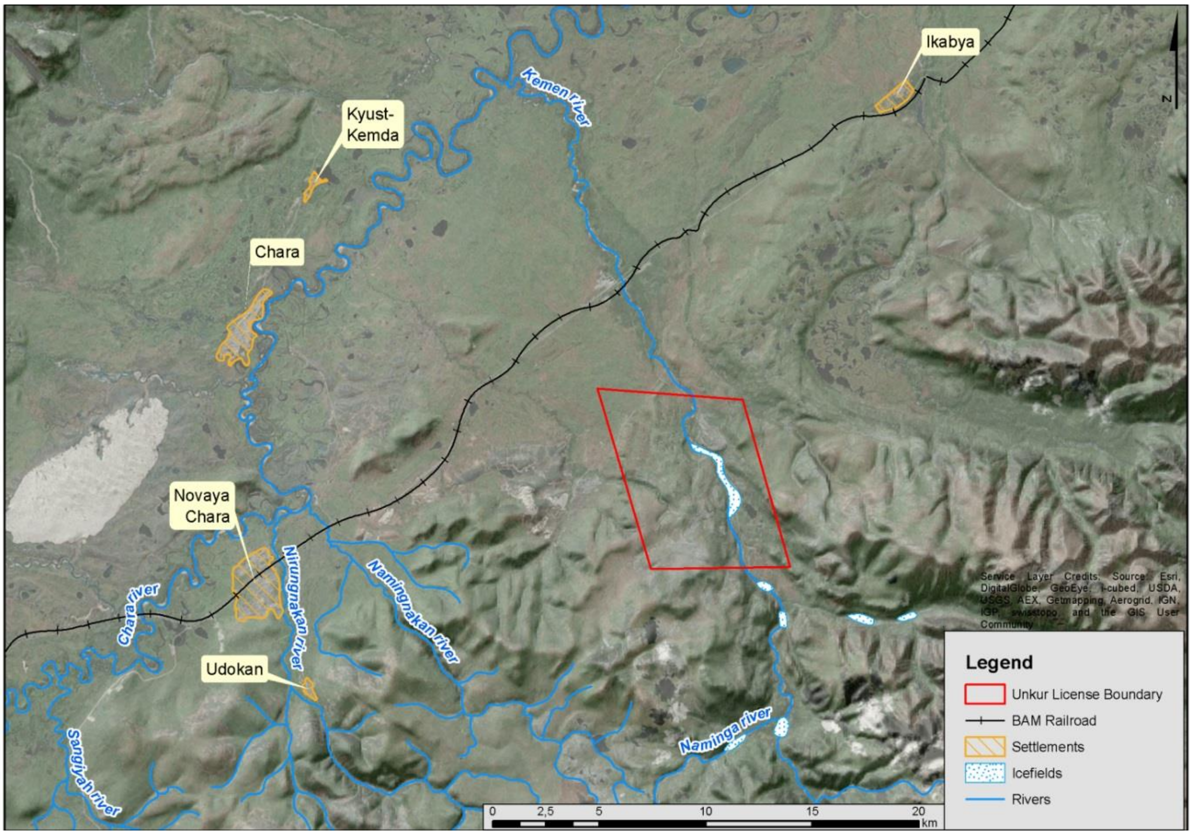



**Figure 16-1: Location of the Unkur Project relative to settlements (compiled by SRK, 2015)**

## 16.2 Environmental and Socio-Economic Studies

To date there is no information about environmental and socio-economic studies that have already been conducted for the deposit. As this is an early stage exploration project the studies will be conducted at later stages. The recommendations for the studies are provided in respective section below.

## 16.3 Review of Exploration and Mining License Environmental Requirements

The license for exploration and mining at the Unkur Project (ЧИТ 02522 БР, valid through 31 December 2039) contains the following environmental, socio-economic and industrial health and safety requirements that Licensee shall comply with (Section and paragraph numbering preserved):

- Section 11. Requirements on compliance with all requirements on subsoil resources protection, environmental protection, safety of mining works.
  - 10.1 Licensee shall comply with requirements defined by legislation on subsoil resources and environment protection, carrying out of activities related to subsoil resources use.
  - 10.2 Licensee shall comply with additional requirements in case they are defined by Section 14 of the mining and exploration requirements.
  - 10.3 Licensee shall carry out monitoring of the natural environment (air quality, subsoil, water bodies, soils, biological resources) in the impact area of the mining enterprise in accordance with established procedures.
- Section 14. Additional requirements
  - 14.1 Relationships between Licensee and state administration of the region where the deposit is located shall be conducted based on socio-economic agreements. The agreements shall be provided to Tsentrsibnedra (Department for Subsoil Use in Central Siberian District) and are kept in the subsoil license folder.
  - 14.2 In any other matters not included into these license conditions Tsentrsibnedra and Licensee shall follow the requirements of the Current Russian legislation.

SRK has reviewed the requirements listed above and concludes that they are similar to those generally applicable to mining companies in Russia. There are no specific requirements that would go beyond the general practice of developing or operating mineral deposits.

Environmental monitoring should start at pre-engineering stages (geological exploration stage) and be adjusted at subsequent stages of project implementation (construction and operation). Annual environmental monitoring procedures usually begin after completion and analysis of the results of a comprehensive set of baseline studies. Types of monitoring and the list of monitored parameters are defined according to types of impacts (physical, chemical or biological) and impacted environmental components (atmospheric air, subsurface, soils, surface water and ground water, vegetation).

It is an accepted practice in Russia that relationships between a mining company and local government are based on socio-economic agreements that present detail of the partnership and assistance of the mining company to the local community.

### 16.3.1 Environmental Permitting Requirements

According to the Russian environmental legislation, the decision making process related to all stages of the project development, including exploration, construction and operation, should be supported by consideration of the environmental issues.

At the current stage of project development, the Licensee has to have a land lease for the area of the exploration works, which requires rehabilitation of the drilling sites and exploration roads after completion of the works. Before commencement of the design stage, baseline environmental and socio-economic studies have to be conducted to support the project design decision making process.

At the project design stage, an environmental impact assessment is performed and impact mitigation activities are proposed.

According to new regulations since January 2015, based on the state environmental review of the project design documents a project obtains a complex environmental permit for operation that details waste disposal, water discharge and air emissions. Additionally, a ground water mining license (in case of ground water extraction) or a decree for the assignation of the water body (in case of water extraction from the surface sources) and an agreement for the surface water body usage (for discharge) have to be obtained for construction and operation.

Compared to international standards, Russian legislation pays low attention to the stakeholder engagement and community development issues related to impact assessment and further project development. It should be noted that Russian legislation is changing constantly. Most of these changes are minimal, however from time to time significant amendments are introduced, especially as applied to design documentation and approval processes.

## 16.4 Key Risks

The key environmental and social risks that SRK considers relevant at this stage of the project, based on the limited information available, that will need to be thoroughly investigated during next phases of project development are:

- Risk of unsuccessful constructional and/or operational water management. Due to proximity of the Kemen River to the deposit and potential presence of swamp areas on the territory of deposit the project may be required to manage and treat high amount of surface and ground water.
- Risk of potential cumulative environmental and socio-economic impacts from mining and supporting activities. The Kalarsky district has a significant mining potential with several mineral deposits present; some are operating mines and some are at development stages. The combined impacts of development of these deposits may require additional measures to be undertaken.

There may be other environmental risks; however, it is not possible to identify them based on the limited information available.

### 16.4.1 Recommendations on Further Work

In summary, SRK considers the next stage of environmental work should comprise of, both for national and international requirements, the following steps:

- A desktop review of available environmental and socio-economic information;
- An initial environmental and social risk assessment, at a technical Scoping Study level, based on the results of the desktop review and on potential project design options.

For the pre-feasibility stage of the project development, a preliminary environmental and social impact assessment (an environmental scoping study) is required. Preliminary impact assessment includes initial elements of the stakeholder engagement process and analysis of data gaps that shall be covered by full scale environmental and socio-economic baseline studies at the next stage. The results of the baseline studies combined with project design form the basis for detailed Environmental and Social Impact Assessment (ESIA) that supplements a Feasibility Study report.

## 16.5 Hydrogeological Studies

### 16.5.1 Site Conditions

The climate of the project area is extreme continental with cold and long winters and short rainy summers. The annual average temperature is -7.8°C, minimum temperature is observed in December and January and can reach -57°C, maximum temperature is observed in July and August and varies between 32 and 33°C. The average period with positive temperatures is approximately 160 days.

Average annual precipitation is 660-940 mm, the bulk of precipitation falls in July and August, at a rate of 130-140 mm per month, whereas the rest falls at a rate of 30 mm per month within winter season, i.e., in November-February. The depth of snow cover in valleys can reach 60-70 cm, whereas in the highlands it is up to 2 m.

The regional geology is dominated by Lower-Proterozoic, weakly metamorphosed terrigenous-sedimentary rocks of the Sakukan and Naminginskaya suites, estimated to be 3 km to 3.4 km thick. The sedimentary succession is intruded by Early-Proterozoic, Proterozoic and Mesozoic rocks of the Kalar, Kodar and Ingamakit units.

The main watercourses are the Kemen River, the Unkur River, Dekandna Lake.

### 16.5.2 Hydrogeological Conditions

Hydrogeological conditions of the deposit are characterised by a highly dissected drainage network caused by significant precipitation, steep surface gradients and rocks with fairly low hydraulic conductivity due to a presence of permafrost.

The absolute elevations of watersheds within the project area are between 1,050 m and 800 m. The absolute elevations of the valleys of rivers and creeks are 800-850 m (the Kemen River).

The catchment area of the Kemen River at the point where it crosses the deposit is 674 km$^2$. An average profile gradient of the riverbed is 2.9%.

### 16.5.3 Permafrost Conditions

The area of study is located in the region where continuous permafrost dominates and occasional taliks, underlying valleys of rivers and creeks, can be encountered. The specific feature of this territory is that the permafrost is well developed, its thickness is greatest on ridges, and decreases towards the base of river and creek valleys until it pinches out completely.

The thickness of the permafrost zone within the area of interest is reported to be 200-400 m. The base of the permafrost is measured to be at an elevation of 600 m in boreholes 122 and 123 and the thickness of the permafrost in these holes is 250 and 284 m, respectively.

The upper permafrost boundary varies depending on the season, and the thickness of a seasonal thawing layer depends on such parameters as slope exposure and the type and amount of vegetation.

### 16.5.4 Description of Aquifers

Based on the experience gained during working in the region where the Unkur deposit is located, SRK expects to encounter the following aquifers:

- An aquifer of alluvial and fluvio-glacial sediment in permanent talik;
- An aquifer of alluvial sediments in a seasonal thawing layer (above permafrost); and
- An aquifer of fractured metamorphic rocks (both a sub-permafrost water-bearing horizon and a water-bearing horizon of bedrock in open talik).

### 16.5.5 Aquifer of Alluvial and Fluvio-Glacial Sediment in Permanent Aquifers

The aquifer of alluvial sediments in permanent talik includes the recent saturated alluvial sediments and the Upper Quaternary fluvio-glacial sediments, which can reach up to 300 m in thickness.

The water-bearing strata are represented by a non-graded boulder-pebble material with a sand-gravel filling. Based on the flow pattern and degree of isolation from the ground surface, the aquifer is classified as an unconfined aquifer with porous media. The aquifer is recharged by infiltration of the surface runoff and direct precipitation. The area that contributes its water to the alluvial aquifer system coincides with the catchment areas of creeks and rivers in the deposit area that cross-flow.

### 16.5.6 Alluvial Sediments in a Seasonally Thawing Layer

The above-permafrost aquifer is active during warm periods only and exists throughout the area. In terms of a hydrodynamic condition, this aquifer is classified as an uppermost unconfined aquifer. Depth to groundwater and aquifer thickness varies during summer and is 0-4 m in autumn, depending on slope aspect. Water-bearing strata are represented by the rubble-boulder material with various filling compositions (clay sand, loam).

### 16.5.7 Fractured Metamorphic Rocks

The bedrock aquifer consists of a sub-permafrost (sub-cryogenic) water-bearing horizon and bedrock water-bearing horizons in open taliks. Water-bearing strata are represented by fractured metamorphic sandstone and siltstone.

The thickness of the water-bearing fractured zone is not known. The fractured zone is frozen to a depth of 250-284 m (drillholes 122 and 123) in the north-western side of the deposit. Distribution of hydraulic conductivity of the sub-permafrost aquifer and its overall permeability are currently unknown. The thickness of sub-permafrost aquifer is likely to be much greater within the fault zones.

An indicated depth of groundwater is 140 and 110 m in drillholes 122 and 123 respectively. The sub-permafrost aquifer is classified as confined. No data on the hydraulic properties of the sub permafrost aquifer exist, apart from result of a long term (5 days) “bailer used” pumping test, which is not considered to be reliable. Based on the experience from the nearby deposits, the sub permafrost bedrock aquifer can be quite heterogeneous, with hydraulic conductivities varying between 0.01 m/day in unfractured rock, to 22 m/day in extensively fractured zone.

The sub-permafrost aquifer is largely recharged by precipitation and by water flowing from overlying water-bearing horizons through the system of continuous hydrogenous taliks and underlying horizons.

No data on the chemistry of the sub permafrost aquifer in deposit area has been provided.

The Unkur license area is located significantly downstream from the headwaters (~38 km) of the Kemen River, so there is a large catchment area (674 km$^2$, Figure 14-2) feeding into the River before it crosses the Project area. This suggests significant surface water flow rates. The flowrates will vary seasonally, increasing in warm periods and decreasing in cold periods. Maximum rates are expected to be seen during spring thaws, which usually take place through May to June.

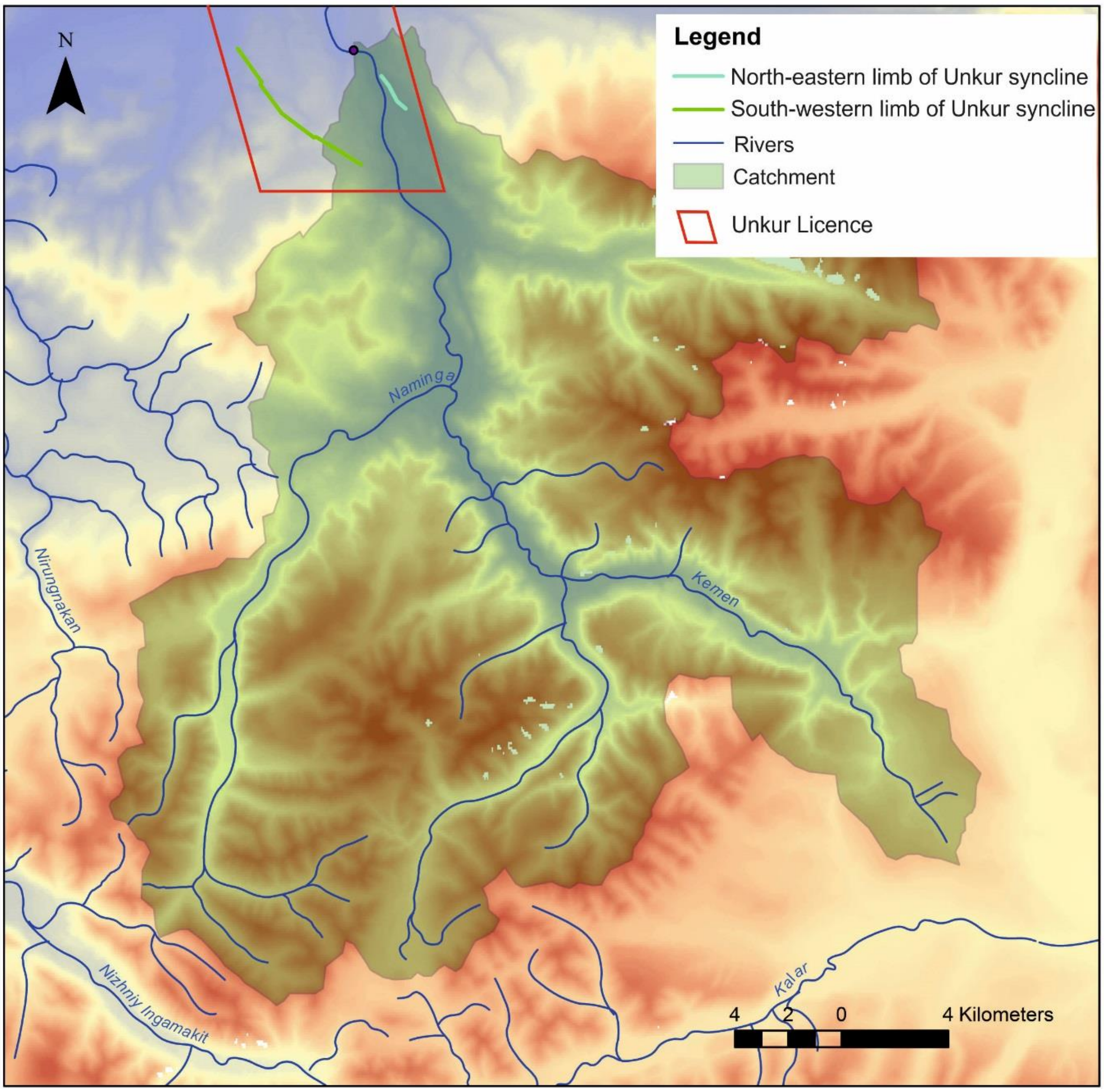



**Figure 16-2: The Kemen River Catchment (compiled by SRK, 2015)**

The alluvial sediments in the seasonally thawing zone are expected to have limited amount of storage and are of less concern compared to alluvial and fluvio-glacial sediments in the permanent taliks and sub permafrost aquifer.

If encountered by mine workings, then the alluvial and fluvio-glacial sediments in the permanent talik zone may produce relatively large flow rates due to their potentially high hydraulic and storage properties. But due to the relatively small areal extents of this aquifer, inflows from alluvial and fluvio-glacial sediments are expected to have seasonal pattern, starting with the spring thaw and ending in early winter, when no recharge takes place and storage has been drained.

Within the first year of mining activity, the dewatering system will need to cope with surface water, direct precipitation and ground water discharge from the alluvium aquifer. If mine workings reach 250 m depth below surface, then the sub permafrost aquifer will also start to discharge water into the mine.

The groundwater flow in bedrock is confined to fractures, so any inflows into any mine workings will be from major fracture systems. This bedrock aquifer is heterogeneous with highly variable hydraulic properties. Due to the large extent of the bedrock aquifer and high hydraulic properties within fractured zones, this aquifer may produce significant inflows even in “no-recharge” winter period.

There is a high probability that the sub permafrost aquifer is hydraulically connected to the surface water (the Kemen River) via continuous zones of talik, in which case the sub permafrost aquifer will transmit water from the river to the mine workings and change the hydrological regime of the Kemen River. Due to the fact that the Kemen River crosses the south-eastern part of deposit there is a high chance that the river would need to be diverted for mining to proceed to depths significantly below the riverbed elevation of about 800 m.

# 17 Interpretation and Conclusions

The results from the exploration carried out by Azarga Metals from August 2016 until February 2017 have confirmed the presence of significant copper-silver mineralisation in the Unkur project area. This mineralisation potential was evident from historical data, and was discussed in the previous technical report for this project (SRK, 2016).

The quality and quantity of data collected by Azarga Metals is a sufficient basis for reporting a maiden mineral resource estimation for the Unkur Project. The main mineralised domain modelled by SRK from Azarga Metals' drilling and trenching intersections is continuous for 3400 m along strike, and up to 550 m down dip, with a mean thickness of 19 m. This domain (Zone 1) is open in both directions along strike and down dip.

Several mineralised intersections have also been interpreted to define an approximately parallel zone of mineralisation, 100 to 150 m southeast of Zone 1. Potential remains for other new zones of mineralisation to be discovered by further drilling within the Unkur license area. Results from the ground magnetic survey done by Azarga Metals show that this geophysical tool will be useful for predicting the extensions of Zones 1 and 2, and defining new targets for drilling.

The northern part of the domain is Quaternary moraine material, which increases to a thickness of approximately 100 m at the northern limit of the resource.

The current database for the project is adequate to support an overall Inferred mineral resource classification, but is not adequate to provide reliable local estimates. The main limitations on confidence are:

1) Drilling sections are 300 to 400 m apart, with one or two Zone 1 intersections per section.

2) One hole (AM009), which was expected to intersect Zone 1 mineralisation, did not, implying that although the overall mineralised zone is interpreted to be continuous over kilometres along strike and at least hundreds of meters down dip, there are probably local discontinuities due to faulting, folding, or original sedimentary features of the deposit.

3) Surveyed locations of drill hole collars and surface channel sampling locations are based on measurements from a hand-held GPS device. Based on comparing repeat measurements, the uncertainty attached to these measurements appears to be up to tens of meters.

4) No detailed topographic survey is yet available for the project. The topography used for the modelling done so far is based on drill hole collars, and information digitized from scanned maps.

A further limitation, which will need to be addressed before the project can proceed from a mineral resource to a preliminary economic assessment, is the small quantity of information available regarding the metallurgical properties of the mineralised material. As discussed in Item 13 of this report, one bulk sample from a surface outcrop has undergone metallurgical testwork, but testing on further samples, particularly from deeper mineralised zones, will be needed to characterise the metallurgical properties of the deposit.

# 18 Recommendations

In the opinion of SRK, the potential of the Unkur Project is sufficient to justify additional exploration expenditures. SRK recommends that Azarga Metals' priorities should be to expand the resource inventory for the project, and collect the additional information that will be required for proceeding to preliminary economic assessment.

Exploration planning should be based on two phases of work.

## 18.1 Phase 1

The following main items are recommended for the first phase of work:

1) Additional drill holes on the same set of section lines already drilled by Azarga Metals. The main purpose of these holes will be to expand the resource inventory by testing for extensions of Zone 2 mineralisation. The holes should be planned to be deep enough to test for other parallel zones of mineralisation, stratigraphically below Zone 2. The new holes will also be expected to provide further Zone 1 intersections, which will increase the stocks of material available for metallurgical testing. A total of 2,500 m of drilling is proposed for this program, with an estimated budget of USD 375,000, based on all-inclusive costs of USD 150/m.
2) Commission a topographic survey of the entire license area, based on satellite data supplemented by control points surveyed on the ground. During surveying of the control points, higher-precision coordinates should also be obtained for all of Azarga Metals' previous drill hole collars and trench locations. A budget of USD 150,000 is estimated for this topography and surveying item.
3) Ground-based geophysics (magnetics and electrical tomography). The purpose of the geophysical surveys will be to provide targets, in addition to the strike extensions of Zone 1 and Zone 2 mineralisation, that can be tested by drilling during Phase 2. A combined budget of USD 280,000 is estimated for the geophysical surveys: USD 180,000 for higher priority areas to the north and northeast of the current resource, and USD 100,000 for lower priority areas to the south.
4) Metallurgical testwork on core and reject sample material from the holes Azarga Metals drilled during the 2016/2017 exploration campaign. Initial analyses will aim to establish the Cu oxide content, and diagnose the dominant Cu mineral species, for various zones within the deposit. Based on these results, a likely processing pathway of either leaching, or flotation, or a combination, will be identified, and further testwork will be done on several composite samples. A budget of USD 10,000 is estimated for this testwork.

The total expenditure estimated for the proposed Phase 1 work is USD 815,000.

## 18.2 Phase 2

The extent to which the recommendations for the second phase of work should be followed will be dependent on the results from the first phase of work, and in particular dependent on the quantity and nature of targets identified from the geophysical surveys. The following main items are recommended for the second phase of work:

1) Drilling to test geophysical and other targets from the Phase 1 of exploration. SRK expects these targets will primarily originate from the geophysical surveys, but with some influence from ongoing re-interpretations of historical information and earlier holes drilled by Azarga Metals. A total of 7,500 m of drilling is proposed for this program, with an estimated budget of USD 1,125,000, based on all-inclusive costs of USD 150/m.
2) Further metallurgical testwork, as required to characterise newly identified zones of mineralisation, and reduce any areas of significant uncertainty identified from the Phase 1 testwork. A budget of USD 60,000 is estimated for this Phase 2 testwork.

3) Preparation of an updated mineral resource estimation, and a preliminary economic assessment. A budget of USD 150,000 is estimated for this analysis, modelling and reporting.

The total expenditure estimated for the proposed Phase 2 work is USD 1,335,000.

# 19 References

1. Berezin, G., 1979. Results of exploration undertaken by the Lukturskaya expedition team at the Unkur copper project and Klyukvennoye deposit in 1975-1978. Vols.1; 2 and 3.
2. Henley, S., 2004. The Russian Reserves and Resources reporting system – discussion and comparison with international standards. Available online at *http://www.imcinvest.com/pdf/Russian_reserves_8.pdf*
3. Mulnichenko, V., 1972. Results of exploration undertaken by the Naminginskaya expedition team at the Unkur copper project in 1969-1971. Vols.1 and 2.
4. SGS Mineral Services 2015. Metallurgical Testwork on Oxide Ore Sample of the Unkur Deposit. Project No. SA-1175-MIN-HT-14.
5. SRK Consulting (Russia) Ltd, 2016. Technical Report for the Unkur Copper-Silver Deposit, Kodar-Udokan Area, Russian Federation. Effective date March 1, 2016.
6. Volchkov, A.G., and Nikeshin, U.V. 2014. Conclusions drawn by the Working Team of the FSUE (Federal State Unitary Enterprise) Central Geological Research Institute (TsNIGRI) based on the approbation of the prognostic copper resources of the Unkur deposit, the Zabaikalsky Region
7. Zientek, M.L, Chechetkin, V.S, Parks, H.L., Box, S.E., Briggs, D.A., Cossette, P.M., Dolgopolova, A., Hayes, T.S., Seltmann, R., Syusyura, B., Taylor, C.D., and Wintzer, N.E., 2014, Assessment of undiscovered sandstone copper deposits of the Kodar-Udokan Area, Russia: U.S. Geological Survey Scientific Investigations Report 2010-5090-M, 129 p. and spatial data. Also available online at *http://dx.doi.org/10.3133/sir20105090M*.
8. License ЧИТ02522БР (geological study, exploration and production of copper, silver, and associated components for the Unkur Project).

# Appendices

# Appendix A: License

**Департамент по недропользованию по Центрально-Сибирскому округу**
**(Центрсибнедра)**

(наименование органа, выдавшего лицензию)

# ЛИЦЕНЗИЯ
## на пользование недрами

| Ч И Т | 0 2 5 2 2 | Б Р |
|---|---|---|
| серия | номер | вид лицензии |

Выдана **Обществу с ограниченной ответственностью "Тува-Кобальт"**
(субъект предпринимательской деятельности, получивший
**(ООО "Тува-Кобальт")**
данную лицензию)

в лице **Директора**
(ф.и.о. лица, представляющего субъект предпринимательской деятельности)
**Каримовой Ольги Вячеславовны**

с целевым назначением и видами работ **геологическое изучение, разведка и добыча меди, серебра и попутных компонентов на Ункурском рудопроявлении**

Участок недр расположен **в Каларском районе**
(наименование населенного пункта,
**Забайкальского края**
района, области, края, республики)

Описание границ участка недр, координаты угловых точек, копии топопланов, разрезов и др. приводятся в приложении **№№ 3, 6**
(№ прилож.)

Участок недр имеет статус **горного отвода**
(геологического или горного отвода)

Дата окончания действия лицензии **31.12.2039**
(число, месяц, год)

**Место штампа**
**государственной регистрации**

Отдел геологии и лицензирования по
Забайкальскому краю (Центрсибнедра)
регистрирующий орган
ЗАРЕГИСТРИРОВАНО
«02» сентября 2014 г.
№ 02522 БР
подпись уполномоченного регистратора
Чекунова О.А.
фамилия, имя, отчество регистратора

# Department for Subsurface Use in Central Siberian District (Tsentrsibnedra)

## SUBSURFACE USE LICENSE

**CHIT** **02522** **BR**
Series number type

Issued to **Limited Liability Company Tuva-Cobalt (Tuva-Cobalt LLC)**
represented by the **Director Karimova Olga Vyacheslavovna**
with the purpose and work type: **geological studies, exploration and mining of copper, silver and associated components at Unkur Project**.
The subsurface area is located in **Kalarsky District of Zabaikalsky Region**.
Description of the subsurface area boundaries, coordinates of corner points, copies of topography plans, cross-section etc. are contained in appendices No. **3, 6**.
The subsurface area has the status of a **mining license**.
The license is valid till **31.12.2039.**

**Stamp:**
Department of geology and licensing in Zabaikalsky Region (Tsentrsibnedra)
REGISTERED
02 September 2014
No. 02522 BR
(signature)
Tekunova O.A.

***Неотъемлемыми составными частями настоящей лицензии являются следующие документы (приложения):***

1. Условия пользования недрами, на 9 л.;
2. Копия решения, являющегося основанием предоставления лицензии, принятого в соответствии со статьей 10[1] Закона Российской Федерации «О недрах» на 9 л.;
3. Схема расположения участка недр на 2 л.;
4. Копия свидетельства о государственной регистрации юридического лица на 2 л.;
5. Копия свидетельства о постановке пользователя недр на налоговый учет на 1 л.;
6. Документ на 3 л., содержащий сведения об участке недр, отражающие:

местоположение участка недр в административно-территориальном отношении с указанием границ особо охраняемых природных территорий, а также участков ограниченного и запрещенного землепользования с отражением их на схеме расположения участка недр;

геологическую характеристику участка недр с указанием наличия месторождений (залежей) полезных ископаемых и запасов (ресурсов) по ним;

обзор работ, проведенных ранее на участке недр, наличие на участке недр горных выработок, скважин и иных объектов, которые могут быть использованы при работе на этом участке;

сведения о добытых полезных ископаемых за период пользования участком недр (если ранее производилась добыча полезных ископаемых);

наличие других пользователей недр в границах данного участка недр;

7. Перечисление предыдущих пользователей данным участком недр (если ранее участок недр находился в пользовании) с указанием оснований, сроков предоставления (перехода права) участка недр в пользование и прекращения действия лицензии на пользование этим участком недр (указывается при переоформлении лицензии), на _____ л.;
8. Краткая справка о пользователе недр, содержащая: юридический адрес пользователя недр, банковские реквизиты, контактные телефоны, на 1 л.;
9. Иные приложения _______________________________

(название документов, количество страниц)

Уполномоченное должностное лицо
органа, выдавшего лицензию

**Начальник отдела**

(должность, ф.и.о. лица, подписавшего лицензию)

**Иванов А.В.**

Подпись

М. п., дата 02 сентября 2014 г.

The following documents (appendices) are the indispensable constituents of this license:

1. Subsurface use conditions, on 9 pages;
2. Copy of the resolution which is the basis for the license provision, on 9 pages; the resolution passed in accordance with Clause 10 of the Russian Federation Law “On Subsurface”;
3. Layout of the subsurface license area, on 2 pages;
4. Copy of the State Certificate of legal entity registration on 2 pages;
5. Copy of Tax Registration Certificate for the subsurface user, on 1 page;
6. Document on 3 pages, containing the following information on the subsurface license area:
   - Location of the subsurface area in terms of administrative and territorial allegiance, with specification of boundaries of specially protected natural areas and areas of limited or forbidden land use, with indication of these areas on the subsurface area layout;
   - Geological characteristic of the subsurface area with indication of mineral deposits (ore bodies) and mineral reserves (resources);
   - Overview of historical works performed in the subsurface area, presence of mine workings, drillholes and/or other facilities which can be used in work in this area;
   - Information on recovered minerals over the period of historical subsurface use (if historical mining was performed);
   - Presence of other subsurface users within the boundaries of this subsurface area;
7. List of the previous subsurface users of this license area (if the subsurface area was previously used) with indication of reasons and terms for the subsurface license provision (or transfer of rights) and for termination of license (in case of license renewal), on ___ pages.
8. Brief note on the subsurface user, containing: legal address of the subsurface user, bank details, contact telephone numbers, on 1 page;
9. Other appendices: ______________________________________________

The authorized official of the license issuing body:
**Department Head**
**Ivanov A.V.**
Signature: __(signature)___ (Stamp)
Date: 02 September 2014

# SRK Report Distribution Record

Report No. RU00556

Copy No.

| Name/Title | Company | Copy | Date | Authorised by |
|---|---|---|---|---|
| D. Nicol | Azarga Metals Corp. | | May 15 2017 | Robin Simpson |
| | | | | |
| | | | | |
| | | | | |

Approval Signature: