Updated Technical Report and Resource Estimate
TV Tower Property
Çanakkale, Western Turkey

Effective Date: February 9, 2021
Report date: May 18, 2021

Prepared for:
Liberty Gold Corporation
Orta Truva Madencilik Sanayi Ticaret A.Ş.

By:
Mehmet Ali Akbaba, P. Geo.
Mustafa Atalay, MSc, P. Geo.
Fatih Uysal, MSc, P. Geo.

DAMA Mühendislik A.Ş.

Ankaralılar Cad. Azatbey Sit. 2562.Sok. No:1/14A Çayyolu 06810
Ankara, Turkey

James N. Gray, P. Geo.
Advantage Geoservices
Osoyoos, British Columbia, Canada

Gary Simmons, Met. Eng.
G.L Simmons Consulting, LLC
Larkspur, Colorado, USA

CONTENTS

FIGURES

TABLES

1. SUMMARY

1.1 Introduction

DAMA Mühendislik A.Ş. ("DAMA"), of Ankara, Turkey, has prepared this independent technical report for Liberty Gold Corp. ("Liberty Gold") ("LGD" on the Toronto Stock Exchange) on the TV Tower Property ("TV Tower" or "the Property") to provide an update to the technical report entitled "Independent Technical Report for the TV Tower Exploration Property, Çanakkale, Western Turkey" (Hetman et al, 2014). This updated technical report updates results of drilling and geological programs from 2014 through 2015 at TV Tower, including drilling, metallurgical and other work on the Karaayı license in the southern portion of the property. It also presents first-time resource estimates for five deposits: Kayalı, Yumrudağ, Hilltop, Valley and Columbaz. This report was written in compliance with disclosure and reporting requirements set forth in the Canadian Securities Administrators' National Instrument 43-101, "Standards of Disclosure for Mineral Projects", Companion Policy 43-101CP and form 43-101F1 (collectively, "NI 43-101"), for the TV Tower Exploration Property ("TV Tower", or the Property") in Çanakkale Province of Northwestern Turkey.

All dollar figures in this report are expressed in United States dollars ("$") unless otherwise stated. Amounts in Canadian dollars are expressed as C$.

1.2 Property Description and Location

TV Tower is located in Çanakkale Province on the Biga Peninsula of Northwestern Turkey. The property consists of 8960 hectares of mineral tenure in eight contiguous licenses, all classified as Exploitation/Operation type.

TV Tower is a 62.9%-37.1% joint venture between Pilot Investments Inc., an indirect subsidiary of Liberty Gold (collectively with Liberty Gold, referred to "Liberty Gold" herein) and Teck Madencilik Sanayi Ticaret Anonim Şirketi ("TMST"), a subsidiary of Teck Resources Limited ("Teck"). All eight licenses relating to TV Tower are held by Orta Truva Madencilik Sanayi ve Ticaret Limited Anonim Şirketi ("Orta Truva"), a Turkish Joint Stock Company.

On June 20, 2012, Liberty Gold, then holding a 40% interest in TV Tower, entered into a share-purchase and joint venture agreement with TMST pursuant to which Liberty Gold would have the right to acquire a further 20% of Orta Truva, and thus indirectly, a further 20% in TV Tower (the "TV Tower Joint Venture and Share Purchase Agreement"). Through the earn-in period, Liberty Gold was the operator of TV Tower and will continue as operator of the property as long as it retains the majority interest in Orta Truva.

The earn-in obligations included incurring $21,000,000 in exploration expenditures over three years (the "TV Tower Expenditure Requirement") as follows:

- $5,000,000 in the twelve months from June 20, 2012, the effective date of the TV Tower Joint Venture and Share Purchase Agreement (the "Option Effective Date").
- $7,000,000 in the second year from the Option Effective Date.
- $9,000,000 in the third year from the Option Effective Date.

Liberty Gold had the right to accelerate annual expenditures at its sole discretion, and thus had an opportunity to complete the earn-in before the third year, by:

- Issuing 3,275,000 Liberty Gold common shares ("Common Shares") and 3,000,000 Common Share purchase warrants ("Liberty Warrants") to TMST. Each Liberty Warrant was exercisable for a period of three years from the date of issue and was exercisable for

one Common Share at an exercise price of C$3.00 per share.
- Issuing 1,637,500 Common Shares to TMST on the first and second anniversaries of the Option Effective Date.
- Making a one-time cash payment to TMST equal to $20 per ounce of gold applicable to 20% of the ounces of gold delineated at TV Tower in excess of 750,000 gold ounces defined as compliant Measured, Indicated or Inferred resources in a NI 43-101 Technical Report prepared generally concurrent with the completion of the TV Tower Expenditure Requirement.

On September 13, 2013, at Liberty Gold's direction, Orta Truva acquired beneficial interest in mining operation license #80823, known as the Kuşçayırı or Karaayı project ("Karaayı"), from Batı Anadolu. Consideration for the transaction comprised 1,250,000 Common Shares and $300,000. The Karaayı license is currently held by Orta Truva. TMST agreed to recognize consideration for the acquisition of Karaayı as an eligible expenditure toward the TV Tower Expenditure Requirement.

As of the date of this Technical Report, Liberty Gold has satisfied the TV Tower Expenditure Requirement, has issued all Common Shares and Warrants contemplated by the TV Tower Joint Venture and Share Purchase Agreement, sole-funded exploration expenditures in 2020 and is the 62.9% owner of the TV Tower property.

1.3 Accessibility, Physiography, Climate and Infrastructure

The TV Tower Exploration Property is located 27 kilometers (km) southeast of the city of Çanakkale and 37 km west of the city of Çan, on the Biga Peninsula in northwestern Turkey.

Access to the property is afforded via paved highways and secondary roads and thereafter to the various deposits by a series of local improved and unimproved gravel and dirt forestry roads.

The property is located in an area of steep-sided hills and ridges. The highest elevations on the property are approximately 700 meters (m). Exploration areas require significant road construction for drilling. Most of the property has been logged in the past, such that vegetation includes immature pine trees and heavy brush, particularly on north-facing slopes. Deciduous trees are present in areas with year-round streams. Some pasture land is present in the southern and northwestern portions of the property.

The region is well-serviced with electricity, transmission lines and generating facilities, the most significant being a large coal-fired power plant outside the city of Çan (37 km to the east). Population and agricultural activity is concentrated in the valleys, while most areas of active exploration are located in forested highlands. Local labour is employed from nearby villages. There is no exploration infrastructure located on the Property, with the exception of dirt roads used for logging. There are a number of streams and springs located at the bases of many of the hills that are suitable sources of water for drilling.

1.4 History

Limited historical exploration work has been completed within the TV Tower license areas. There are numerous small, ancient Roman workings, located throughout the property. These workings include prospect pits, small stopes and ore piles and are widespread in and around mineralized areas of the Biga Peninsula.

Recent work includes a series of holes drilled in the Sarp target area in the northeastern part of the property, but further details of this exploration work or results from the drilling are not known. The Government General Directorate of Mineral Research and Exploration of Turkey ("MTA") conducted a regional-scale exploration program over the Biga Peninsula between 1988 and 1991.

Results from this work were not available to the authors. Sampling by TMST in the 1990's included 36 rock samples from silicified and argillic altered outcrops along with six silt samples. The highest-grade rock samples returned 1,900 ppb and 510 ppb Au at Sarp. The highest value returned from the silt sampling program was from a sample collected in the southeastern portion of the property, which returned 241 ppb Au. These anomalous results highlighted the potential of the area. The authors are not aware of any previous mineral resource or reserve estimates or mineral production from the property.

TMST and Liberty Gold's predecessor, Fronteer Gold Inc. (formerly, Fronteer Development Group Inc. ("Fronteer")) undertook surface exploration programs from 2007 through 2011, including:

- Extensive grid-based soil sampling, totaling over 4,460 samples
- Prospecting and rock sampling, totaling over 1,780 samples
- Geological mapping over approximately 60% of the property
- Ground magnetics (35 line-kilometers) and IP (77.4 line-kilometers), over established targets
- PIMA Hyperspectral analysis of over 4,000 rock and core samples

The results of these investigations showed the presence of widespread gold and copper geochemical and geophysical anomalies that led to the designation of at least seven high-priority targets. TMST carried out drilling in two separate campaigns between August 2010 and December 2011, totaling 92 holes. The main objective of the 2010 and 2011 drilling programs was to test coincident IP/MAG geophysical anomalies and anomalous gold values in rock and soil samples at the Küçükdağ, Kayalı, Nacak and Sarp/Columbaz targets. This drilling led to discoveries at the Küçükdağ and Kayalı targets. The Columbaz target was drilled in 2014, focusing on low sulphidation epithermal veins exposed on surface. In the course of drilling the veins, a porphyry gold-copper system was discovered.

The Karaayı tenure was explored by Eurogold AŞ, then a subsidiary of Normandy Mining Ltd., ("Eurogold"), Tüprag Metal Madencilik Sanayi ve Ticaret Anonim Şirketi ("Tüprag"), a subsidiary of Eldorado Gold Corporation ("Eldorado") and Batı Anadolu Madencilik Ltd. Şti, a Turkish subsidiary of Chesser Resources Limited ("Chesser") from 2004 to 2012. These companies carried out limited rock and soil sampling, geophysical surveys and geological mapping, and discovered near-surface high sulphidation epithermal gold mineralization as well as porphyry copper-gold mineralization through drilling of a total of 41 short rotary air blast, RC and diamond core holes.

After acquisition of the Karaayı tenure, Liberty Gold carried out extensive soil and rock sampling, geological mapping and aeromag surveys, followed by drilling in 2013 and 2014, resulting in further definition of the Yumrudağ oxide gold and Hilltop porphyry systems and discovery of the Valley porphyry system.

1.5 Geological Setting and Mineralization

TV Tower lies within the central part of the Biga Peninsula, the geology of which is complex and characterized by various lithological associations made up of: (1) Paleozoic and early Mesozoic basement metamorphic rocks; (2) Permian and Mesozoic sedimentary and ophiolitic rocks; (3) Cenozoic volcanic and intrusive rocks; and (4) Neogene sedimentary rocks. Older rocks are affected by several collisional orogenic events. Cenozoic rocks record mainly brittle extensional and transtentional deformation.

TV Tower hosts metamorphic basement rocks at low elevations in the western and central areas and intermediate intrusive rocks at low elevations in the south, overlain by interlayered Cenozoic calc-alkaline volcanic and volcaniclastic rocks at higher elevations. They are variably altered, brecciated, mineralized and variably brittly deformed.

The TV Tower property contains multiple zones of gold mineralization interpreted to be nested within and under a large, highly-altered volcanic center or centers. Many of these target areas have wide-spread epithermal alteration with supporting geophysical and geochemical signatures typical of those seen at other high- and low sulphidation gold (e.g., Kirazlı, Ağı Dağı) and porphyry copper-gold (Halilağa) deposits within the Biga Peninsula.

The targets defined to date on the TV Tower property are primarily classified as either low sulphidation epithermal gold-silver, high sulphidation epithermal gold-silver +/- copper or copper-gold +/- Mo porphyry style mineralization. One target has also been defined in the basement metamorphic rocks and has been tentatively classified as listwaenite lode-gold mineralization.

Three adjacent properties are characterized by mineralization similar to that described from the TV Tower Property, and include The Kirazlı Property, owned by Alamos Gold Inc.; the Kartaldağ Mine and Property, previously owned by Çanakkale Madencilik A.Ş. and now owned by Esan A.Ş, a subsidiary of Eczacibasi Holdings Co; and The Halilağa Cu-Au porphyry deposit, owned by Cengiz Holdings A.Ş. Further details related to these properties are outlined in Section 16.

The main gold and copper-gold targets at TV Tower are defined by surface geochemistry, alteration, geology, IP chargeability highs, and in some cases drilling, and include:

Küçükdağ Deposit: The mineralized zone consists of west-northwest/east-southeast-trending gold zone overlain by a large, tabular zone of silver mineralization. Copper is found in association with both zones. Gold, silver and copper mineralization are hosted in a sub-horizontal stratigraphic sequence consisting primarily of tuff, reworked volcaniclastic rocks and siltstone. Mineralization is characterized by a high sulphidation gold-pyrite-enargite assemblage and associated silicification and advanced argillic alteration. Gold-copper mineralization in the main zone is associated with hydrothermal/tectonic breccias, stratabound and structural zones of vuggy quartz and sheeted vein swarms. A silver rich, relatively strata-bound zone overlies and extends north of the gold zone. This deposit was the subject of a resource estimate described in Section 14. No work has been carried out on this deposit since September, 2015.

Kayalı Deposit: At the Kayalı high sulphidation epithermal deposit, gold is hosted in west-northwest-trending, steeply south-dipping breccia zones (ribs) hosted in a ~100 metre-thick, gently north-dipping sequence of strongly silicified and oxidized volcaniclastic strata (ledge). Copper has been leached from the ledge and redeposited as a supergene copper blanked immediately below it. The Kayalı area has been tested by 51 drill holes.

Columbaz Deposit: Drilling of twelve holes by Liberty Gold in 2014 focused on low sulphidation epithermal gold-silver veins, at the same time discovering high-level porphyry Au-Cu mineralization. The latter consists of quartz stockwork hosted in phyllic, potassic and magnetite-altered quartz monzonite, breccia and volcanic rocks. A deep IP survey outlined a circular chargability high encompassing approximately 2 km^2 that includes the drill holes. Five holes were drilled in 2020 to follow up on the porphyry discovery.

Valley Porphyry Deposit: The Karaayı tenure hosts a number of significant targets. The Valley Porphyry Au-Cu deposit was discovered through follow-up of a 1400 metre-long, 400 metre-wide gold and copper in soil anomaly. As of the effective date of this report, it has been tested with a total of 31 drill holes over a 1500 metre distance from northwest to southeast. It consists of northwest-trending, mineralized dyke-like bodies of porphyritic rock intruded into basement rocks of the Kuscayir batholith. Higher-grade rocks contain a dense stockwork of quartz-magnetite veins in a matrix of pervasive K-feldspar-magnetite-sericite alteration.

Yumrudağ High Sulphidation Epithermal Gold Deposit: The Yumrudağ deposit is located immediately north of the Valley Porphyry deposit, and comprises a large residual quartz ledge with iron oxide and free gold, hosted in volcaniclastic rocks, cut by west-northwest-striking structural ribs similar in nature to the Kayalı target. Rocks beneath the oxidized quartz ledge contain supergene chalcocite and appear to be transitional into a porphyry system. The Yumrudağ target has been tested with a total of approximately 31 drill holes by Eurogold, Tüprag, Chesser and Liberty Gold.

Hilltop Porphyry Deposit: The Hilltop porphyry deposit is located immediately beneath and to the east of the Yumrudağ target, where an intermediate intrusive body is exposed in a gully cutting through the quartz ledge. Surface rocks are quartz-sericite altered with abundant quartz stockwork and malachite staining. A total of approximately 35 drill holes by Eurogold, Tüprag, Chesser and Liberty Gold have tested the target. Mineralized rocks are strongly sericite altered with abundant quartz stockwork and pervasive very fine-grained chalcocite. At depth, sericite alteration gives way to biotite alteration with fracture-controlled sericite and trace chalcopyrite.

Gümüşlük Target: The Gümüşlük target lies in the western portion of the property, and consists of quartz veins, silicification, chromium mica and iron oxides hosted near the contact of quartz-mica schist with an overlying serpentinite body. It is interpreted as a listwaenite-lode gold system. It is defined by anomalous gold over a 1200 x 400 metre area within a grid of tightly-spaced soil samples.

Kartaldağ West Target: The Kartaldağ West target comprises an east-west-striking structural rib composed of brecciated, quartz-alunite-altered volcaniclastic rocks. It extends westward from the Kartaldağ Mine, a third-party inlier located in the western portion of the property. Rock samples from the rib contain up to 1 g/t gold.

1.6 Exploration

In June, 2012, Liberty Gold, as operator of the Joint Venture with TMST, commenced a program of geological mapping, sampling and drilling, with an emphasis on target identification and definition. As of the effective date of this Technical Report, Liberty Gold has collected over 2601 rock and 6061 soil samples, conducted an airborne EM and magnetics survey over the entire property, conducted ground magnetic surveys over the southern Karaayı tenure, conducted IP surveys over the Valley porphyry, Gümüşlük, West Kartaldağ and Tesbihçukuru targets with additional deep IP surveys over the Columbaz target, mapped (1:24,000) most of the property in reconnaissance and a number of targets in detail (1:1,000), and has identified or refined several new or existing targets.

Through the effective date of this report, Liberty Gold has carried out five campaigns of drilling from August 2012 through January 2013, from March through December 2013, from April through November 2014, June to August 2015 and August to November, 2020. A total of 230 exploratory diamond drill holes and 11 RC holes, for a total of 58,303 metres in 241 holes were completed during this period. An additional two RC holes totaling 282.0 m were drilled for the purpose of installing groundwater monitoring wells. The drilling accomplished a number of goals, including drilling off the KCD target pursuant to generating a resource estimate, exploratory and confirmation drilling of the Kayalı, Hilltop, Valley and Yumrudağ deposits, and testing of the Columbaz and Nacak targets. This drilling expanded the footprint of mineralization at Kayalı and led to discovery of two new porphyry systems at Valley and Columbaz.

1.7 Sampling and Data Verification

All drill samples collected in the TMST and Liberty Gold programs were subjected to rigorous quality control procedures that ensured best practice in the handling, sampling, analysis and storage of the drill core. QA/QC included the insertion and monitoring of blanks, standards and duplicates at regular intervals, the retention of half-core for archival purposes, and a program of check assaying. Quality-control data generated for the various drill programs were indepently verified by DAMA as part of the project review.

The authors of the previous technical report (Hetman et al, 2014) visited the property in 2013 and inspected the core and RC drilling, logging, sampling and database entry procedures, as well as independent collection and analysis of drill core samples. Mehmet Ali Akbaba and Mustafa Atalay visited the South TV Tower area on August 20-21th, 2020. Fatih Uysal and Mehmet Ali Akbaba visited the Columbaz area on January 13, 2021. The scope of their visits included inspection of core and collection of pulps for independent analysis.

Data pertaining to previous drilling programs at the Karaayı license were compiled using data acquired from Batı Anadolu. QA/QC protocols employed by Eurogold are not available. Consequently, data from these holes are not currently being utilized. Both Tüprag and Chesser were known to employ QA/QC protocols; however, the nature of these protocols is not currently known.

1.8 Metallurgical Testing

At the Hilltop porphyry target, Chesser commissioned rougher and cleaner testing, which was carried out on three samples from a single drill hole at the Hilltop porphyry target, including copper and gold mineralization in KAD-02. The samples had a range of Cu grades from 0.3 to 0.4% and gold grades from 0.1 to 0.4 g/t Au. Rougher flotation tests showed that nearly all the sulphides could report to a bulk concentrate with high recoveries of copper and gold. Cleaner flotation tests with no regrinding returned poor grades due to incomplete mineral liberation in the rougher concentrate. Further optimization is needed to confirm that fine regrinding of rougher concentrates can produce an acceptable grade of final concentrate. Flotation performance based on the rougher and cleaner flotation tests, and incorporating an appropriate plant recovery discount, gave estimated recovery performance to final concentrate of 80% Cu and 58% Au. In 2015, five master composites in four Liberty Gold holes were selected for further metallurgical testing, under the advisement of metallurgical consultant Gary Simmons, a Qualified Person as defined by NI 43-101. The selected composites are currently being stored in a freezer.

Metallurgical studies on mineralized material from the Valley porphyry target started in 2014 and were completed in early 2015. The focus of this first phase of testwork was to determine if the Valley Porphyry material types were compatible with the flowsheet developed for the Halilağa Project which is located approximately 20 kilometers southeast of the Valley Porphyry Project. This test program was supervised by G.L. Simmons Consulting, LLC. The laboratory testing was conducted by John Gathje Consulting, LLC using the facilities and support provided by Hazen Research, Inc. (Golden, Colorado).

Core assays and geochemical analyses, as well as assessments of geology and alteration provided by Liberty Gold were used to select drill core intervals from which five master composites were prepared for testing. These composites were identified as VPMC-1 to VPMC-5 and head analyses showed that they ranged in value from 0.23% Cu to 0.49% Cu and from 0.42 gpt Au to 1.44 gpt Au.

Composites VPMC-2 and VPMC-4 were chosen to be used for the majority of the testing and their head analyses are more detailed than the other three composites. Mineralogical examinations of these two composite showed that pyrite is the major sulfide mineral for VPMC-2 with lesser amounts of chalcopyrite, bornite, chalcocite and traces of covellite. In the case of VPMC-4 the results were similar showing mainly pyrite along with subordinate chalcopyrite, bornite and traces of chalcocite, galena and sphalerite.

The previously developed Halilağa flowsheet, which was used for this first phase of testing, consists of a primary grind P80 of ~140μm followed by rougher flotation using lime to adjust to ±pH 9 and potassium amyl xanthate (PAX) as the collector. The rougher concentrate is reground to a P80 of ~20μm and two or three stages of cleaning are used to produce a final copper concentrate product. The pH during cleaning is maintained at ~11 to 11.5 (using lime) to reject pyrite.

For VPMC-1 to VPMC-4 two cleaner stages produced copper concentrates with grades >25% Cu. The average copper concentrate grade from a single cleaner stage for VPMC-1 to 4 was 30.2% Cu with a recovery of 87.0%. The copper grades ranged from 23.2% Cu for VPMC-4 to 37.1% Cu for VPMC-3. The copper recoveries ranged from 85.3% to 89.0%.

Likewise, a single cleaner stage achieved gold grades which ranged from 33.4 gpt Au for VPMC-4 to 67.5 gpt Au for VPMC-2 with an average of 48.9 gpt Au. The average gold recovery was 64.1%.

For VPMC-5 the first stage of cleaner flotation produced a good copper grade of 29.6% Cu but only 58.1% recovery. The low copper recovery is a response that correlates well with its designation as being a transition ore type. The gold values show a concentrate grade of 37.4 gpt Au and 47.5% recovery; again typical of a transition ore type.

Column tests for the Kayalı and Yumrudağ gold-oxide high sulphidation epithermal targets were completed in late 2015. Three master composites from five holes were prepared from Kayalı drill core, and one composite from one hole was prepared from Yumrudağ drill core (Kayalı-1, Kayalı-2, Kayalı-3, Yum-1). The samples were processed at McClelland Laboratory, under the advisement of Gary Simmons. The scope of work is summarized below.

1. Composite preparation and feed analysis
2. Detailed comminution testwork (Kayalı-1 and Yum-1 only)
3. Bottle roll tests (BT) on P801.7mm (168 hour leach) and P8075μm feed sizes
4. Head screen analysis
5. Column percolation leach tests (CT) on P8012.5mm feeds
6. Tail screen analyses on CT leached/rinsed residues

Results show that Kayalı project core composites were amenable to cyanidation processing. Highest gold recoveries were achieved from P_{80}75μm feeds showing that milling will liberate gold by leaching with cyanide.

All composites were amenable to heap leach processing at a P_{80}12.5mm crush size. Best recoveries were achieved from Kayalı-1 and Yum-1 core composites. Gold recovery rates were fairly rapid for P_{80}1.7mm and P_{80}75μm feeds (bottle roll tests), but were slower for P_{80}12.5mm feeds (column tests).

NaCN consumptions were low for Bottle Roll feeds, but were higher for Column Test feeds. NaCN consumptions from laboratory-scale column tests are typically three to four times higher than experienced in commercial heap leaching practice. Lime requirements (lime added) were low to moderate, averageing 2.9 kg/mt of ore.

In April, 2011 G&T Metallurgical Services Ltd. of Kamloops were contracted to complete a "pre-scoping" metallurgical test work program on the Küçükdağ mineralized zone. The two master composite samples were subjected to mineralogical and metallurgical investigations. Gold recoveries for both composites, using a combined gravity plus cyanidation flow sheet resulted in about 50 percent overall gold extractions by this method. Gold recoveries to the gravity concentrate were very low at between 2 to 5 percent.

In 2013, Liberty Gold commenced a metallurgical testing and ore characterization program for the Küçükdağ deposit under the guidance of consulting metallurgists Gary Simmons and John Gathje, with testing at Hazen Research, Inc. in Denver, Colorado. This program included analysis of all assay intervals with > 0.2 g/t Au and > 10 ppm Ag using cyanide-soluble methods, and analysis of selected intervals for organic carbon.

For this study, 132 variability composites were selected based on geological and assay considerations. From these, 16 master composites (MCs) were organized using a significant portion of the variability composites to represent geology / lithology and variable Au, Ag and Cu grade ranges. The master composites cover oxide, mixed and sulphide mineralization. The scope of Phase 1 test work, carried out in 2013, included:

- Sample preparation, cold storage after prep and head assays on the 16 MCs.
- Comminution testing for JK SAG parameters, Bond Ball Mill Work Index and Abrasion Index numbers.
- Baseline cyanide-leach and carbon-in-leach (CIL) testing on oxide and mixed MCs.
- Scoping level rougher and cleaner flotation test work on various MCs.
- CIL leaching of flotation scavenger concentrate, cleaner tails and rougher tails products.

Twelve individual variability composites, representing various rock types, were selected for comminution testing. The results show a very wide range of SAG (A x b), Ball Mill (kWh/t), Abrasion Index (Ai) numbers.

The metallurgical performance of the master composites was evaluated under direct cyanide leaching at grind P_{80}=75 µm, carbon-in-Leach (CIL) testing at P_{80}= 75 µm, and direct cyanide leaching at coarser P_{80}=1,700 µm. General conclusions are as follows:

- Gold in oxide and mixed material types can be cyanide leached. It is early in testing, but samples tested show a flat response to particle size vs. gold extraction %, indicating amenability to conventional milling and / or heap leaching practice.
- Gold extractions ranged from 50-78% at a grind size of 80% percent passing (P_{80}) 75 microns (µm).
- Silver in oxide and mixed material types can also be extracted by cyanide leaching; however, unlike gold, there is a marked decline in extraction % with increasing particle size, indicating that silver mineralization will not be suitable for heap leaching.
- Silver extraction at a grind size P_{80} = 75 µm, ranges from 45-73%; however, there was potential to improve silver extraction by various methods not evaluated in this early stage of testing, such as: finer grinding, higher cyanide strength, lead nitrate addition, elevated temperature leaching, and pressure cyanidation.
- Some samples contain organic carbon C(org). With respect to gold extraction, there is indication of “very mild” preg-robbing effect, whereas silver extraction appears to be unaffected.

Four flotation campaigns, utilizing seven of the master composites, were conducted as follows:

- Initial scoping tests on sulphide rock types.
- Additional tests on BLIT / BLIT2 master composites
- Flotation and cyanidation of oxide and mixed rock type composites
- Cyanidation of intermediate flotation products

BLIT material type (the major rock type source for high-grade sulfide Cu, and Au mineralization) testing indicated reasonable response to conventional flotation practice with:

- Rougher and scavenger flotation concentrate recoveries ranging from 87-96% for Cu, 78-93% for Ag and 89-95% for Au.
- 1st cleaner concentrate recovery ranges from 73-90% for Cu, 33-75% for Ag and 60-87% for Au.
- 2nd cleaner concentrate recovery ranges from 69-88% for Cu, 28-72% for Ag and 54-85% for Au.

All sulphide material types contain copper minerals with elevated levels of arsenic (As) and antimony (Sb). A significant portion of the contained As and Sb report to flotation concentrates, in concentration levels between 2-8%. The commercial concentrate smelting market is limited for concentrates containing elevated levels of As and Sb. Potential exists to treat small to modest tonnages of high-grade Cu, Au and Ag concentrates, containing As and Sb, either through concentrate blending entities or direct sale to smelters. Once sufficient flotation optimization test work is completed, a concentrate marketing study should be commissioned to evaluate potential placement of the Küçükdağ deposit concentrates.

The scope of Phase 2 testing, carried out in 2014, encompassed the following:

- Flotation of the sulfides to investigate the potential for making a high-grade Ag concentrate.
- Oxidative treatment of flotation concentrates to enhance Ag extraction and improve overall Ag recovery.

The flotation test program was completed in three steps:

- Step 1 - Preliminary tests to determine flotation response using a flow sheet established during testing in 2013.
- Step 2 - Large scale flotation to generate concentrate to be used for oxidation/cyanidation testing.
- Step 3 – Additional tests to determine if flotation Ag recovery and/or grade could be increased.

Silver recovery form rougher plus scavenger floatation ranged from approximately 82 to 89% using natural pH. However, concentrate grades were relatively low (144 g/t Ag).

The bulk sulfide flotation concentrate contained 18.8% sulphide sulphur (S=). The high S= grade, combined with the relatively low Ag grade (144 g/t), necessitated the adoption of partial oxidation testing approach to determine if the Ag mineralization could be oxidized preferentially over pyrite. Partial-oxidation options selected for testing included:

- Alkaline Pressure Oxidation (APOX)
- Neutral Albion Leach (NAL)
- Caustic (NaOH) Oxidation
- Trona ($Na_3(CO_3)(HCO_3)\cdot 2H_2O$) Oxidation

The results indicate that partial S= oxidation using Trona achieves higher Ag extractions, at lower S= oxidation levels, than the other oxidation technologies. It may be possible to achieve >90% Ag extraction with higher levels of Trona addition. On the potential positive side regeneration of caustic from Trona oxidation discharge liquors, may be possible, significantly reducing the total amount of Trona required but at the same time adding lime to the process for regeneration of caustic. Additional Research and Development (R&D) effort is needed to refine this process.

1.9 Resource Estimate

Maiden resource estimates for the Columbaz, Valley and Hilltop porphyry deposits and the Kayalı and Yumrudağ high sulphidation oxide gold deposits were carried out in 2021 by Mehmet Ali Akbaba, P.Geo. of DAMA Engineering, an independent Qualified Person as defined by NI 43-101.

The resource estimate is based on results from 30,055.2 metres of drilling in 122 drill holes (113 core and nine reverse circulation) for the Hilltop, Yumrudağ, Valley and Kayalı deposits in the South TV Tower area and 8,353.1 meters of drilling in 11 drill holes for the Columbaz Deposit in the North TV Tower area. In the South TV Tower database, a total of 9,981 individual assay intervals averaging 1.47 m in length were composited into a total of 7,453 composite intervals of 2 m length, while a total of 2,771 individual assay intervals with an average length of 1.42 m in the Columbaz deposit at the North TV Tower sector were composited into a total of 1,978 composite intervals of 2 m length.The resource model consists of a detailed three-dimensional geological model including lithological domains and weathering profiles. These, in turn, were used to constrain the interpolation of gold and copper grades. Block grades were estimated by ordinary kriging. Blocks size are10 x 10 x 5 meters for the Valley, Hilltop, Kayalı and Yumrudağ deposits at South TV Tower and 20 x 20 x10 meters for the Columbaz deposit in the North TV Tower sector.

Gold and copper assay data were reviewed statistically to determine appropriate grade capping levels by domain. A total of 95 gold assays, and 51 copper assays in the South TV Tower database and a total of 14 gold assays in the North TV Tower database were capped prior to compositing. Model validation was carried out using visual comparison of blocks and sample grades in plan and section views; statistical comparison of the block and composite grade distributions; and swath plots to compare ordinary kriging (OK), inverse distance squared (IDW^2) and nearest neighbor (NN) estimates.

Mineralization classified as Indicated Mineral Resource was assigned to the blocks interpolated in the first run, using search radii equal to the variogram range distances. The Indicated blocks were informed by at least 3 samples from at least 2 drill holes with a distance of closer than 50 m to the block. All other above cut off material within the pit shell was classified as Inferred. All Columbaz mineralization within the pit shell was classified as Inferred.

The cut-off grades were calculated using metal prices and were adjusted for metallurgical recoveries. Mineral resources for Karaayı and Kayalı are reported at a 0.2 g/t Au cut-off grade for the mineralized material within the Hilltop, Yumrudağ and Kayalı oxide zones, 0.2% Cu cut-off grade for the mineralized material within the Kayalı supergene zone and 0.4 g/t AuEq cut-off grade for the mineralized material within the Hilltop, Valley and Yumrudağ Au-Cu zones.

To evaluate the potential for reasonable prospects of eventual economic extraction for all deposits, a Micromine pit shell was generated using parameters listed below Table 1.1.

Pit-constrained Mineral Resource for the TV Tower Project are presented in Table 1-1 below. Mineral Resources that are not mineral reserves do not have demonstrated economic viability.

Table 1.1: In-Pit Mineral Resource Statement for the TV Tower as of the Effective Date

DEPOSIT	INDICATED RESOURCE	TONNES	GRADE				METAL CONTENT $x10^3$				Cut-off grade
			Au	Ag	Cu	AuEq[2]	Au	Ag	Cu	AuEq[2]	
		$X10^6$	g/t	g/t	%	g/t	oz	oz	lb	oz	
ALL SOUTH TVT DEPOSITS	ALL MINERALIZATION TYPES	59.19	0.28	-	0.17	-	540	-	218,393	1,084	
Kayalı, Yumrudağ, Hilltop	South TVT Oxide Gold	20.35	0.42	-	-	0.42	276	-	-	276	0.2 g/t Au
Kayalı	South TVT Supergene Copper	2.99	-	-	0.41	-	-	-	27,151	-	0.2% Cu
Hilltop, Yumrudağ, Valley	South TVT Au-Cu Porphyry	35.85	0.23	-	0.24	0.7	264	-	191,242	808	0.4 g/t AuEq[2]
ALL NORTH TVT KCD[1]	ALL MINERALIZATION TYPES	23.1	0.63	27.6	0.16	1.34	470	20,500	78,900	996	0.5 g/t AuEq[3]
DEPOSIT	INFERRED RESOURCE	TONNES	GRADE				METAL CONTENT $x10^3$				Cut-off grade
			Au	Ag	Cu	AuEq[2]	Au	Ag	Cu	AuEq[2]	
		$X10^6$	g/t	g/t	pct	g/t	oz	oz	lb	oz	
ALL SOUTH TVT DEPOSITS	ALL MINERALIZATION TYPES	104.45	0.23	-	0.16	-	761	-	359,589	1,475	
Kayalı, Yumrudağ, Hilltop	South TVT Oxide Gold	42.48	0.37	-	-	0.37	501	-	-	501	0.2 g/t Au
Kayalı	South TVT Kayalı Supergene	12.65	-	-	0.39	-	-	-	108,652	-	0.2% Cu
Hilltop, Yumrudağ, Valley	South TVT Au-Cu Porphyry	49.32	0.16	-	0.23	0.61	260	-	250,937	974	0.4 g/t AuEq[2]
ALL NORTH TVT COLUMBAZ	ALL MINERALIZATION TYPES	35.53	0.36	-	0.12		409	-	93,153	674	
Columbaz	North TVT Oxidized Porphyry	3.38	0.36	-		0.36	39	-		39	0.2 g/t Au
Columbaz	North TVT Au-Cu Porphyry	32.15	0.36	-	0.13	0.61	370	-	93,153	635	0.4 g/t AuEq[2]
ALL NORTH TVT KCD[1]	ALL MINERALIZATION TYPES	10.77	0.15	45.7	0.06	1.01	53	15,800	14,900	351	0.5 g/t AuEq[3]

[1]Current mineral resource estimate in 2014; details provided in the 2014 Technical Report filed under Liberty Gold's profile on www.sedar.com
[2]AuEq for 2021 resource calculated using the following equation: Au g/t + Cu % / 0.6686 x 1.338. The gold equivalent formula was based on the following parameters: Cu price $3.40/lb; Au $1600/oz, Cu recovery: 87%, Au recovery:65%.
[3]AuEq calculated in 2014 using a ratio of Au:Ag of $1200 $20 at 75% recovery and Cu at $3.00/lb at 70% recovery.
For more details regarding the resource estimation, see below.
Notes:

1) *The Qualified Person for the estimate is Mr. Mehmet Ali Akbaba, AIPG, P.Geo. of DAMA Mühendislik A.Ş.*
2) *The Effective Date of the mineral resource estimate is February 9, 2021.*
3) *The volume for each contiguous zone of above cut-off mineralization was defined by wireframing in 3D space and was used to constrain mineralization.*
4) *Metal assays were capped where appropriate using statistical methods.*
5) *Grade was interpolated by domain using Ordinary Kriging.*
6) *Density values were assigned by domain using density data derived from wax-dip immersion of core samples.*
7) *Mineral resources are reported within an optimized conceptual Micromine pit that uses the following input parameters: Au price: US$ 1600 /oz, Cu price: US$3.40 /lb; mining cost: US$1.00/t mined; processing cost: US$5.00/t ore processed by heap leach (including G&A) for oxide zone, US$12.35/t ore processed by flotation (including G&A); Recoveries are 91% Au for Yumrudağ-Hilltop oxide and 76% Au for Kayalı Oxide materials; 65% Au and 87%Cu for sulphide/supergene materials from the all prospects studied. The pit slope angle was 50°.*
8) *AuEq for sulphide/supergene ore types calculated using the following equation: Au (g/t) + Cu(%) / 0.6686 x 1.338. The gold equivalent formula was based on the following parameters: Cu price $3.40/lb,Au $1600/oz, Cu recovery: 87%, Au recovery:65%.*
9) *All figures rounded to reflect the relative accuracy of the estimate; this may result in apparent differences between tonnes, grade and contained metal content.*
10) *The Mineral Resources have been classified as Indicated and Inferred under the guidelines of the CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council, and procedures for*

classifying the reported Mineral Resources were undertaken within the context of the Canadian Securities Administration National Instrument 43-101.

11) *No mining or metallurgical factors were applied to the block model grade estimates except gold and copper recovery used for cut-off determination.*
12) *Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resources estimated will be converted into Mineral Reserves. The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues. The quantity and grade of reported Inferred Mineral Resources in this estimation are uncertain in nature and there has been insufficient exploration to define these Inferred Mineral Resources as an Indicated Mineral Resource and it is uncertain if further exploration will result in upgrading them to an Indicated Mineral Resource category.*

The resource estimate on the Küçükdağ (KCD) deposit was completed in 2013 by James N. Gray, P.Geo. of Advantage Geoservices, a Qualified Person as defined by NI 43-101 (Table 1.1). No additional work has been carried out at KCD that would materially change this estimate.

The resource estimate is based on results from 37,860 m of drilling in 169 drill holes (160 core and nine RC). Quality-control data generated during the various drill programs conducted at Küçükdağ, were independently verified by SRK Consulting, Vancouver, BC, as part of the project review. The resource model consists of a detailed three-dimensional geological model including lithological domains and structural domains derived from 25 meter-spaced sections. These, in turn, were used to constrain the interpolation of gold, silver and copper grades. Block grades were estimated by ordinary kriging. Blocks measure 10 x 10 x 5 m. A total of 26,173 individual assay intervals averaging 1.4 m in length were composited into a total of 12,981 composite intervals of 3 m length. Gold, silver and copper assay data were reviewed statistically to determine appropriate grade capping levels by domain. A total of 71 gold assays, 48 silver assays and 33 copper assays were capped prior to compositing based on the evaluation of probability plots by major rock type. In addition to the capping of assay data, the impact of anomalously high gold values was controlled by restricting their range of influence in the estimation process.

For mineralization in the Gold Zone to be classified as Indicated the following criteria were used: two holes within 25 m *or* three holes within 36 m. Indicated classification for the Silver Zone is based on a minimum of two holes within 35 m or three holes within 50 m. All other above cut off material within the pit shell was classified as Inferred. The mineral resources are confined within a Whittle pit shell generated by SRK to ensure reasonable prospects of economic extraction.

The pit shell was based on the following parameters: Au: $1,335/oz; Ag: $22/oz; Cu: $3.60/lb; Mining: $2.00/t; Milling, General and Administrative and sustaining CapEx: $15/t milled; Recovery: Au and Ag = 75%; Cu = 70%; Overall pit slope: 50^{o}. At a 0.5 g/t AuEq cut-off, the strip ratio is 1.47:1. Tonnage estimates are based on 6,027 density measurements which were used to assign average values to lithologic domains of the block model. Bulk density for the main Küçükdağ gold mineralized rock unit averages 2.38 tonnes/m^3.

1.10 Interpretation, Conclusions and Recommendations

A substantial amount of geoscientific data exists for the TV Tower project. The recent drilling has confirmed the presence of multiple mineralization types including porphyry and high sulphidation epithermal ("HSE") styles of copper and gold mineralization at several of the known prospects within the property. The available exploration datasets indicate that the Property is prospective for economic quantities of porphyry and epithermal style, bulk tonnage copper and gold mineralization. The primary target areas that were identified by exploration work on the Property include the Kayalı, Hilltop, Yumrudağ, Valley, Columbaz Tesbihçukuru, Kestanecik, Gümüşlük and Kartaldağ West.

Hilltop, Valley, lower Yumrudağ and Columbaz are Au-Cu porphyry deposits, while the Kayalı and upper Yumrudağ deposits represent HSE mineralization. The deposits are variably oxidized and contain oxide gold on surface and at shallow depth. Supergene chalcocite is recognized in the middle portion of the Hilltop Porphyry, the middle portion of the Yumrudağ deposit, the lower portion of the Kayalı deposit and other areas where oxidized HSE mineralization is present and oxidized. Geological mapping, exploration, diamond drilling and sampling allowed for the definition of Indicated and Inferred Resources at Kayalı, Hilltop, Yumrudağ and Valley, while the drill density is sufficient to estimate only Inferred resources at Columbaz.

Kayalı mineralization is open for expansion to the northwest and southeast. The Hilltop and Yumrudağ mineralized zones are open to expansion in several directions. Columbaz is open in all directions as indicated by the presence of an IP chargeability anomaly undrilled over an area of approximately 2 km^2. Supergene copper as a potentially economic mineralization type has not been fully explored at TV Tower, with a density of drilling sufficient to estimate a resource only realized at Kayalı.

Tesbihçukuru gold-copper porphyry target, Kestanecik gold and silver bearing LSE quartz veins, Kartaldağ West HSE gold target and Gümüşlük gold-silver-copper listwaenite lode gold target are the primary undrilled targets.

Preliminary metallurgical testing by Liberty Gold suggests that Kayalı and Yumrudağ are amendable to heap leaching, with 76 – 91% extraction achieved in four column tests using 0.5” crush size. The primary copper mineral is chalcocite, which is amenable to recovery by leaching or flotation. Preliminary flotation testing suggests that the Valley and Hilltop, and by inference the Kayalı supergene and Columbaz porphyry deposits would be amenable to production of a concentrate.

As summarized above, results of exploration to date at the TV Tower property have been overwhelmingly positive, and an aggressive program of resource drilling and metallurgical testing, as well as continued development and drill testing of other targets, is recommended. This should be carried out in tandem with comprehensive CSR and permitting work.

Continued infill and step-out drilling is recommended at the Hilltop, Valley, Karaayı, Kayalı and Yumrudağ Porphyry and HSE deposit, which warrant additional exploration work for conversion of the Inferred Mineral Resources to Indicated category and discovery of additional resources. Additional drilling is warranted at Küçükdağ to potentially enlarge the silver zone. Step-out and exploratory drilling should be carried out at the Columbaz Au-Cu Porphyry target. Initial drill tests for the Gümüşlük listwaenite lode-gold and the Karadag West HSE targets are also recommended. A staged exploration program is recommended for each of the additional known target areas (i.e., Tesbihçukuru South, Kestanecik, Kiraz, etc.). In addition to exploration work, drilling and metallurgical testing should be continued on representative samples from Valley, Hilltop, Columbaz and other targets, with an emphasis on proving the amenability to producing a flotation concentrate.

A recommended work program and budget for TV Tower is presented in Tables 1.2 and 1.3.

Table 1.2: Recommended Exploration Budget for TV Tower

Activity	US$	%
Labor	720,000.00	3.6
Environment	200,000.00	1
Metallurgy	120,000.00	0.6
Drilling	14,800,000.00	74
Survey	98,000.00	0.5
Field Support	720,000.00	3.6
Property	700,000.00	3.5
Geochemistry	2,400,000.00	12
Administrative	242,000.00	1.2
Total	**20,000,000.00**	**100**

Table 1.3: Recommended allocation of drilling (drilling cost all-in, including G & A, etc.)

Target Name	Stage of Work	Deposit Type	Work Completed	Work Plan	Budget ($USD)
Columbaz	Resource Definition and Resource Expansion	Au-Cu Porphyry	12 holes / 5,698.55 m drilling	25,000 m drilling	**$6.0M**
Hilltop Porphyry	Resource Definition and Resource Expansion	Au-Cu Porphyry	28 holes / 8,362 m drilling	10,000 m drilling	**$2.4M**
Valley Porphyry	Resource Definition and Resource Expansion	Au-Cu Porphyry	27 holes / 5,861.7 m drilling	10,000 m drilling	**$2.4M**
Tesbihçukuru	Target Testing/Target Development	Au-Cu Porphyry	Surface geochemical sampling, mapping, IP-Amag Survey	4,000 m drilling	**$960K**
Nacak	Target Testing	Au-Cu Porphyry + HSE	10 holes / 2,516.7 m drilling	400 m drilling	**$100K**
Gümüşlük	Target Testing/Target Development, Resource Definition	Listwaenite Lode Au	surface geochemical sampling, mapping, IP-Amag Survey	10,000 m drilling	**$2.4M**
Kayali	Resource Definition and Resource Expansion	HSE Au Oxide, Supergene Cu	45 holes / 10,359.8 m drilling	4,000 m drilling	**$960K**
Yumru	Resource Definition and Resource Expansion	HSE Au Oxide, Supergene Cu, Au-Cu Porphyry	23 holes / 5,858.7 m drilling	7,500 m drilling	**$1.8M**
Küçükdağ	Resource Definition and Resource Expansion	HSE Au+Ag+Cu	Resource Defined (43-101); 179 holes / 40,383 meters drilled (inc. abandoned)	7,000 m drilling	**$1,68M**
Kartaldağ West	Target Testing	Intermediate Epithermal Au+Ag	surface geochemical sampling, IP-Amag Survey	2,500 m drilling	**$600K**
Kestanecik	Target Testing/Target Development	LSE Au+Cu	surface geochemical sampling, IP-Amag Survey	2,500 m drilling	**$600K**
Kiraz	Target Development	HSE? Au	surface geochemical sampling, IP-Amag Survey	-	**$100K**
Pink Flower	Target Development	LSE? Au	surface geochemical sampling, IP-Amag Survey	-	**$100K**
Total				**82,900 m drilling**	**$20.0M**

2. INTRODUCTION AND TERMS OF REFERENCE

DAMA Mühendislik A.Ş. ("DAMA"), of Ankara, Turkey, has prepared this independent technical report for Liberty Gold Corp. ("Liberty Gold")("LGD" on the Toronto Stock Exchange) on the TV Tower Property ("TV Tower" or "the Property")to provide an update to the technical report entitled "Independent Technical Report for the TV Tower Exploration Property, Çanakkale, Western Turkey" (Hetman et al, 2014). The updated technical report includes results of drilling and geological programs through 2015 at TV Tower, including work on the Karaayı license in the southern portion of the property, as well as a description of metallurgical work at the Valley porphyry target. It also presents first-time resource estimates for five deposits: Columbaz, Kayalı, Yumrudağ, Hilltop and Valley. This report was written in compliance with disclosure and reporting requirements set forth in the Canadian Securities Administrators' National Instrument 43-101, "Standards of Disclosure for Mineral Projects", Companion Policy 43-101CP and form 43-101F1 (collectively, "NI 43-101"). The property was previously described in a technical report released in August 2012 (Gribble, 2012). For the sake of brevity, previously reported data and descriptions have been shortened in length, and the reader is refered to the previous technical reports for additional information.

In 2016, Liberty Gold Corp changed its name to Liberty Gold Corp., while subsidiary companies retained the name "Pilot Gold". In the text of this this report, all subsidiaries of Liberty Gold are refered to as "Liberty Gold".

TV Tower is a 62.9%-37.1% joint venture between Liberty Gold and Teck Madencilik Sanayi Ticaret Anonim Şirketi ("TMST"), a subsidiary of Teck Resources Limited ("Teck"). The eight licenses that comprise the TV Tower Property are held by Orta Truva Madencilik Sanayi ve Ticaret Limited Anonim Şirketi ("Orta Truva"), a Turkish Joint Stock Company.

On June 21, 2012, Liberty Gold, then holding a 40% interest in TV Tower, announced having entered into a share-purchase and joint venture agreement with TMST, pursuant to which, Liberty Gold would have the right to acquire a further 20% of Orta Truva, and thus indirectly, a further 20% ownership in TV Tower, by funding exploration over a three year period ("the earn-in period"). After this point, Liberty Gold became, and continues to be, the operator of the property.

On September 13, 2013, Orta Truva acquired beneficial interest in Karaayı license from Batı Anadolu.

TV Tower is characterized by the presence of widespread high- and low-sulphidation epithermal gold +/- silver +/- copper mineralization as well as porphyry gold-copper mineralization Three defined targets were tested by a total of 91 diamond drill holes by TMST. In 2012, 2013, 2014 and 2015 Liberty Gold tested six targets with a total of 241 core and reverse circulation ("RC") holes.

The previous Technical Report (Hetman et al, 2014) documented the first-time disclosure of a mineral resource estimate for the Küçükdağ target in the northeastern part of the property by Liberty Gold as well as the addition of the contiguous Karaayı license adjoining the southern boundary of the original TV Tower Property.

This report is based partially on the previous independent technical report authored by SRK Canada (Hetman et al, 2014) together with data, professional opinions and unpublished material generated by Liberty Gold, or its consultants. DAMA was contracted to carry out first-time resource estimates on five deposits and to prepare the updated Technical Report.

2.1 Scope of Work

The purpose of this Technical Report is to update the previous Technical Report (Hetman et al,

2014) with descriptions of work carried out by Liberty Gold in 2015, and to release resource estimates on four deposits in the southern portion of the Property, namely Kayalı, Yumrudağ, Valley and Hilltop, as well as the Columbaz deposit in the northeastern part of the property. The report provides a full accounting of all work carried out by Liberty Gold since assuming operatorship of the property in 2012. The scope of this report includes updates on the general setting, geology, exploration activities, metallurgical work and drilling activity since the previous Technical Report was published, as well as the new resource estimates.

2.2 Qualified Persons

Mehmet Ali Akbaba of DAMA Mühendislik A.Ş. is a Certified Professional Geologist (CPG-11853) with the American Institute of Professional Geologists is responsible for sections 1-5, 12, 14.1-14.3 and 15-22 of this report.

Mustafa Atalay, MSc of DAMA Mühendislik A.Ş. is a Certified Professional Geologist (CPG-11874) with the American Institute of Professional Geologists and is responsible for the sections 6-9, 12 and 18-20 of this report.

Fatih Uysal of DAMA Mühendislik A.Ş. is a Certified Professional Geologist (CPG-11997) with the American Institute of Professional Geologists, and is responsible for the Sections 10-12 and 18-20 of this report.

James N. Gray, P. Geo. of Advantage Geoservices prepared the resource estimate for the KCD deposit in Section 14.4 (Resources) and the KCD resource portion of Section 1 of this report.

Gary Simmons, B.Sc. Met. Eng., of Simmons Consulting is responsible for Section 13 (Metallurgy) and Section 1.8 of this report.

Mr. Akbaba, Mr. Atalay, Mr. Uysal, Mr. Gray and Mr. Simmons are Qualified Persons for the purposes of NI 43-101 and have no affiliation with Liberty Gold except that of independent consultant / client relationship.

2.3 Site Visit

In accordance with NI 43-101 guidelines, Mehmet Ali Akbaba and Mustafa Atalay, visited the South TV Tower area on August 20-21th, 2020. Fatih Uysal and Mehmet Ali Akbaba visited the Columbaz area on January 13, 2021. The scope of their visits included inspection of pertinent outcrops, mineralization, drill sites, and project setting. They also visited the Project's core preparation and storage facilities located in Isiklar Village, Çanakkale. They inspected drill hole assay logs and certificates, quality control information, geologic maps and sections, and took samples from pulps of the drill samples for which they maintained secure custody and performed independent analysis for gold at a certified laboratory. Although they cannot validate and verify all of the information that composes the TV Tower database, Mr. Akbaba, Mr. Atalay and Mr. Uysal found no issues based on their site visit and other inspections which would preclude estimation of mineral resources.

In accordance with NI 43-101 guidelines, and pursuant to issueing the KCD resource and previous Technical Report (Hetman et al, 2014), Mr. Gray visited the TV Tower Project site between August 14 and 19, 2013, and was accompanied by Moira Smith and Liberty Gold's on-site technical team. The purpose of the site visit was to review the exploration database and validation procedures, review exploration procedures, define geological modelling procedures, examine drill core, and interview project personnel and to collect all relevant information for the preparation of a mineral resource estimate. As part of this visit a series of samples were collected from the drill core to confirm mineralization. No additional work has been done at KCD that would affect the results of the 2014 resource estimate.

Mr. Simmons visited the TV Tower Property and core storage facility between April 23 and May 1, 2013 with the primary purpose to select composites for metallurgical testing.

Public and private sources of information and data contained in this report, other than the author's direct observations, can be found in the References section.

2.4 Declaration

DAMA's opinions contained herein and effective February 9, 2021, is based primarily on information collected by Liberty Gold throughout the course of Liberty Gold's exploration, which in turn reflects various technical and economic conditions at the time of writing. 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 includes 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, DAMA does not consider them to be material.

2.5 List of Abbreviations

The gold values for work performed by Liberty Gold are reported as grams per metric tonne (g/t) unless otherwise indicated. Details about the units used in report are given in Table 2.1. Frequently used abbreviations and acronyms are given in Table 2.2.

All map co-ordinates are given as European Datum 1950 (ED50), UTM zone 35N, UTM Central Meridian 27 co-ordinates in meters or Latitude / Longitude.

Table 2.1: Units used in this report

Measure Type	Unit	Unit Abbreviation	(Si conversion)
Area	acre	acre	4,046.86 m2
Area	hectare	ha	10,000 m2
Area	square kilometer	km^2	(100 ha)
Area	square mile	mi^2	259.00 ha
Concentration	grams per metric ton	g/t	1 part per million
Concentration	troy ounces per short ton	oz/ton	34.28552 g/t
Length	foot	ft	0.3048 m
Length	meter	m	Si base unit
Length	kilometer	km	Si base unit
Length	centimeter	cm	Si base unit
Length	mile	mi	1,609.34 km
Length	yard	yd	0.9144 m
Mass	gram	g	Si base unit
Mass	kilogram	kg	Si base unit
Mass	troy ounce	oz	31.10348 g
Mass	metric ton	T, tonne	1000 kg
Time	million years	Ma	million years
Volume	cubic yard	cu yd	0.7626 m3

Measure Type	Unit	Unit Abbreviation	(Si conversion)
Temperature	degrees Celsius	°C	Degrees Celsius
Temperature	degrees Fahrenheit	°F	°F=°C x 9/5 +32

Table 2.2: Frequently used abbreviations and acronyms

AA	Atomic absorption spectrometry
Ag	Silver
As	Arsenic
Au	Gold
Ba	Barium
Bi	Bismuth
cm	centimeter
COG	Cut-off grade
CV(av)	Average coefficient of variation
CV	Coefficient of variation
Cu	Copper
DDH	Diamond Drill Hole
E	East
g x m	Gram-Meter
g/t	Grams per tonne; 31.1035 grams = 1 troy ounce
ICP	Inductively coupled plasma
IDW	Inverse distance weight estimate
IP	Induced Polarization
K	Thousand
K-Ar	Potassium-Argon
kg	Kilogram = 2.205 pounds
km	Kilometer = 0.6214 mile
LoM	Life of Mine
m	Meter = 3.2808 feet
Ma	Million years old
Mining Bureau	Turkish Bureau of Land Management
Mo	Molybdenum
μm	Micron = one millionth of a meter
MTA	General Directorate Mineral Research & Exploration
N	North
NN	Nearest neighbor attribute
NSR	Net Smelter Royalty
oz	Troy ounce (12 oz to 1 pound)
OK	Ordinary kriging estimate
Oz/t	Troy ounces per tonne
Pb	Lead
PIMA	Portable Infrared Mineral Analyzer
ppm	Parts per million
ppb	Parts per billion
QA/QC	Quality Assurance/Quality Control
RAB	Rotary Air Blast drilling method
Rb-Sr	Rubidium-Strontium
RC	Reverse-circulation drilling method
S	South
Sb	Antimony
SEM	Scanning electron microscope

SG	Specific Gravity
t	metric tonne
UTM	Universal Transverse Mercator
W	West

3. RELIANCE ON OTHER EXPERTS

Most of the content in sections 2-12 of this report was generated directly by Liberty Gold and the consultants named below, including:

- Sections 2 – 10, 16 and 20 of this report were prepared by Moira Smith, Ph.D., P.Geo., Vice President of Exploration and Geoscience for Liberty Gold. Dr. Smith is a Qualified Person under the meaning of NI 43-101, but is not independent of Liberty Gold. Dr. Smith was assisted by the project team, consisting of Ender Özaydın (Turkey Country Manager), Hakan Boran (Project Manager), Will Lepore, P. Geo. (South TV Tower Project Manager), Tolga Incekaraoğlu (Database Manager) and geologists Alper Büyüksolak, Ali Sevimli, April Barrios, Ken Raabe, Gökhan Subasi and Gökhan Arslan.

Contributions from the following independent consultants were also integrated into the report:

- Peter Grieve, Consultant, New Zealand: Mapping, interpretation of hydrothermal systems
- Katerina Ross, Panterra Associates, White Rock, BC, Canada: Petrographic work
- Dave Heberlein, Heberlein Geoconsulting, North Vancouver, BC, Canada: Analysis and leveling of geochemical data
- Jim Wright, Wright Geophysics, Spring Creek, NV, USA: Interpretation of geophysical data
- Craig Bow, Colorado, USA: Geological Mapping
- Anna Fonseca, Toronto, Canada: SWIR analysis

4. PROPERTY DESCRIPTION AND LOCATION

4.1 Land Area

The TV Tower Property is located in Çanakkale Province on the Biga Peninsula of Northwestern Turkey. It is situated 27 km southeast of the city of Çanakkale and 2.6 km north of the village of Kuşçayır at 465870E 4423580N UTM Central meridian 27 (ED50 datum).

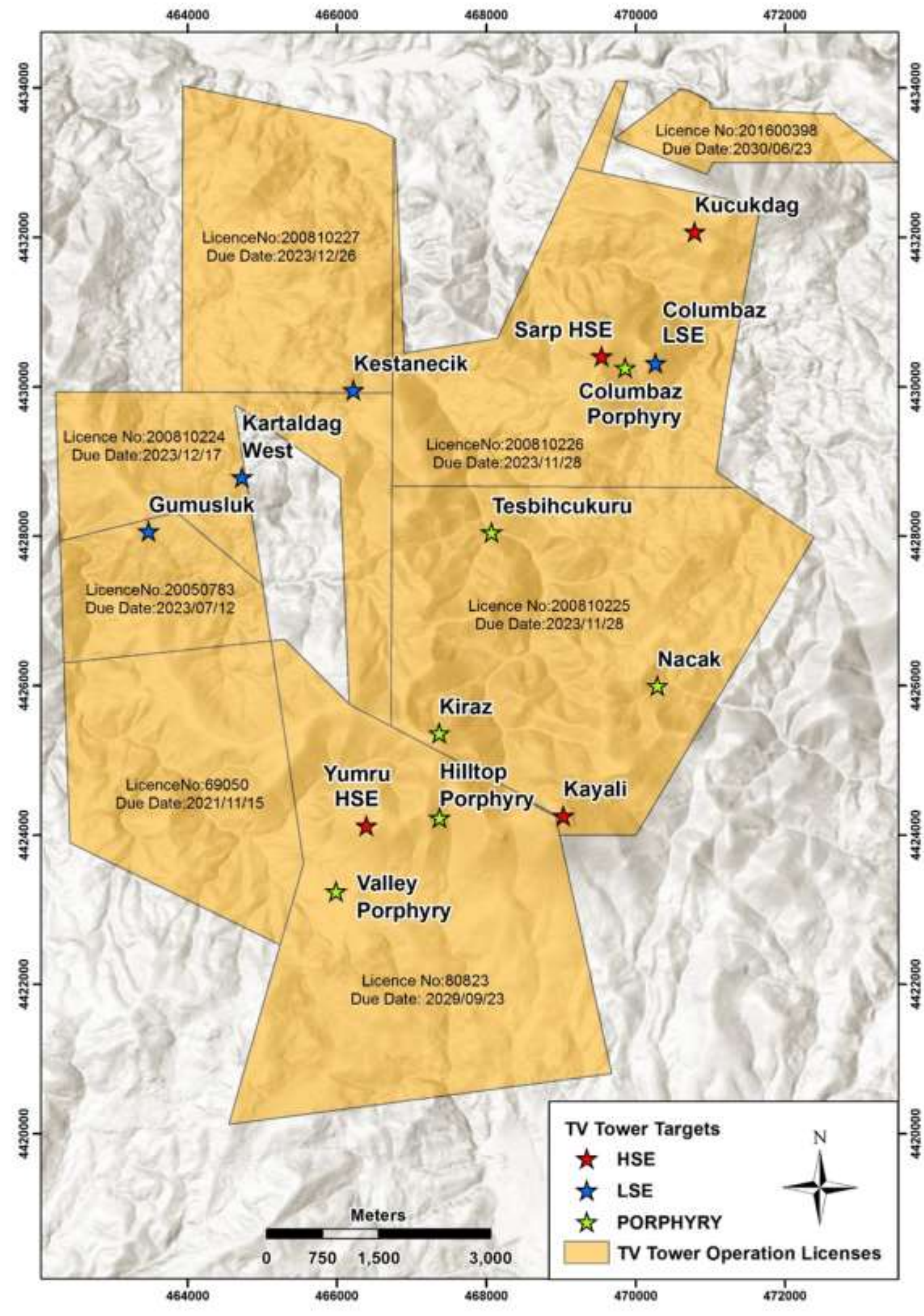
Prior to the acquisition of the Karaayı license, the TV Tower Property consisted of 7,108.96 ha of mineral tenure in eight contiguous licenses (Table 4.1 and Figure 4.1). As a result of the transaction to acquire Karaayı and reduction in the number of licences, the property now encompasses 8960 ha in eight licenses all of which are classified as Exploitation/Operation type (Table 4.1 and Figure 4.1).

According to Turkish mining law, the property boundaries are defined by the coordinate descriptions on the original license application and awarded to the applicant by the government. The licenses that define TV Tower are expressed according to the UTM northern Zone 35 coordinate system and European Datum 1950.

Table 4.1: TV Tower project licenses (Liberty Gold, 2020)

LICENCE No	ACQ DATE	RENEWAL DATE	AREA (ha)	TARGETS
69050	15.11.2011	15.11.2021	972,36	
80823	23.09.2009	23.09.2029	1.956,18	Yumru HSE, Valley Porphyry, Hilltop Porphyry
20050783	12.07.2013	12.07.2023	422,43	Gümüşlük
200810224	17.12.2013	17.12.2023	847,24	Kartaldağ West, Kestanecik
200810225	28.11.2013	28.11.2023	1.935,85	Kayalı, Nacak, Kiraz, Tesbihçukuru
200810226	28.11.2013	28.11.2023	1.490,24	Küçükdağ, Columbaz Porphyry, Columbaz LSE, Sarp HSE
200810227	26.12.2013	26.12.2023	1.076,14	Kestanecik
201600398	23.06.2020	23.06.2030	259,11	

Figure 4.1: TV Tower tenure map (Liberty Gold, 2020)



4.2 Agreements and Encumbrances

Liberty Gold's interest in the property, which began with the assignment of Fronteer Gold Corporation's interest in Orta Truva to Liberty Gold, is detailed below.

Fronteer's interest in TV Tower was initiated in October, 2004 when Fronteer signed a Letter of Agreement with TMST to acquire a 100% interest in all of TMST's properties in the Biga region.

To earn a 100% interest, Fronteer was required to spend $2,000,000 over four years to November 1, 2008 and issue C$105,000 worth of shares in Fronteer, an amount equal to 111,930 shares. TMST retained the right to earn back a 60% interest in any project that the two parties designated as a "Designated Property" by spending 3.5 times Fronteer's expenditures on any particular Designated Property. TV Tower and three other properties became designated properties under the Agreement.

Based on the results of the first two holes from another, nearby Designated Property ("Halilağa"), TMST exercised its back-in right on four of the designated properties, including TV Tower, on November 30, 2006, prior to Fronteer completing its $2,000,000 earn-in. Fronteer was thus deemed to hold a 100% interest in each and gave TMST the ability to regain a 60% interest in each by spending an amount equal to between 2.0 and 3.5 times Fronteer's aggregate expenditures, depending on the property. The deemed expenditure for TV Tower was approximately $33,704. Therefore, TMST spent $117,964 at TV Tower to earn a 60% interest under the back-in right for the project. TMST accomplished this in 2007 and the Property became a 60%/40% joint venture between TMST and Fronteer. TMST also waived any rights to take their interest to 70%. Further to the earn-back, and the incorporation of a Turkish Joint Stock Company, seven of the licenses relating to TV Tower are held by Orta Truva, with one license held by TMST for the benefit of Orta Truva while conversion to the operation stage is completed. Fronteer continued to hold 40% of the share capital of Orta Truva, with the remaining 60% held by TMST.

From this point, and through until the sale on April 6, 2011 of Fronteer to Newmont Mining Corporation ("Newmont"), TV Tower was a 60%/40% joint venture between TMST and Fronteer, with TMST as the operator.

Pursuant to the sale of Fronteer to Newmont, Fronteer's 40% interest in Orta Truva was transferred in its entirety to Liberty Gold, giving Liberty Gold a 40% ownership in TV Tower.

4.3 Liberty Gold-TMST Joint Venture and Share Purchase Agreement

On June 20, 2012, Liberty Gold entered into a share-purchase and joint venture agreement with TMST, pursuant to which, Liberty Gold would have the right to acquire a further 20% of Orta Truva, and thus indirectly, a further 20% in TV Tower (the "TV Tower Joint Venture and Share Purchase Agreement"). Through the period over which Liberty Gold had the right to earn-in to the additional 20%, Liberty Gold was the operator of TV Tower.

The earn-in obligations included:

- Incurring $21,000,000 in exploration expenditures over three years (the "TV Tower

Expenditure Requirement") as follows:

    - $5,000,000 in the twelve months from the effective date of the TV Tower Joint Venture and Share Purchase Agreement (the "Option Effective Date");
    - $7,000,000 in the second year from the Option Effective Date; and
    - $9,000,000 in the third year from the Option Effective Date.

Liberty Gold had the option to accelerate annual expenditures at its sole discretion, and thus an opportunity to complete the earn-in before the third year, by:

- Issuing 3,275,000 Common Shares and 3,000,000 Common Share purchase warrants ("Liberty Warrants") to TMST. Each Liberty Warrant was exercisable for a period of three years from the date of issue for one common share of Liberty Gold at an exercise price of C$3.00 per share.
- Issuing 1,637,500 shares to TMST on the first and second anniversaries of the Option Effective Date of the TV Tower Joint Venture and Share Purchase Agreement.
- Making a one-time cash payment to TMST equal to $20 per ounce of gold applicable to 20% of the ounces of gold delineated at TV Tower in excess of 750,000 gold ounces defined as compliant Measured, Indicated or Inferred resources in a NI 43-101 Technical Report prepared generally concurrent with the completion of the TV Tower Expenditure Requirement.

Liberty Gold completed all Common Share issuances and satisfied the TV Tower Expenditure Requirement, for a 60% interest in TV Tower. As of the effective date of this Technical Report, Liberty Gold holds a 62.9% interest in TV Tower due to dilution of TMST after sole-funding exploration expenditures in 2020.

4.4 Liberty Gold-Chesser Resources Limited Karaayı Property Acquisition

On September 13, 2013, Orta Truva acquired beneficial interest in mining operation license #80823 (formerly identified as license numbers 58368 and 70501), known as the Kuşçayırı and/or Karaayı project ("Karaayı"), from Batı Anadolu, formerly a Turkish subsidiary of Chesser Resources Limited ("Chesser"). Batı Anadolu was subsequently acquired by Tümad Madencilik A.Ş (Tümad), a subsidiary of Nurol Holding A.Ş. ("Nurol"). Tümad has covenanted to Chesser to be bound to the trust arrangement established in Batı Anadolu. Located within the administrative boundaries of Kuşçayır Village, Bayramiç District, Çanakkale Province, the Karaayı license is within the defined Area of Interest of TV Tower. Karaayı comprises a total area of 1956.18 hectares, and includes an operation permit for a total area of 117.25 hectares.

Immediately prior to executing the agreement to dispose of Karaayı, Batı Anadolu satisfied a number of earn-in obligations to acquire Karaayı from Tüprag. Tüprag's only remaining interest in Karaayı is a 2.5% Net Smelter Return royalty ("NSR").

In conformity with the TV Tower Joint Venture and Share Purchase Agreement, and in order to have consideration paid to acquire Karaayı qualify as part of the TV Tower Expenditure Requirement, Liberty Gold contributed $300,000 and 1.25 million Common Shares to Orta Truva to acquire Karaayı:

Exploration expenditures at Karaayı incurred by Liberty Gold during the earn-in period qualified as part of the TV Tower Expenditure Requirement. Formal conveyance and registration of title was completed in June 2015. Orta Truva has all the rights for the Karaayı license as of the date of this technical report.

4.5 Mining Rights and Title in Turkey

Mining rights and minerals are exclusively owned by the state. The ownership of the minerals in Turkey is not subject to the ownership of the relevant land. The State, under the mining legislation, delegates its rights to explore and operate to individuals or legal entities by issuing licenses for a determined period of time in return for a payment of royalty. Mining rights with respect to certain types of mines, however, belong to state or state enterprises.

The licenses for mining rights are granted to the Turkish citizens, legal entities established under Turkish laws. Companies established under Turkish law according to the provisions of the Turkish Commercial Code are Turkish companies even if they are established by foreign persons with a

100% foreign capital, and they can acquire mining licenses. Consequently, there is not any distinction between the mining rights that may be acquired by local investors and those that may be acquired by foreign investors provided that the foreign investors establish a company in Turkey under Turkish law (Özkan, 2007).

Under the New Turkish Mining Law released in 2015, Mining Licenses have been divided into four groups which are subject to different terms and conditions on licensing principals and procedures.

According to Article 6 of the Mining Law, mining rights can be defined as the licenses and permits for prospecting and operating mines and can only be granted to the following real or legal persons; (i) Turkish citizens; (ii) legal entities incorporated under the laws of the Republic of Turkey, including legal entities having foreign shareholders, provided that the articles of association of such legal entities shall contain a mining operation clause; and (iii) authorized public entities and administrative bodies.

The two types of licenses granted for prospecting and operating the mines stated under the laws of the Republic of Turkey are as follows; (i) exploration licenses, enabling a holder to carry out prospecting activities in a specific area; (ii) exploitation/operation licenses, enabling a holder to carry out operational activities (including exploration) within the same area as stated in the prospecting license. For production (extractive activity) to occur, an operations permit must also be obtained. An operations permit enables a holder to operate a specific mine as specified in the Exploitation/Operation license, and as contemplated by an approved EIA report.

Prospecting activities can be defined as all mining activities other than those carried out for production. As an exception, the prospecting licensee shall have a right to carry out production and sale activities in respect of maximum 10% of the proved mine reserves within the prospecting license period in the event the prospecting licensee applies to the Bureau of Mining Affairs (Maden İsleri Genel Müdürlüğü) with the prospecting activity report.

Terms and Procedure for Prospecting License: The application for an exploitation / operation license shall be made to the General Directorate of Mining Affairs for the mining groups other than group I (a). For the group I (a) mines, the application shall be made to the relevant Provincial Special Administration (Il Özel Idaresi). Prospecting licensees are obliged to submit a prospecting activity report to the General Directorate of Mining Affairs within two years upon the obtainment of such license, as provided in Annex 5 of the Regulation on the Implementation of Mining Law. In case of non-compliance with such provision, the prospecting license guarantee provided by the prospecting licensee shall be recorded as revenue. The term of the prospecting license is three years and may be extended for a period of two years upon the demand and submission of the second prospecting activity report by the prospecting licensee.

4.6 State Royalties

According to the Turkish Mining Law, the Turkish Government will charge a Gross Royalty Rate for the mineral rights at production. The royalty rate is calculated based on the Commodity Price in the previous year.

4.7 Environmental Permits and Licenses

The author is not aware that the property contains any environmental liabilities other than those attached to drill site permits and limited excavation operations that have been, or may be issued in the future. There has been no active mining or extensive bulk sampling for economic purposes conducted at TV Tower. However, there are limited excavation workings to fulfill the obligation of producing the declared amount of quartz or other material as one of the requisites to hold a license of which the details are designated in Mining Law and inspected by the Mining Bureau. Otherwise, no existing tailing ponds, waste deposits or other disturbances which could be classified as environmental liabilities exist on the current TV Tower licenses.

In 2015, AECOM, based in Ankara, Turkey, completed a three-year baseline environmental study covering the entire property. The Karaayı license was added to the baseline study program after it was acquired in August, 2013. The scope of work included collection of meteorological data, surface and ground water monitoring, analysis of soils and plants, and socioeconomic studies.

4.8 Permitting for Surface Disturbance

4.8.1 Forestry Land

With the exception of the southern part of the Karaayı License where private agricultural fields are found, virtually all land within the TV Tower property is designated as public forestry land, wherein a "Forestry" permit must be obtained in order to carry out surface disturbance involving the clearing of trees for road and drill pad building. The permitting process involves submission of Forestry Application Files to a District Forestry Office, where they are distributed to a number of government offices, including Tourism, Archaeology, Water Resources, etc. After review, the Forestry office advises the applicant whether an environmental impact assessment ("EIA") is necessary, or issues an EIA exclusion. If the latter, the application is forwarded to the Ministry of Forest and Water Resources in Ankara for approval by the Minister, and subsequently by the Presidential Office. The application is then returned to the District office, the applicant pays a fee based upon the amount of disturbance planned, and the District Office stamps trees for cutting. As at the effective date of this report, this process is taking several months or more to complete.

4.8.2 Private Land

A number of parcels of private land are present in the southern part of the Karaayı License. Most consist only of fallow pastureland. Liberty Gold identified a number of parcels that lie over or adjacent to porphyry targets, and signed leases with a number of land owners. The process of identification and procurement of private land involved identification of the parcel owner(s), negotiation with the owners, and submittal of a request to the government Cadastral Department to allow for mineral exploration.

By late 2014, Liberty Gold had secured leases on 22 private parcels in order to facilitate drilling activities in the southern part of the Karaayı License. As of the effective date of this report, all of these leases have lapsed.

Table 4.2: Status of pending Forestry Permit applications

Licence Number	Forestry Permit Area (m2)	Forestry Permit ApprovalNumber	Forestry Permit Date	Forestry Permit Due Date	Purpose	Remarks
69050	24,529.72	1,221	22/09/2017	11/15/2021	Production for Inds Min. / Operating	Permit in Progress
200810226	4,860.34	870	20/07/2017	11/28/2023	Drill, Road	Permit in Progress
200810225	20,131.87	1,222	22/09/2017	11/28/2023	Production for Inds Min. / Operating	Permit in Progress
200810226	23,736.27	1,366	17/11/2017	11/28/2023	Production for Inds Min. / Operating	Permit in Progress
200810225	21,208.81	1,413	29/12/2016	28/11/2023	Production for Inds Min. / Operating	Permit in Progress
200810225	45,062.10	1,429	29/12/2016	28/11/2023	Drill, Road	Permit in Progress
20050783	26,277.30				Drill, Road	Permit is Pending
200810226	16,802.05				Drill, Road	Application Pending
80823	8,837.23				Production for Inds Min. / Operating	Application Pending

5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

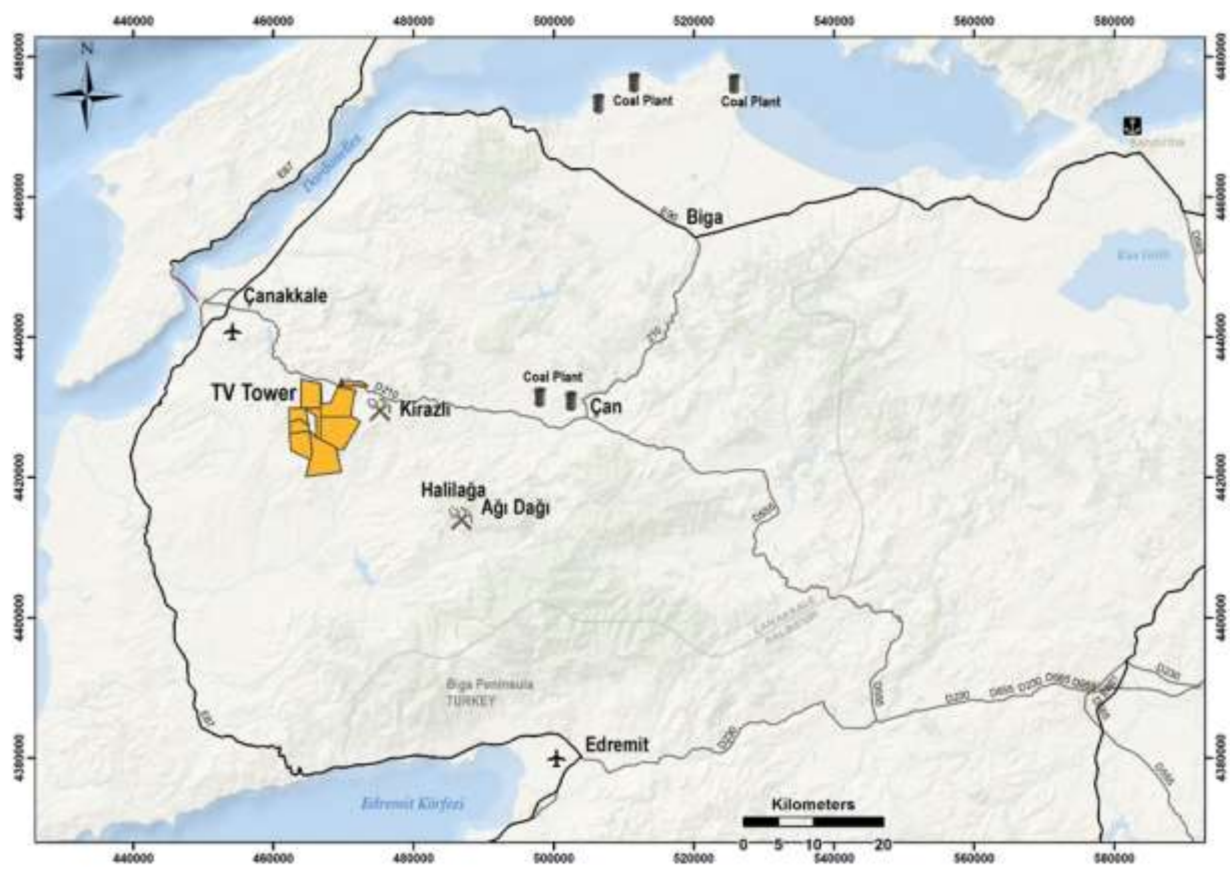
5.1 Accessibility

The TV Tower Exploration Property is located 27 km southeast of the city of Çanakkale and 37 km west of the city of Çan on the Biga Peninsula in northwestern Turkey (Figure 5.1). Çanakkale is a large, modern city with regularly scheduled commercial flights from Ankara. Both Çanakkale and Çan can also be easily accessed from Istanbul via ferry service to the deep water port of Bandirma, or by highway E87 from Istanbul and a short ferry crossing of the Dardanelles Straight to Canakkale.

Access to the north side of the property is via paved highway D210, and to the south side of the property along a secondary paved road extending southeast from Canakkale, or from a secondary paved highway extending southwest from Çan.

Access to the deposits described in this report is afforded by a series of local improved and unimproved gravel and dirt forestry roads.

Figure 5.1: Location of TV Tower in western Turkey



5.2 Local Resources and Infrastructure

The region is well-serviced with electricity, transmission lines and generating facilities, the most significant being a large coal-fired power plant near the city of Çan, 37 km to the east of TV Tower. Population and agricultural activity are concentrated in the valleys, while most exploration activities are located in highlands, which are predominantly forested.

The city of Çanakkale can provide a full range of services including fuel, accommodations and field supplies, and is also the site of local and federal government offices and a large University.

Local labour is employed from nearby villages. There is no exploration infrastructure located on the properties, with the exception of dirt roads originally used for logging. There are a number of streams and water springs located at the bases of many of the hills.

No assessment of the sufficiency of surface rights for mining operations, the availability and sources of power, water, mining personnel, potential tailings storage areas, potential waste disposal areas, heap leach pad areas and potential processing plant sites has been undertaken as part of this report.

5.3 Climate

The Biga Peninsula has fertile soils and a Mediterranean climate with mild, wet winters and hot, dry summers. Temperatures range from 15 to 35 ˚C in the summer and -10 to +10˚C in the winter months. The annual rainfall is approximately 30 cm, generally falling as mixed rain and snow in late fall and winter. Year-round access to the properties for field exploration is largely unrestricted due to weather; however, snow during winter may restrict vehicle movement for short periods.

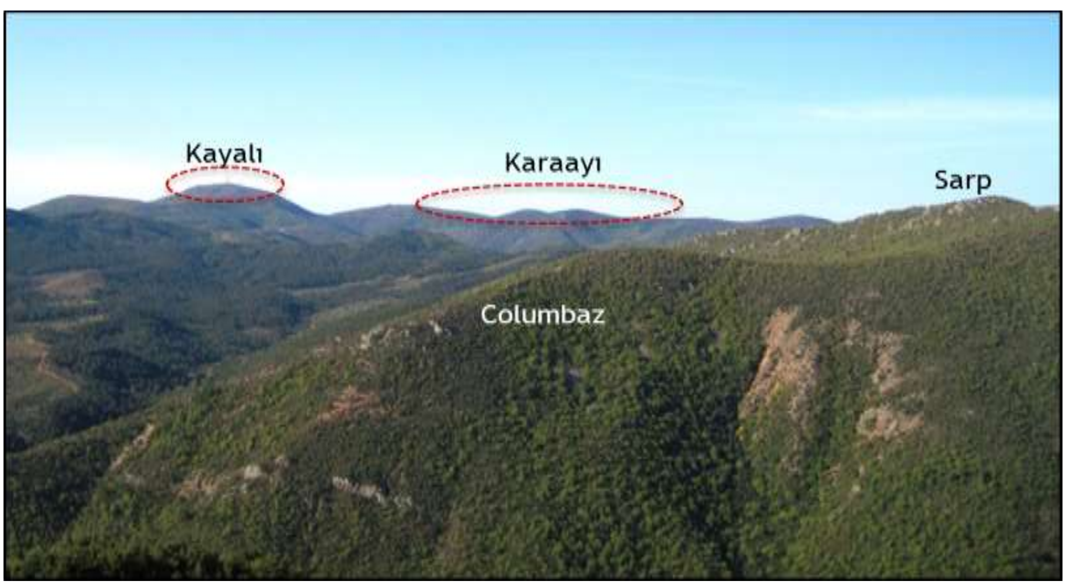
5.4 Physiography

The property is located in an area of steep-sided hills and ridges. Elevations range from approximately 200 m in the valley bottoms to a maximum of 877 m at the highest point on the property. A general view of the topography is shown in Figure 5.2. Exploration areas require significant road construction for drilling.

Much of the property has been logged in the past, such that vegetation includes immature pine trees and heavy brush, particularly on north-facing slopes. Deciduous trees are present in areas with year-round streams.

An exception to the above is the southern portion of the Karaayı tenure, a low elevation area with rolling hills and local areas of pasture land.

Figure 5.2: TV Tower licenses, looking south from Küçükdağ (Liberty Gold, 2014)



6. HISTORY

Prior to work by Fronteer and TMST, very little modern exploration had been carried out on the property and the prior ownership details are unknown, with the exception of the Karaayı license.

There are numerous small, ancient, Roman workings located throughout the property. These workings include prospect pits, small stopes, ore piles and slag piles, as is typical in and around mineralized areas of the Biga Peninsula.

A previous operator drilled a series of holes in the Sarp target area in the northeastern part of the property, but further details of this exploration work, the company that carried out the work and the results from the drilling, are not known.

The Government General Directorate of Mineral Research and Exploration of Turkey ("MTA") conducted a regional scale exploration program over the Biga Peninsula between 1988 and 1991. Results from this work were not available to the authors.

Historical sampling by TMST in the 1990's included 36 rock samples from silicified and argillic altered outcrops along with six silt samples. The highest-grade rock samples returned 1,900 ppb and 510 ppb Au at Sarp. The highest value returned from the silt samples was 241ppb Au from the southeastern portion of the property. These anomalous results highlighted the potential of the area.

Exploration work is summarized below, starting with TMST in the early 2000s. Exploration on the Karaayı tenure is described separately.

6.1 TMST-Fronteer Surface Exploration

Initial assessment and target evaluation on the two original TV Tower licenses was conducted by Fronteer in 2007 and 2008 prior to the acquisition of four additional licenses from government auction in September 2008. An additional two licenses were added in February 2012.

The 2007-2011 exploration work was conducted by TMST and Fronteer and the author has relied on data supplied by TMST. Given Fronteer and Liberty Gold's long standing interaction and association with TMST, and their best practices protocols, the author is satisfied that the data and information were collected in a proper manner and collated into appropriate databases.

Exploration work included reconnaissance and detailed geological mapping and prospecting, geochemical sampling (soil and PIMA), IP resistivity and chargeability surveys, a ground magnetic survey, and diamond drilling. The work completed between 2007 and 2011 is summarized in Table 6.1 and Figure 6.1.

Eight targets were defined by TMST using geochemistry and mapping (Küçükdağ, Kayalı, Sarp/Columbaz, Kestanecik, Nacak, Tesbihçukuru, Kestanecik and Kiraz). In 2010, a ground magnetic survey and IP survey were conducted over Küçükdağ, Kayalı and Sarp. Nineteen diamond drill holes totaling 4,183 m were drilled at these three targets. In 2011, the IP and ground magnetic surveys continued and 72 holes totaling 14,759 m were drilled on the Küçükdağ, Kayalı, Nacak and Sarp targets.

Table 6.1: Summary of TV Tower exploration work by TMST/Fronteer, 2007 – 2011

	2007	2008	2009	2010	2011	Total
Rock Samples	98	263	450	357	616	1784
Soil Samples	1156	418	1264	1264	358	4460
PIMA samples			1,300		2,780	4080
IP/Resistivity (Line Km)	-	-	25.2	39.2	13	77.4
Ground Magnetic Survey (Line Km)	-	-		168	67	235
Total Drill Holes	-	-		19	72	91
Drilling (meters)	-	-		4,183.6	14,758.8	18942.4

6.1.1 Mapping

Regional and detailed mapping was conducted over the property by four primary sources that included TMST geologists Ramazan Sari and Hakan Boran, Orta Truva geologists, April Barrios (Liberty Gold) and Anna Fonseca (geological consultant; 2010 and 2011).

6.1.2 Surface Geochemistry

Grid-based soil sampling was carried out in 2007 by Fronteer, and in 2008 - 2011 by TMST using Orta Truva staff. All assaying was carried out by Acme Analytical Laboratories Ltd. ("ACME Labs"). Soil samples were sieved to -150 mesh, and 30 gram samples were subject to aqua regia digest, followed by analysis by inductively-coupled plasma mass spectrometry ("ICP-MS") and Au by fire assay with atomic absorption spectrometry ("AA") finish. Rock samples were crushed and pulverized, followed by analysis of gold by fire assay with inductively-coupled plasma emission spectrometry ("ICP-ES") finish and 36 trace elements by ICP-MS.

Soil samples were generally collected on 250 meter-spaced, northwest-trending lines at 50 meter-spaced stations. The soil and rock sampling at TV Tower highlighted a number of anomalous zones.

The 2007 soil sampling program targeted the southwestern portion of the property, with a total of 1,156 samples. This program generated intermittent anomalous Au, Cu and Mo soil values which correlate to the magnetic bodies that are now mapped as hornblende-feldspar porphyry intrusive rocks.

In 2008, 418 soil and 263 rock samples were collected. The soils were collected on 400 meter lines at 100 meter-spaced stations. A gold in soil anomaly at the unconformity between basement metamorphic rocks and the overlying volcanic sequence indicted potential mineralization at Tesbihçukuru.

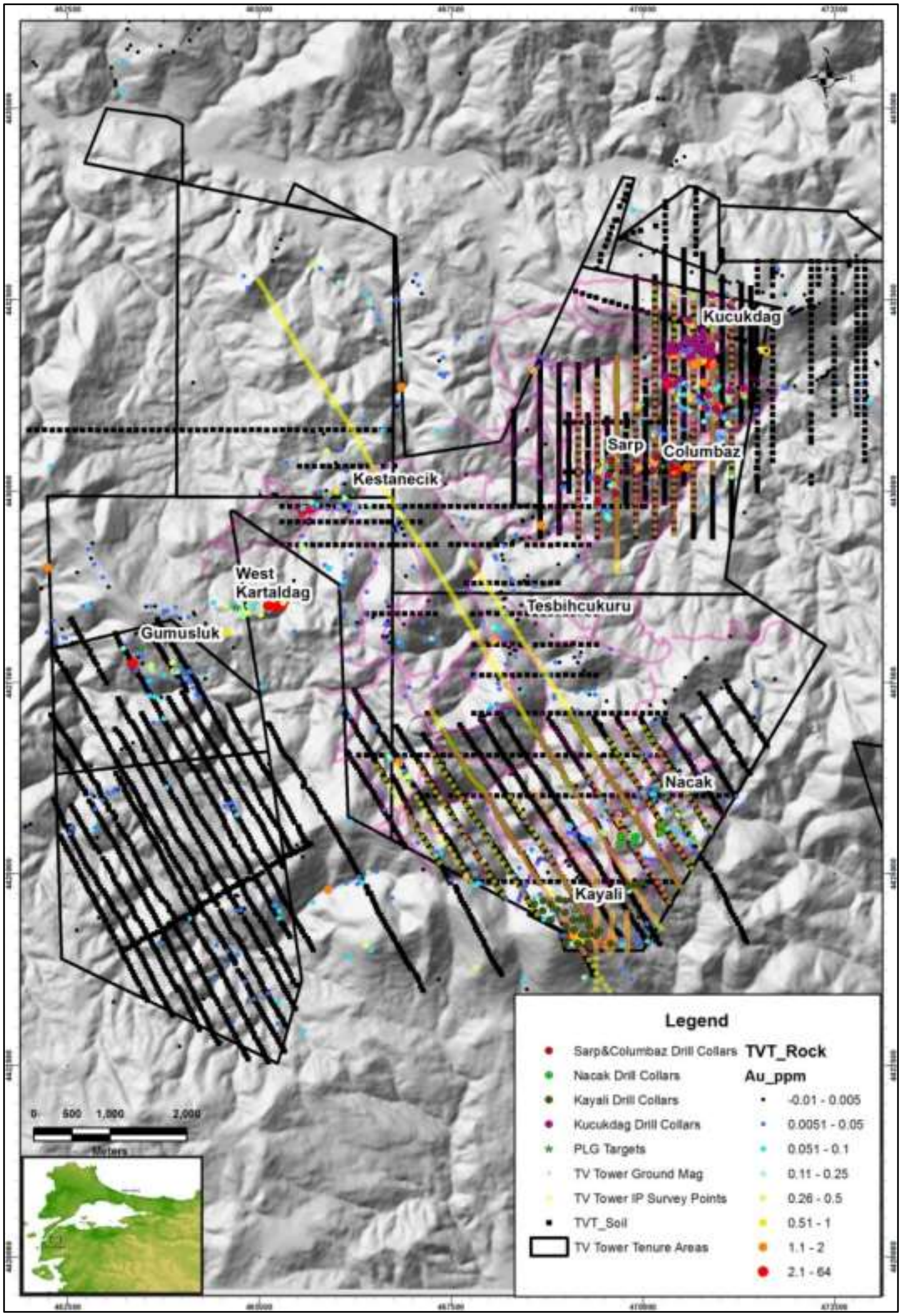
The 2009 sampling program was comprised of 1,264 soil and 450 rock samples. It outlined > 100 ppb Au zones around Küçükdağ (0.7 x 1.3 km), Sarp (0.7 x 1.2 km) and Kayalı (1.2 x 0.5 km). Channel sampling defined significant outcropping gold mineralization, including 74 m averaging

1.3 g/t Au at Kayalı and 1.9 m averaging 11 g/t Au at Nacak.

Infill soil sampling and follow-up rock sampling of the targets identified in 2009 was conducted in

2010, as well as sampling over of Nacak and to a lesser extent Kiraz. Nacak and Kiraz returned sporadic Cu and Mo assays, up to 621 ppm Cu and 90 to 21 ppm Mo in soils.

Figure 6.1: TMST and Fronteer Exploration Programs, 2007-2011



Infill soil (214) and rock (308) sampling continued during 2011 with soil sampling focused on Küçükdağ, specifically to close off the northern Au and Ag anomaly. Rock road cut sampling returned values of up to 20.0 ppm Ag. Samples from a newly discovered ancient Roman working returned 3.78 g/t Au and 24.0 g/t Ag to the north of the Main zone at Küçükdağ.

A surface alteration map was prepared by TMST using data obtained from a Portable Infrared Mineral Analyzer (PIMA) survey of rock and soil samples and by visual inspection. PIMA analysis works best on minerals that contain hydroxyls (OH groups) such as phyllosilicates (including clay, chlorite and serpentine minerals), hydroxylated silicates, and sulphates (alunite, jarosite and gypsum). Approximately 2,780 core and over 1,300 reconnaissance rock and soil samples were analyzed by TMST to create the map.

6.1.3 Geophysical Surveys

IP/Chargeability: Seventy-seven line-km of IP Chargeability/Resistivity surveying were conducted at TV Tower from 2009 to 2011.

Relatively little is known about the specifics of the 2009-2010 survey. It was conducted by Zeta

Project Geophysical Services ("Zeta").

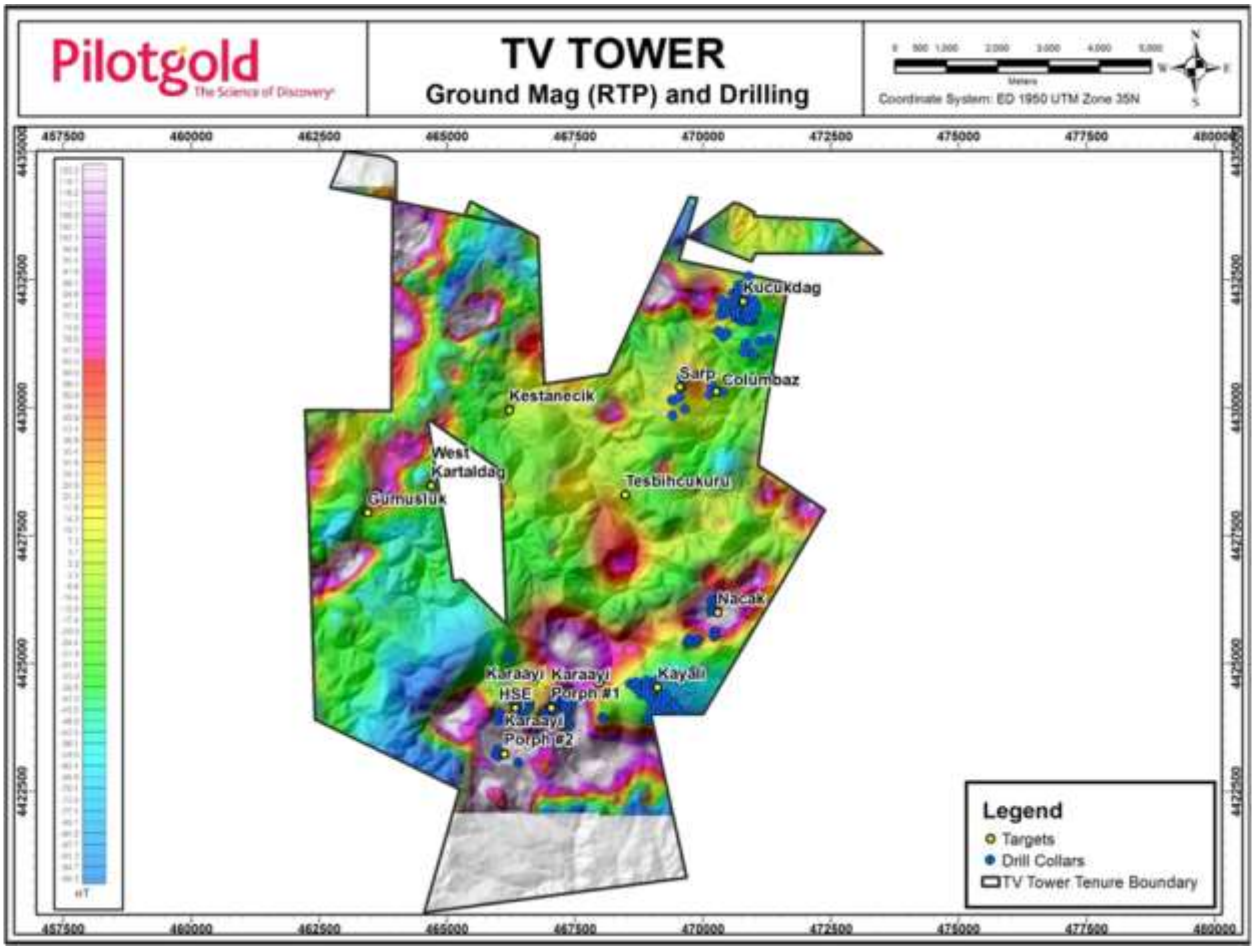
IP surveying over the Küçükdağ area in 2011 was carried out in two phases by CFT Engineering Geophysical Services. The survey used two different configurations in a conventional 2-D pole-dipole array. The conventional n=6, a=100 meter pole-dipole set up was used for L1000E as an extension of a line originally surveyed in 2010. Eleven other N-S lines spaced 100 m apart were surveyed with a potential electrode spacing of 25 m for levels n=1, 2, 3, 4 and 5, and a 50 m spacing for levels n=6, 7 and 8. The data were used to create complete chargeability and resistivity plan maps for the Küçükdağ area. Results were merged with Liberty Gold surveys, which are described and illustrated in Section 9.

Airborne Magnetics: An airborne magnetic survey was completed by New-Sense Geophysics in 2007. The survey utilized a Piper Navajo aircraft and a geophysical flight control system, designed and built by New-Sense Geophysics Limited. The aircraft was fitted with a cesium sensor magnetometer, with a sensitivity of better than 0.01 nT at a sampling interval of 0.1 seconds. The magnetometer has the capability to measure ambient magnetic fields in the range of about 100 to more than 1,000,000 nT The survey was relatively low resolution and has been superseded by a survey conducted by Liberty Gold in 2012 and described and illustrated in Section 9.

Ground Magnetics: 235 line km of ground magnetic surveying were conducted at TV Tower from 2010 to 2011. The survey was carried out by Teck staff using two Scintrex ENVI magnetometers as a base station and field unit and a handheld GPS for location information. The survey was primarily constrained to road networks on the license. The stations were always located 12.5 m apart. GPS readings were taken every 50 m (or 4th reading). The survey recorded 4631 usable measurements which equates to approximately 67 line-km. Several repeat measurements were taken at each station and data was rigorously edited for outliers and cultural effects. Maps of Residual Reduced to the Pole magnetic response were created from this data (Figure 6.4).

The ground magnetic surveys highlight several, likely shallow, "bulls-eye" magnetic highs, some of which have a general NE trend and seem to follow the regional structural fabric. Less prominent NW–SE- trending faults, such as the valley and break in the magnetic feature between Kiraz and Nacak, are also interpreted as faults. Each "bulls-eye" feature in conjunction with permissible surface geology and geochemistry constitutes a potential porphyry target.

Figure 6.2: Reduced to Pole ground magnetic map, data from TMST and Chesser surveys.



6.2 Drilling by TMST

The main objective of the 2010 and 2011 drilling programs was to test coincident IP and magnetic geophysical anomalies and anomalous gold values in rock and soil samples at the Küçükdağ, Kayalı, Nacak and Sarp/Columbaz targets. Between August 2010 and early January 2011, a total of nineteen diamond core holes were drilled (including two that were abandoned). These were previously discussed in a technical report prepared by Cunningham-Dunlop (2011). From March through December, 73 additional diamond core holes were drilled (including six that were abandoned). These holes are described in a technical report authored by Gribble (2012). In total, TMST drilled 90 diamond drill holes, totaling 19,630.2 m. Collar information and comprehensive drill results for all holes are reported in Hetman et al (2014) and summarized below.

Spektra Jeotek was contracted to complete the diamond core drilling. The drill rigs included Delta Makina D150 and D220 rigs with depth capacities of 1,000 m and 1,500 m respectively. The majority of the holes were completed with HQ (63.5 mm) tools; KCD-19 was drilled with PQ (85 mm). Drill collars with an “A” suffix reflect abandonment of the previous hole on the same site due to poor ground conditions. Down-hole surveys were carried out using a Flexit HTMS reflex survey tool, with an accuracy of ±0.35 degrees on the azimuth and ±0.25 degrees on the inclination. Down-hole surveys were generally conducted at shift change, nominally every 50 to 100 meters down-hole. The results were recorded on the Daily Drill Sheets and the recorder unit was given to the project geologist to download onto the database.

The collar locations were surveyed with a Trimble R3 GPS with an L1 receiver and antenna, with an accuracy of ±10 mm + 1ppm^2 RMS in the horizontal and 20 mm+1ppm^2 RMS in the vertical direction. The collars were marked with 1 m lengths of drill rod. TMST subsequently removed the collar markers, requiring Liberty Gold to relocate them. Collars were marked with a 1 m-long piece of casing; drill hole identifiers are welded directly on the pipe.

Core was picked up by geologists in the field and transported directly to TMST's core logging facility in the nearby town of Etili for logging and processing.

6.2.1 Küçükdağ Target

A total of 32 diamond drill holes totaling 6,527.7 m were drilled at Küçükdağ in 2011. Drill recoveries averaged 84% including holes that were lost due to poor ground conditions. Drill results on the Küçükdağ target were very encouraging, including KCD-02 and KCD-19, drilled into the sub- vertical breccia zone, which returned 4.26 g/t gold over 136.20 m (drilled width), including 12.76 g/t gold over15.90 m, and 3.80 g/t gold over 131.80 m (drilled width), including 9.54 g/t gold over 45.0 m respectively. KCD-16, drilled into the stratabound silver zone, returned 51.94 g/t silver over 74.5 m. True widths of the mineralized intervals are generally interpreted to be between 50 and 100% of the reported lengths; the irregular nature of mineralized zones precludes greater specificity with regard to true widths. Exceptions include KCD-2 and KCD-19, which were drilled approximately parallel to and within the breccia pipe.

6.2.2 Kayalı Target

A total of 26 diamond drill holes totaling 5,598.6 m were drilled at Kayalı in 2011. Drill recoveries averaged 89% including holes that were terminated due to poor ground conditions. Drilling by TMST supported gold grades returned from surface channel sampling, with KYD-01 returning 15.4 m (drilled width) at 2.85 g/t gold within an interval of 114.5 m averaging 0.87 g/t gold, and KYD-02 returning 22.5 m (drilled) at 1.98 g/t gold. True widths of the mineralized intervals are generally interpreted to be between 50 and 100% of the reported lengths; the irregular nature of mineralized zones precludes greater specificity with regard to true widths. Exceptions include KYD-1 and KYD-2, which were drilled approximately parallel to and within a mineralized rib.

Gold-bearing intervals mainly coincided with highly oxidized, intensely silicified and either fractured or locally brecciated zones (ribs) in volcaniclastic rocks outcropping on the main ridge of the TV Tower massif.

6.2.3 Nacak HSE Target

Three diamond drill holes totaling 547.4 m were drilled at Nacak in 2011. Drill recoveries averaged 85% including holes that were lost due to poor ground conditions.

Drilling was designed to test outcropping silicification and anomalous surface rock sampling. Gold mineralization corresponds to zones of weakly brecciated vuggy quartz. Drilling returned anomalous gold results. Mineralized intercepts are tabulated in Hetman et al (2014).

6.2.4 Sarp/Columbaz Target

Eleven diamond drill holes totaling 2,112.1 m were drilled at the Sarp/Columbaz target in 2011. Drill recoveries averaged 89% including holes that were lost due to poor ground conditions.

Drilling focused on zones of vuggy and massive brecciated residual quartz. Drilling returned anomalous gold results. Mineralized intercepts are tabulated in Hetman et al (2014).

6.3 Karaayı Property Historical Exploration

Beneficial interest to the Karaayı license was acquired from Chesser in September 2013. Relatively little is known about the exploration history of the property. The author is not aware of any previous mineral resource or reserve estimates or mineral production from the property.

The earliest known exploration was carried out by Eurogold in 2004. Eurogold is known to have carried out ground magnetic and IP surveys on the property, but this data has not been reviewed, and has been superseded by ground magnetic and IP surveys carried out by Chesser. Eurogold drilled 13 RC and 7 rotary air blast ("RAB") holes on the property. Assay data for these holes is not currently available, except in summary form for a selection of the holes (Yilmaz, 2003).

Tüprag explored the property in approximately 2007. A total of 114 grab samples attributed to Tüprag, primarily from the Yumrudağ area, are in a database provided by Chesser. The average grade of all samples is 0.24 g/t Au. Thirteen stream sediment samples were also collected.

Chesser entered into an agreement to acquire the property from Tüprag in 2008. Over the next three years, Chesser carried out rock and soil sampling on a 50 x 100 m grid in the central portion of the northern of the two original tenures, covering Yumrudağ hill. Soil samples were submitted primarily to ACME Labs and subjected to geochemical analysis using 4 acid digest and ICP-MS (1EX), and gold by fire assay with ICP-ES finish (G6). A database with 624 samples was provided by Chesser. Rock samples were submitted to ALS in Izmir, Turkey for 41-element geochemical analysis using aqua regia digest and ICP-AES (ME-ICP41) gold fire assay using a 50 g pulp and AAS finish. 1,030 rock samples are in a database provided by Chesser. The use of standards, blanks and duplicates was employed, but no analysis of the data was provided. A small number of stream sediment samples were also taken.

Chesser carried out ground magnetic and IP surveys in the northern half of the property in 2010 and 2011. The ground magnetic survey showed a very high magnetic response in the low elevation areas to the south of Yumrudağ, probably related to outcropping, magnetite-bearing intrusive rocks of the Kuşçayırı batholith. High magnetic response was also returned from the area of outcropping intrusive rock at the collar of drill hole KAD-02.

An IP survey was carried out for Chesser by Zeta in late 2010. The silicified rocks capping Yumrudağ were found to be highly resistive, with a high IP chargeability response in the rocks beneath the silica cap.

6.4 Drilling by Eurogold

Eurogold (Normandy) drilled twenty holes in the Karaayı tenure in 2004, totaling 2190.6 m. Of these, thirteen holes totaling 1144.0 m were RC holes, and seven holes totaling 1046.5 m were diamond core holes. The details of drilling contractors, survey methods, etc. are not known. All are thought to be vertical holes. There is currently no reliable assay or geological data available for these holes.

6.5 Drilling by Tüprag

Tüprag drilled eight RC core holes on the Karaayı tenure in 2007, for a total of 1380.5 m. Holes were primarily oriented to the north with an inclination of -65. The Turkish drill contractor was Spektra Jeotek Sanayi ve Ticaret A.Ş. ("Spektra Jeotek"). Holes were drilled using a T25-K Tamrock drill rig with a 130 mm bit diameter and SDS bit. Conditions were mostly dry. Drill collars were surveyed using a differential GPS; further details are lacking. It is not known whether down-hole surveys were employed; none are currently available. Geological logs include information on rock type, alteration and mineralization. The holes were sampled from top to bottom on 1.5 m intervals. Assay methods appear to include gold by fire assay and 32 element ICP. Tüprag were clearly aware that gold mineralization appears to be influenced by steeply south-dipping joints, quartz veins and breccias, and oriented most of their holes with a north-directed azimuth. They tested both the high sulphidation gold oxide target on the south side of Yumrudağ, as well as the outcropping porphyry target to the east.

Highlights include (drilled widths):

- KC06: from 0 to 82.5 m, 82.5 m averaging 0.63 g/t Au
- KC07: from 87.0 to 145.5 m, 58.5 m averaging 0.62 g/t Au

6.6 Drilling by Chesser

Chesser drilled 2964.5 m in thirteen diamond core holes, including one abandoned hole, at the Karaayı tenure in 2011. Of these holes, assay data is available for eleven holes, but was not provided for holes KAD11 and KAD12, which were short holes drilled for geotechnical purposes.

The drill contractor was Spektra Jeotek, utilizing a D-150 core rig for drilling using HQ tools. Holes were surveyed at 25 and 50 m down-hole, and at 50 m intervals thereafter. The type of survey tool is not known at present. Collar surveys were made using a Trimble differential GPS unit, including validation of collar locations of historical holes.

Chesser is known to have inserted one standard, one blank and one duplicate sample every 20 to 25 m. As of the effective date of this Technical Report, no performance charts are available.

Chesser tested the main HSE gold target at Yumrudağ, the porphyry target, and a number of other locations over the higher-elevation portion of the tenure. A complete table of drill results and collar information is included in Appendix A, and includes all holes designated with “KAD”. All widths are given as drilled widths, as drilling was too sparse to calculate true widths. Highlights include:

- KAD-06: from 1.0 to 50.0 m, 49.0 m averaging 0.60 g/t Au, including 10.5 m averaging 1.49 g/t Au (HSE gold oxide target)
- KAD-02: from 90.4 to 146.0 m, 55.6 m averaging 0.27% Cu and 0.34 g/t Au (porphyry target)

7. GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The TV Tower property is located in the central part of the Biga Peninsula in Western Turkey. The geology of the peninsula is complex and characterized by various lithological associations made up of: (1) Paleozoic basement metamorphic rocks; (2) Permian and Mesozoic sedimentary and volcanic rock units; (3) Cenozoic volcanic and intrusive rocks; and (4) Neogene sedimentary rocks. The regional geology is shown in Figures 7.1 and 7.2.

Paleozoic and early Mesozoic basement metamorphic rocks occur in three distinct lithological associations, as summarized by Yiğit (2012). These include the Çamlıca metamorphic complex, Kazdağ Massif, and Permo-Triassic Karakaya complex. The latter comprises two distinct lithological associations, namely: (1) a strongly deformed greenschist facies metamorphic sequence of metabasites intercalated with phyllite and marble accompanied by minor amounts of metachert, meta-gabbro and serpentinite; and (2) a thick series of low grade metamorphic rocks. Metamorphic rocks variably record Carboniferous, Late Triassic and Oligo-Miocene metamorphic events.

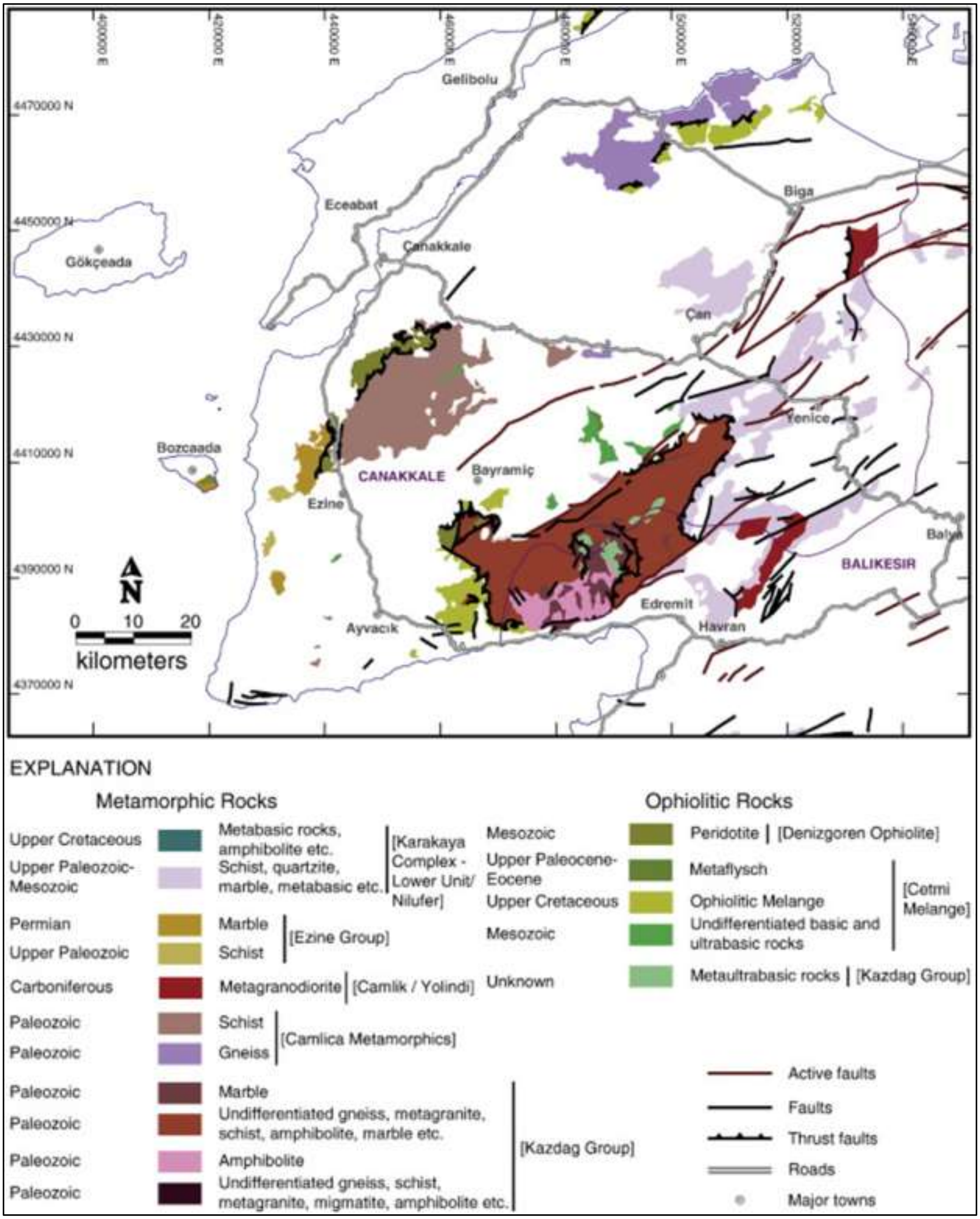
Pre-Cenozoic sedimentary rocks in the Biga Peninsula include (1) Triassic terrigenous to shallow marine clastic sedimentary rocks; (2) Middle to Upper Jurassic platform-type neritic limestones; (3) Lower Cretaceous pelagic limestones; and (4) Upper Cretaceous through Paleocene volcanic and sedimentary rocks comprising accretionary melange and ophiolitic rocks.

Cenozoic sedimentary rocks in the Biga Peninsula can be evaluated in four time-intervals, separated by disconformities: Maastrichtian–Early Eocene, Middle Eocene–Oligocene, Miocene and Pliocene–Holocene. Early-Middle Miocene times are characterized by coeval volcanism and sedimentation. Lacustrine sediments like shale, siltstone and tuffs were deposited in small basins including economic coal deposits, such as the Çan lignite.

Cenozoic volcano-plutonic rocks dominate the geology of the Biga Peninsula and therefore largely obscure older rocks (Figure 7.2). Cenozoic calc-alkaline volcanic rocks host many important economic deposits of metallic and industrial minerals in this area. Cenozoic volcanism in the Biga Peninsula started in the Eocene in extensive areas with mainly andesitic and dacitic, calc-alkaline character and continued to basaltic alkaline volcanism through Late Miocene. Broadly, volcanism in the Biga Peninsula initiated with Middle Eocene medium-K calc-alkaline and continues through Oligocene with high-K calc-alkaline character. Early Miocene volcanism is characterized by high-K to shoshonitic lavas. In the Middle Miocene to Late Miocene, volcanism shifted to mildly-alkaline and alkaline characters respectively.

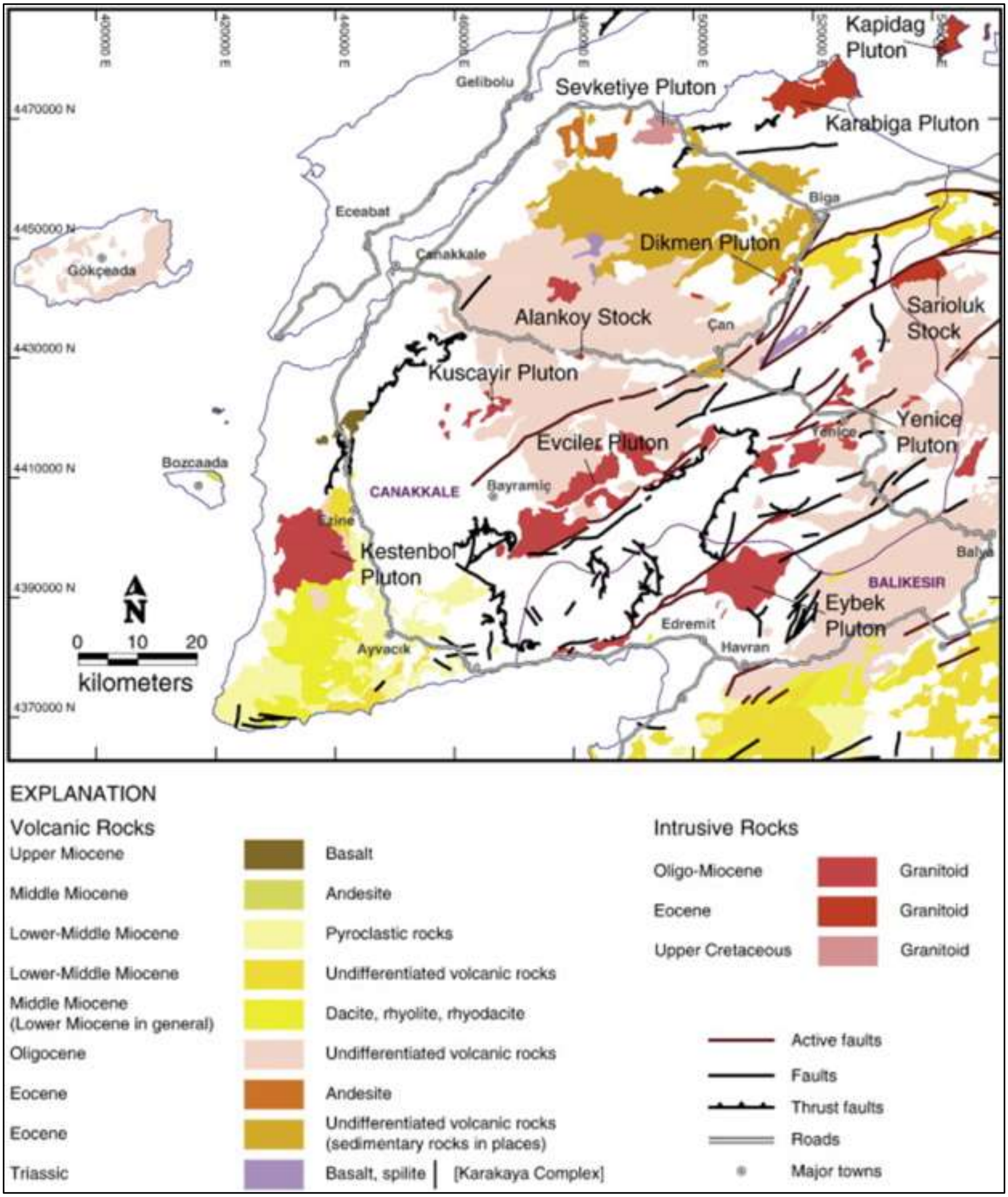
Small to medium-sized intrusive bodies are exposed throughout the Biga Peninsula. Most of these intrusions trend either northeast, following the major tectonic grain of the peninsula, or east-northeast, cutting the major tectonic grain. The main Cenozoic intrusions in the Biga Peninsula show calc-alkaline character with compositions ranging from granite to quartz diorite. Young granitoids in the Biga Peninsula generally are the products of Eocene to Oligo-Miocene plutonism. The radiometric ages from Cenozoic intrusions range from 52.7±1.9Ma (Karabiga Pluton) to 18.8±1.3 Ma (Yenice Pluton). Age dates from plutonic rocks collectively suggest a younging age from north to south for plutonism in the Biga Peninsula, from Late Cretaceous to Early Miocene (Yiğit, 2012).

Figure 7.1: Regional distribution of metamorphic rocks in the Biga Peninsula



After Yigit, 2012

Figure 7.2: Regional distribution of volcanic and igneous rocks in the Biga Peninsula



After Yigit, 2012

The structural geology of the Biga Peninsula is intricate. Pre-Cenozoic structures are dominated by thrust faults associated with ophiolitic rocks. The oldest thrust faults are related to metamorphosed ophiolites in the Kazdağ Group and melanges in Hodul unit of the Karakaya complex. Cenozoic structural features are characterized by detachment faulting related to exhumation and core-complex development of Kazdağ Massif in Oligo-Miocene, and strike-slip faulting started in Early Miocene related to development of the North Anatolian Fault Zone (NAFZ).

Neotectonic activity is dominated by dextral-strike slip faulting as well as north-south extension. Based on interpretation of the geological maps, LANDSAT and ASTER images incorporated with field observations, NE-, E- and NW trending faults form three major groups in the Biga Peninsula (Yiğit, 2012). The NE- and NW-trending faults are likely conjugate Riedel shears. The most prominent faults are NE-trending dextral-strike slip systems (~060) (Figure 7.1), related to the western extension of the NAFZ, which create pull-apart basins that control Oligo-Miocene sedimentation and volcanic activity. This current tectonic regime forms NE-trending basins and ranges, and forms the northwestern boundary of volcanic rocks in the Biga Peninsula.

7.2 Property and Local Geology

7.2.1 Volcanic, sedimentary, and metamorphic rocks

The western portion of the TV Tower Property is underlain by Paleozoic to Cretaceous (metamorphic age) metamorphic basement rocks, overlain in the central and eastern parts of the property by Cenozoic volcanic and volcaniclastic rocks (Figure 7.3). Both sequences are intruded by at least two phases of intermediate intrusive rocks. Volcanic rocks are variably altered, brecciated, mineralized and display a range of intensities of brittle deformation. Outcrop is relatively poor on slopes, with most areas covered by a mantle of colluvium. Exceptions are silicified rocks, which often form resistant ribs; valley bottoms, where water often scours creek beds down to bedrock; and road-cuts.

Metamorphic basement rocks are primarily comprised of grey, strongly deformed quartz-mica schist and phyllite. These rocks are widespread at lower elevations in the central, southern and western parts of the property, and are unconformably overlain by either late Mesozoic (?) sandstone and conglomerate or Cenozoic volcanic rocks. The schist locally contains thin lenses of medium to coarse, pale grey to white marble. Areas of the western and southern part of the property are underlain by mafic to ultramafic schist, including dark green serpentinite, which lies above the phyllite unit on a low angle, faulted contact. Metamorphic basement rocks have only been mapped on a regional scale on the property.

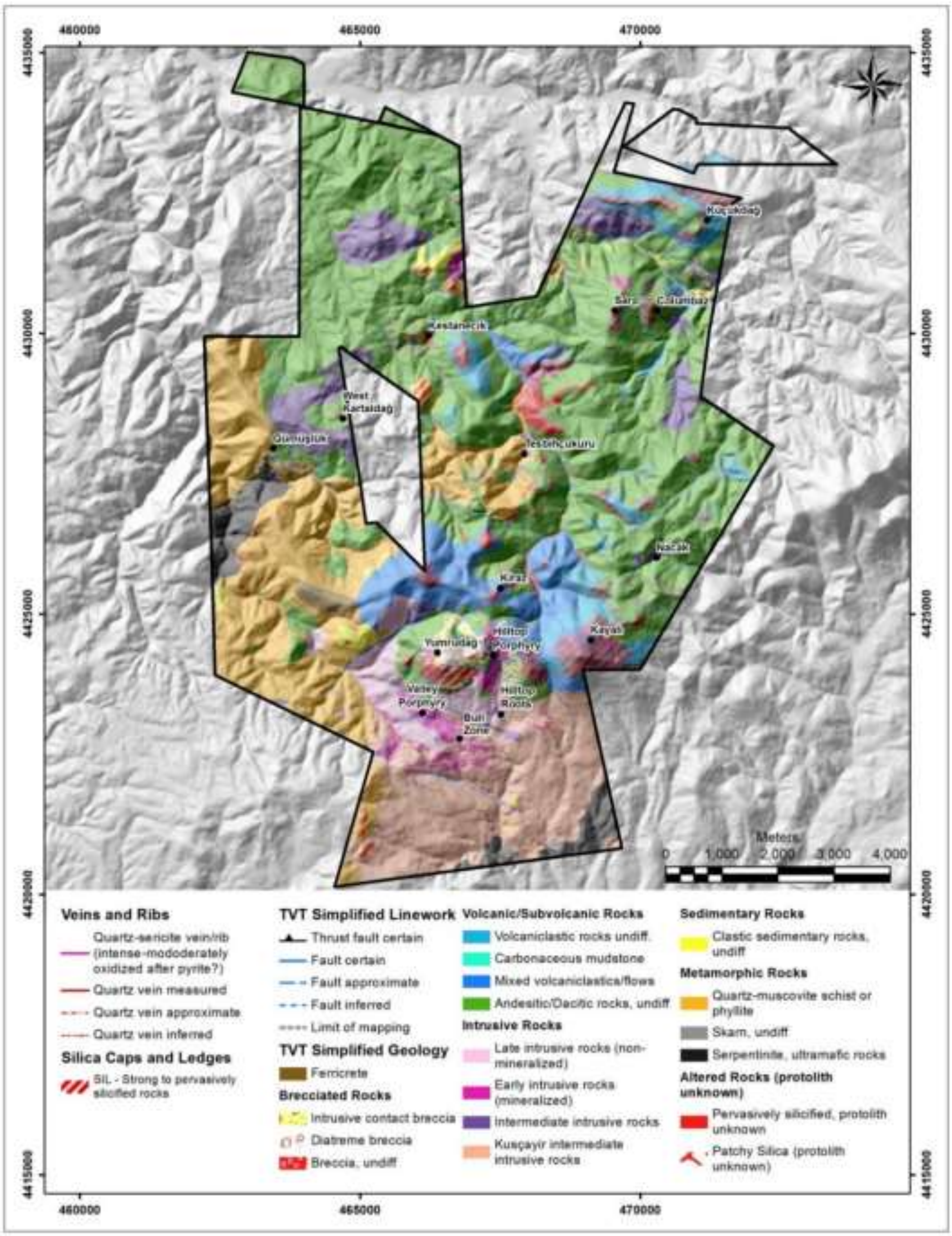
Cenozoic volcanic rocks cover most of the higher-elevation areas of the property. They are mostly flat-lying to gently north-dipping, except locally where affected by faulting. Volcanic rocks comprise flows, tuffs and related volcaniclastic rocks, as well as rare breccia. The stratigraphy and age range of the volcanic sequence on a property scale is not well known. Most of the volcanic rocks were assumed to be Oligocene in age, based on regional correlations and age dates.

With the exception of autobrecciated flow top/bottoms which have been recognized locally, flows are generally massive, and range from basaltic andesite to rhyodacite in composition, with dacite the most common. Flows are generally feldspar>>quartz porphyritic. Rocks in most areas are generally too altered to accurately decipher the mafic content, but less altered rocks generally contain hornblende and rare biotite. In many, if not most, areas it is difficult to impossible to distinguish porphyritic volcanic rocks from porphyritic intrusive rocks due to alteration.

Volcaniclastic rocks vary widely in texture and genesis, from coarse lahar breccias to finely laminated ash and crystal tuff, and from welded tuff through reworked volcanilithic sandstones. They are interbedded with flows and may also form distinct basins in some areas of the property. Intense alteration often obscures primary textures, making mapping of these rock types difficult.

Volumetrically, variably bedded, coarse sand-sized lithic lapilli tuff and volcanilithic sandstone appear to be the most abundant rock types. In the Küçükdağ target area, thinly bedded to laminated ash and lapilli tuff are present and are important host rocks for mineralization (the stratigraphy of the Küçükdağ area is described in more detail below). Mapping of volcaniclastic rocks should continue to be a priority in subsequent programs, as HSE alteration and mineralization preferentially occur in these rocks.

Figure 7.3: TV Tower Simplified Geology



TV Tower geology. Source: TMST and LibertyGold mapping, 2007 – 2015.

7.2.2 Intrusive rocks

Intrusive rocks are noted in a few areas of the original property, primarily at lower elevations, and underlie most of the low elevation areas on the Karaayı license. At least some appear to intrude both metamorphic basement rocks and volcanic rocks. A large number of intrusive phases have been differentiated in the Valley Porphyry area based on intrusive contact relationships, presence or lack of aphanitic groundmass, phenocryst assemblage and degree of alteration. With the exception of late andesite[1] and basaltic andesite[1] dykes, nearly all intrusive rocks are crowded porphyries with variable amounts of plagioclase and hornblende, and between 0 and 5% quartz, biotite and K-feldspar, plotting as diorites, quartz diorites monzonites, monzodiorites or granodiorites. Most contain very fine grained magnetite in the groundmass. Differentiation between intrusive phases is extremely difficult as there is very little compositional or textural variability between them. In the Valley Porphyry area, distinguishing between phases is possible due to the presence of a significant number of drill holes, intrusive phases bracketing porphyry alteration, and detailed petrographic studies. Recent whole rock geochemisty studies have classified the Valley Porphyry intrusive suite as Diorite to Quartz Diorite. Elsewhere on the property, intrusive phases for the most part have not been broken out. The different phases identified in the Karaayı license are described in more detail below.

Karaayı Porphyry Targets and Intrusive Phases – General Statement: The main phase of the Kuşçayır pluton and associated border phases are intruded into the metamorphic basement. Mapped and modelled lithologic units used on the target and referenced herein can be found in Table 7.1.

Throughout much of its extent, the intrusion consists of medium to coarse-grained quartz monzonite to quartz diorite consisting of plagioclase, K-feldspar, hornblende, quartz and biotite. Hornblende occurs as distinctive large, lath-shaped crystals, giving the rock a porphyritic appearance. The Kuşçayır pluton has been dated at ~43 Ma, but recent U-Pb dating of border phases suggests it is likely 40.37 – 37.89 Ma, as detailed below.

Along the northern edge of the pluton, at least a dozen separate intrusive phases with very similar appearance and composition have been recognized on the basis of contact relationships, texture, percentage of quartz phenocrysts, and degree of alteration. These phases form thick dikes and sills or small stocks, and, on the basis of alteration, are parsed into pre-, syn-, late syn- or post mineral with respect to porphyry alteration. There is very little compositional difference between the various phases, which are generally of quartz diorite or diorite in composition.

The oldest phases include the Kuşçayır pluton (KB; KBfg, GDR), and a pre-mineral, "sub-volcanic" intrusive phase that consists of a crowded quartz-feldspar-hornblende porphyry (QHFP, HFP), that underlies much of the Yumrudağ massif. The Kuşçayır pluton consists largely of quartz diorite composed of plagioclase and hornblende with lesser amounts of biotite, quartz and magnetite. Hornblende grains are large, often poikilitic, and lathe-shaped, giving the rock a porphyritic appearance. A finer-grained phase is present in some areas (KBfg). The QHFP phase is a fine to medium-grained crowded porphyry that appears to have been intruded into the upper levels of the basement rock sequence, rafting up blocks of schist, sandstone and serpentinite such that they appear on surface at the top of the Yumrudağ massif. Basement rock blocks are angular, suggesting no milling or transport, and range in size from a few cm to over 50 m in size, forming a carapace "megabreccia" which is mapped on surface and in drilling as the "Intrusive Contact Breccia" (ICBX). The QHFP has not been observed in contact with the Kuşçayır pluton.

Syn-mineral intrusive rocks include a hornblende-feldspar porphyry (HFDP1) at Hilltop and a relatively sparsely hornblende-feldspar porphyritic intrusive at Valley Porphyry (HFMP). The former is a medium-grained, crowded porphyry with little or no quartz as phenocrysts, and is always strongly phyllic altered with variable quartz stockwork. The latter is relatively sparsely porphyritic, with acicular to lath-shaped hornblende phenocrysts. The groundmass is a characteristic pink color from K-feldspar flooding.

Late syn-mineral phases in both locations contain up to 10% quartz as embayed phenocrysts, and include a hornblende-feldspar-biotite porphyry with accessory quartz (HFDP2) at Hilltop, and a quartz-hornblende-feldspar porphyry (QHFMP) at Valley. The latter is similar in appearance to the syn-mineral phase HFMP, but contains more quartz, as well as larger euhedral orthoclase phenocrysts. It is less altered than the syn-mineral phase, with considerably less quartz stockwork alteration.

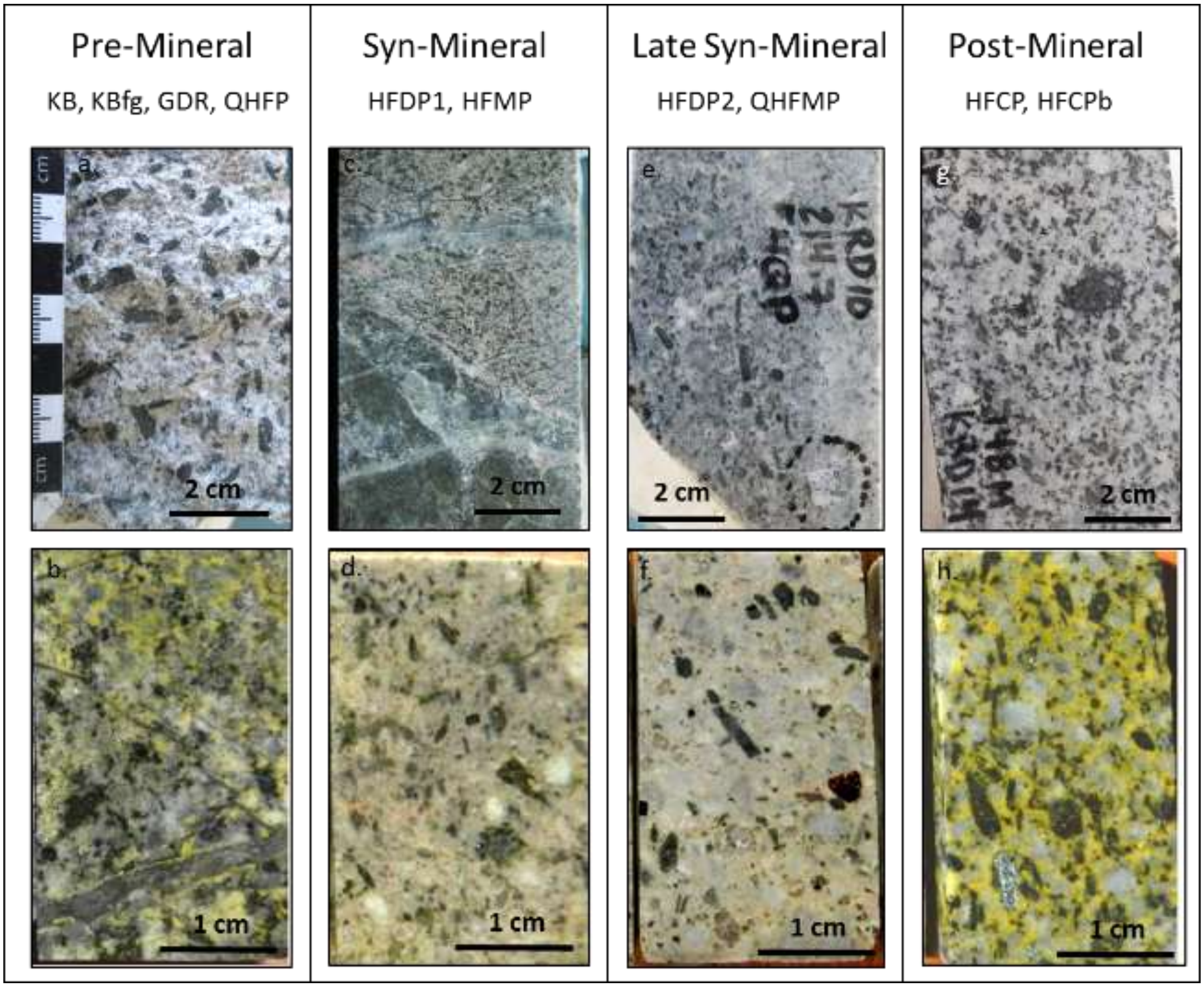
A post-mineral phase is present in both areas, consisting of a coarse, crowded, biotite-hornblende-feldspar porphyry with abundant wall-rock xenoliths (HFCP, HFCPb). It often has a distinctive "salt and pepper" appearance from the presence of abundant hornblende. It forms a "floor" to mineralization in portions of the Hilltop porphyry system, and forms a dyke-like body bounding the southwest side of the Valley porphyry. This phase post-dates most hydrothermal activity, although in some areas it is cut by zones of phyllic or argillic alteration.

[1]*As dykes, these might be more correctly described as quartz diorites or diorites; however, they are largely aphanitic or sparsely porphyritic, and as such, the field terms "andesite" and "basaltic andesite" to describe these rocks used herein.*

Table 7.1: Intrusive phases at Valley and Hilltop Porphyry Targets

Relative Age	Code	Subunit	Rock Type
Post Mineral	QSP	QSP	Quartz-sericite-pyrite alteration zones
	DIO	DIO	Diorite Dyke
	APL	APL	Aplite
	HFMPD	HFMPD	Hornblende Feldspar Monzonite Porphyry Dyke
	HFCP	HFCP	Hornblende-Feldspar Crowded Porphyry
Late	QHFMP	QHFMP	Quartz-Hornblende-Feldspar Monzonite Porphyry
	HFDP2	HFDP2	Hornblende Feldspar Diorite Porphyry
Main	HFMP	HFMP	Hornblende-Feldspar Monzonite Porphyry
	PI	PI	Protolith indeterminate due to quartz-magnetite-Kspar alt'n
	HFDP1	HFDP1	Hornblende Feldspar Porphyritic Diorite
Pre	QHFMP	QHFMP	Quartz-Hornblende-Feldspar Monzonite Porphyry
	GD	GD	Quartz-Biotite-Hornblende-Feldspar Granodiorite
	KB	KB	Kuscayir Batholith - Holocrystalline Quartz-Biotote-Hornblende-Feldspar Quartz Diorite

Figure 7.4: Photos of intrusive phases at Karaayı



Examples of pre-, syn-, late syn- and post-mineral intrusive rocks in the Karaayı area. A) Hand sample from the Kuşçayır stock (KB). B) Stained thin section cut off of same, within the Valley Porphyry system. Hornblendes have been replaced by biotite C) Core sample of syn-mineral unit HFMP showing typical strong quartz-stockwork, K-feldspar and magnetite alteration, in contact with hornfelsed basement rock. D) Thin section cut-off of relatively unaltered HFMP. E) Core sample of late syn-mineral unit QHFMP with large orthoclase phenocryst circled. F) Thin section cut-off of QHFMP, with higher quartz content than HFMP. G) Core sample of post-mineral unit HFCP, showing characteristic “salt and pepper” appearance and wall rock xenolith. H) Stained thin section cut-off of HFCP. All examples are from the Valley Porphyry area.

7.2.3 Age of Intrusive Rocks and Mineralization

Recent U-Pb zircon ages for volcanic and intrusive rocks have helped constrain the intrusive and mineralizing events (Smith et al, 2016). The oldest rocks dated are from the pre-mineral Kusçayir intrusive dated at 42.03±0.52Ma. Two samples of intrusive rock from the Valley Porphyry system were obtained for U-Pb age determination in order to define the age of the porphyry system and its host rocks. Sample (GML-2013-331), a syn-mineral hornblende-feldspar monzonite porphyry, and a post mineral intrusive phase (GML-2014-332) were collected where cross-cutting relationships were well defined by drilling and field mapping. One sample from Hilltop intrusive shows that this phase is slightly younger (38.8±0.50 Ma) than the unit which appears to cut it.

Additional samples of sub-volcanic and intrusive rock from the Karaayı and Columbaz area indicate there are likely multiple pulses occuring between 41-38 Ma. Finally, two Ar-Ar dates from alunite at Küçükdağ puts the high sulphidation event at 29 Ma.

For each U-Pb age determination, groups of 10-20 zircon grains free of alteration, fractures inclusions or cores were analyzed. Seven samples used a Termo Finnigan Element 2 single collector, double focusing magnetic sector ICP-MS at the Pacific Centre for Isotopic and Geochemical Research (PCIGR) at the University of British Columbia (UBC), Canada. The remaining 5 samples were analysed at the Laserchron Center at the University of Arizona (Table 7.2).

Table 7.2: Summary of TV Tower geochronology

Sample_ID	Age_Ma	DH_depth	Age_Type	Lab	Mineral	Type	Easting	Northing
GML-2013-96	29.2±0.33	KCD141 51.0-51.2	mineralization	PCIGR	alunite	Ar-Ar	470645	4431869
GML-2013-97	29.7±0.42	KCD066 149.0-149.3	mineralization	PCIGR	alunite	Ar-Ar	470690	4432010
GML-2013-315	37.3±0.89	Surface	post-mineral	PCIGR	zircon	U-Pb	472036	4427402
GML-2013-231	38.4±0.5	Surface, Kirazli	host/pre-mineral	PCIGR	zircon	U-Pb	472715	4431560
GML-2013-143	38.5±0.44	Surface	host/pre-mineral	PCIGR	zircon	U-Pb	469295	4428986
KRD04 92.5-93.2	38.80±0.50	KRD04 92.5-93.2	syn-mineral	U of A Laserchron Center	zircon	U-Pb	467313.92	4424087.67
GML-2014-332	39.5±0.31	KRD10 188-200	post-mineral	PCIGR	zircon	U-Pb	465969	4423243
CD12 219.4-222.3	39.91±0.48	CD12 219.4-222.3	syn-mineral	U of A Laserchron Center	zircon	U-Pb	469956.5643	4430393.785
CD12 413.0-413.3	39.91±0.50	CD12 413.0-413.3	syn-mineral	U of A Laserchron Center	zircon	U-Pb	469956.5643	4430393.785
GML-2014-331	40.2±0.37	KRD10 30-44m	syn-mineral	PCIGR	zircon	U-Pb	465969	4423243
AMB15 242.1	41.10±0.52	Surface	host/pre-mineral	U of A Laserchron Center	zircon	U-Pb	465997.152	4432118.387
AMB15 242.4	42.03±0.52	Surface	pre-mineral	U of A Laserchron Center	zircon	U-Pb	466146.8209	4420249.127

7.2.4 Structural Geology

Important structural features are summarized on Figure 7.3 (geology) and Figure 7.5 (faults and magnetic and air photo linears). These show a pronounced WNW-trending structural grain, parallel to mineralized brittle structures identified at the Küçükdağ, Kayalı and Karaayı targets, as well as NW- and NE-trending faults and air photo linears.

Metamorphic rocks in the western and central part of the property have undergone significant ductile deformation and metamorphism associated with collision and stacking of basement terranes. An early foliation with superposed crenulation cleavage is visible in the schists and phyllites. The foliation tends to be relatively shallowly-dipping, although locally it can be steeply dipping.

Cenozoic rocks record brittle extension and strike slip faulting as detailed in the regional geology section, although these affects are not well-documented at the TV Tower property.

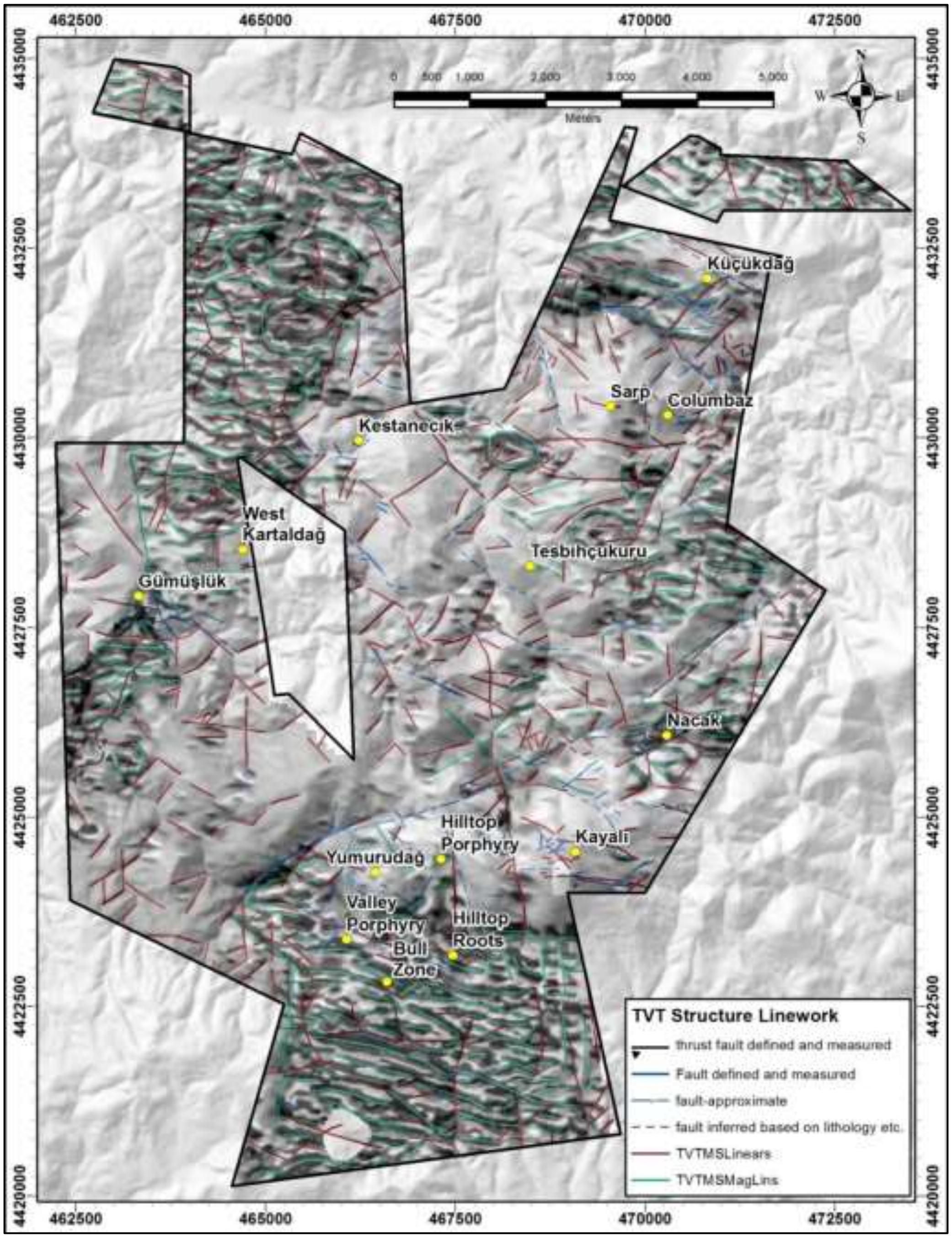
Field evidence, as well as air photo and magnetic linear analysis illustrates the presence of dominant WNW and NE structural grains on the property, reflecting the presence of high angle faults and joint sets. North-trending linears are also present.

The structural architecture exerts a strong control on alteration and mineralization. On a prospect scale, mineralized residual quartz ribs (breccia zones) and joint sets mapped from satellite imagery and on the ground show a strong preference toward west-northwest orientations throughout the property. A secondary set of northeast-striking ribs is also present. In the southern part of the Karaayı tenure, two sets of QSP altered zones have been documented, including a dominant northeast- to east-northeast-striking set as well as a west-northwest-striking set.

The structural grain also appears to have had an effect on the distribution of intrusive rocks, which can be documented in the southern portion of the Karaayı license. In this area, intrusive rocks, in particular HFMP and QHFMP are aligned as thick “dykes” along a NW-SE trend. HFMP also forms a north-trending thick dyke south of the hilltop porphyry.

Air photo linears, faults and magnetic linears create a picture of a dominant WNW structural grain, which can be verified in the field through observation of faults, breccias, joints and zones of QSP alteration, some of which control gold mineralization in high sulphidation and porphyry targets. NE-striking faults and QSP alteration zones are also present. Magnetic and air photo linear interpretations also support the presence of north trending faults, although their significance is not known at this point.

Figure 7.5: Horizontal gradient magnetics, DEM and satellite photo linears and mapped faults.



7.2.5 Alteration and Mineralization

Virtually all significant rock types at TV Tower show signs of extensive hydrothermal alteration and local gold-silver±copper mineralization. Alteration has been mapped both on a property-wide scale using a Short Wave Infrared device and by visual inspection. A compiled surface alteration map for the central and eastern portion of the TV Tower property is shown in Figure 7.6. Throughout 2015, Liberty Gold staff analysed 550 surface samples as well as 92 drillholes from Kaarayi, Kayalı and Columbaz with an ASD Terraspec Spectrometer. All new samples as well as historic (Teck and Liberty Gold) samples, whose spectra could be located, were re-analysed using The Spectral Geologist software. Re-running spectra through the TSG software allowed for AlOH, wavelength variations as well as illite and kaolinite crystallinity calculations.

High sulphidation/advanced argillic alteration

In general, alteration minerals associated with a high sulphidation epithermal environment dominate the central, northern and eastern part of the property, including widespread argillic, advanced argillic and quartz alteration and distal propylitic alteration.

Argillic altered zones include pervasive white kaolinite alteration with variable disseminated pyrite, variably altered to orange-brown iron oxides. Smectite and illite have also been noted. Zones of advanced argillic alteration contain patchy to pervasive to veinlet-hosted alunite, pyrophyllite, diaspore, kaolinite and dickite, with variable disseminated pyrite, generally altered to orange-brown iron oxides. Advanced argillic alteration can be separated into two assemblages: AARG1 (alunite ± kaolinite ± dickite) and AARG2 (alunite ± pyrophyllite ± diaspore ± kaolinite ± dickite). Figure 7.6 shows the AARG1 assemblage dominantly occurs at higher elevations (Küçükdağ and Kayalı) whereas AARG2 occurs at slightly lower elevations (Yumrudağ and Sarp-Columbaz).

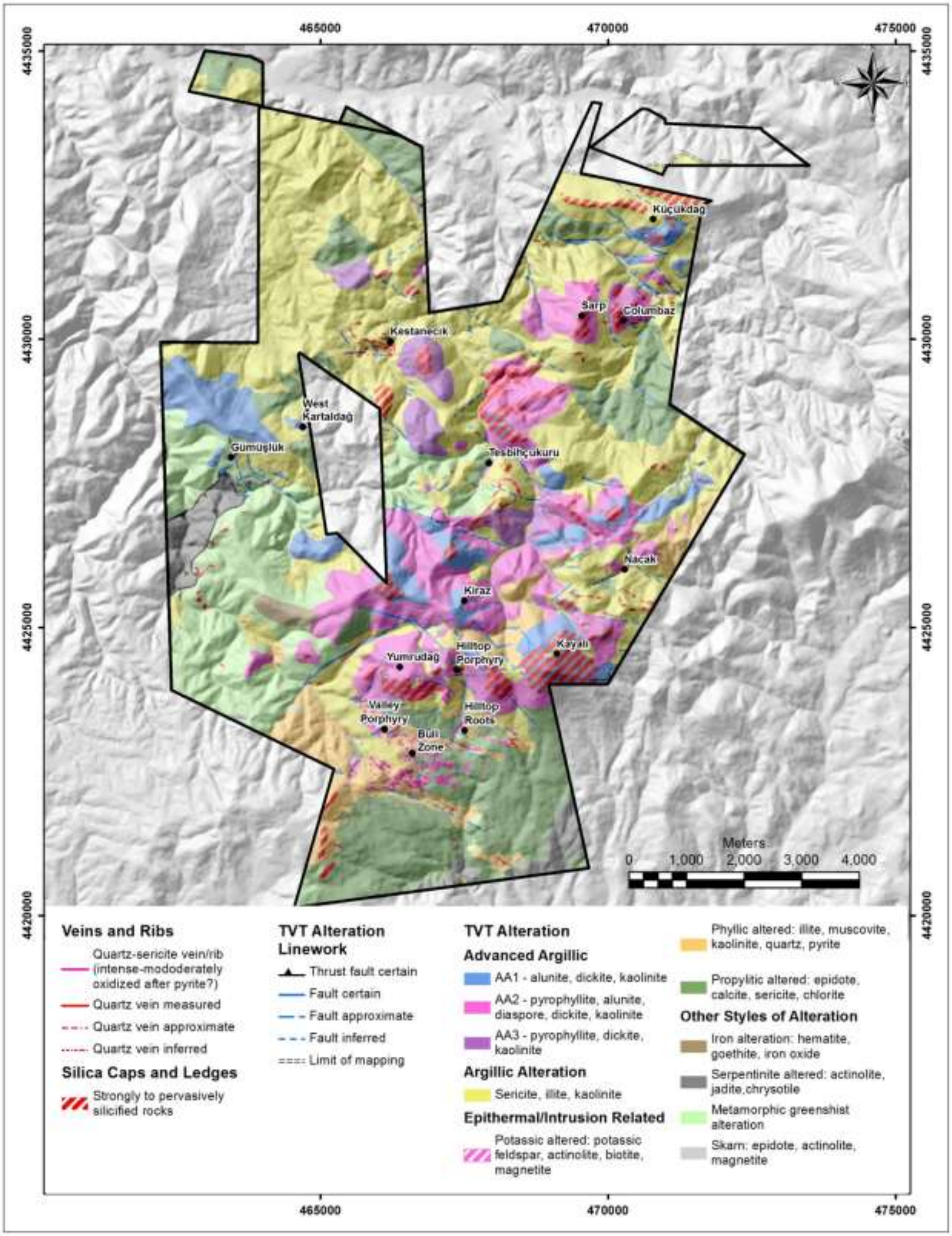
Residual quartz ranges from massive to vuggy, and is generally pale grey in colour. Vuggy quartz zones can replace feldspar porphyritic volcanic rocks, tuffs or breccias, and be accompanied by advanced argillic minerals such as alunite and pyrophyllite lining the vugs. Residual quartz zones are commonly brecciated, with specular or earthy hematite, limonite or jarosite in the fractures and as cement.

With the exception of portions of the Küçükdağ deposit, gold is fine-grained and strongly associated with zones of vuggy quartz containing brecciation and Fe-oxides. These rocks are generally oxidized but, by analogy to other systems, the gold was likely associated with pyrite. Where drill tested, zones of oxidation give way at depth to unoxidized zones, generally in areas of advanced argillic or argillic alteration. In these areas, supergene chalcocite, covellite and green copper oxides are present at the oxidation boundary. The presence of the above copper species in these areas may reflect the original presence of the sulphide mineral enargite in the vuggy quartz zones, which has since been leached and redeposited at the oxidation-reduction boundary.

The Küçükdağ prospect hosts high-grade gold-silver-copper mineralization in a breccia body. In general, mineralization is present as zoned pyrite-enargite and other silver and copper minerals alternating with kaolinite, dickite, alunite and silica as breccia cement. A silver-only zone is also present, but has not been characterized in terms of mineral assemblage.

Local zones of alteration more consistent with a low sulphidation epithermal environment have been noted locally on the property, including areas of the Columbaz and Kestanecik targets. Low sulphidation alteration and veining consists of linear arrays of quartz veins with variable textures ranging from banded and colloform chalcedonic quartz to sugary quartz and quartz-after-calcite. Veins are flanked by white clay alteration, probably illite.

Figure 7.6: Alteration map of TV Tower; data from TMST and Liberty Gold



Porphyry Au-Cu alteration

The presence of Au-Cu porphyry alteration and mineralization on the TV Tower has been documented by drilling in four locations on the property, including the Nacak prospect, Columbaz and two locations on the Karaayı tenure. Hypogene porphyry-style alteration on the property is illustrated in Figure 7.7 and includes:

"Potassic" alteration: Patchy to pervasive, pale pink K-feldspar replacement of the groundmass is common in association with the Valley and Hilltop porphyry systems and at depth in the Nacak and Columbaz porphyries. Locally within the Valley system, K-feldspar completely replaces the host rock. Moderate biotite alteration of the groundmass and mafic clasts is locally present at the bottoms of drill holes in the Hilltop and Columbaz porphyry systems, and is weakly developed at depth in the Valley and Nacak areas. Biotite hornfels is also present, being well developed at depth in the Hilltop and Columbaz porphyry systems. All types of potassic alteration include abundant disseminated, stringer and vein magnetite.

"Phyllic" alteration: Moderate to strong, pervasive sericite alteration with disseminated pyrite, patchy silicification and variable quartz stockwork ("QSP" alteration), is the dominant alteration type at upper and intermediate levels in the Hilltop, Nacak and Columbaz areas. Phyllic alteration W and SW of the Valley Porphyry occur pervasively through the metamorphic country rocks located near the intrusive contact as well as thin remnant caps overlying the intrusive rocks and along NW-SE structures. Alteration along these structures has a broad halo of magnetite destruction across intrusives in the Valley target, generating a distinct NE-SW fabric in the airborne magnetic images. In a number of areas, relict K-feldspar alteration is present or interpreted. It is gradational upward into advanced argillic alteration (quartz-pyrophyllite-kaolinite) and gradational downward into biotite or K-feldspar alteration with cross-cutting sericite zones developed along fractures and veins. In the Valley target, this style of alteration is primarily restricted to linear zones up to several metres wide.

"Argillic" alteration, defined by the presence of pervasive illite and/or kaolinite alteration of phenocrysts and matrix, is observed to the north of the Valley porphyry system and locally at high levels in the other locations.

"Propylitic" alteration, defined by partial replacement of clasts and/or groundmass by chlorite, actinolite, epidote and/or magnetite, is widespread in intrusive rocks proximal to the porphyry systems, but generally weakly developed.

"Stockwork" alteration, ranging from very strong to weak, is ubiquitous in all four areas. Stockwork vein types include, from oldest to youngest: 1) A veins: quartz±Kfeldspar, "wormy" aspect; 2) B veins: quartz with pyrite±chalcopyrite or quartz with chalcopyrite±bornite axial lines, generally in equilibrium with K-feldspar or biotite alteration; and 3) D veins: pyrite>quartz with sericite-altered selvages. Quartz-chalcopyrite-bornite veins are restricted to the higher-grade core of the Valley porphyry system. M veins, consisting of quartz with axial or marginal magnetite, magnetite-only or banded grey quartz-magnetite veins, are also present in all areas.

Supergene alteration The higher levels of the Hilltop and Columbaz porphyry systems are strongly affected by supergene alteration, including clay alteration and conversion of copper minerals into finely disseminated and fracture-controlled chalcocite (Figure 7.8). Chalcocite coats pyrite grains, which are largely unaffected. In both of these areas, supergene alteration extends locally to a depth of over 200 metres. Copper grades are relatively low, but locally may exceed 1%. Some of the copper is likely derived from weathering and oxidation of enargite in overlying areas affected by high sulphidation epithermal alteration.

Figure 7.7: Examples of porphyry-related alteration at TV Tower

Hypogene porphyry-related alteration at TV Tower. A: biotite-altered clasts and groundmass, cut by quartz vein with sericitized margins. B.: patchy K-feldspar replacement of rock, overprinted by sericite alteration; C: hand sample of patchy and vein-controlled K-feldspar alteration, rock mass is K-feldspar-magnetite altered and weakly sericitized; D: pervasive pink K-feldspar and biotite alteration cut by D vein with sericitized margin; E: dense A and B quartz vein stockwork in matrix of K-feldspar alteration overprinted by sericite; F: K-feldspar-magnetite alteration with hairline magnetite veinlets, cut by D pyrite vein with wide, sericitized margin; G: A(?) vein in matrix of K-feldspar-magnetite alteration cut by sericite alteration; H: dense stockwork of quartz-magnetite veinlets in matrix of K-feldspar alteration weakly overprinted by sericite alteration; I) banded quartz vein in sericite altered matrix. Vein probably contained magnetite prior to phyllic overprint event; J) quartz-pyrite-chalcopyrite B vein in sericitized matrix, cut by magnetite blebs. This suggests that at least some of the magnetite is paragenetically relatively late.

Depth of oxidation, as defined by the predominance of limonite, geothite, hematite and/or copper oxides such as malachite and "black copper" (neotocite?) over sulphides ranges from a few metres at the Valley porphyry target to several tens of metres locally at the Hilltop target. Oxidation at the Valley target extends to greater depth locally along QSP-altered zones.

Figure 7.8: Examples of supergene copper mineralization

Left: Fracture-hosted chalcocite with pyrite. Right: disseminated, very fine-grained chalcocite in strongly sericite altered monzonite porphyry.

Low sulphidation epithermal alteration

Alteration associated with low sulphidation epithermal systems can be observed most readily at the Columbaz and Kestanecik targets. In these areas, quartz veins exhibiting typical low sulphidation textures including colloform banding, massive, sugary and rare ginguro textures are arranged in linear arrays. Veins range from a few cm to over 3 metres in thickness. They contain very little sulphide. Wall rocks are bleached and clay altered up to distances of a few meters to a few tens of metres from the veins. Where veins are arranged in parallel arrays, the alteration may coalesce into large zones of clay alteration. Clay alteration is gradational outward into pale to medium green propylitic alteration, consisting primarily of pervasive chlorite and lesser epidote.

7.2.6 Breccias

A number of breccia types are present at TV Tower, and some are interpreted to be important gold hosts and fluid conduits. Breccias can be divided into those of volcanic, intrusive or sedimentary origin, with high primary porosity, breccias of tectonic origin, reflecting brittle faulting, and breccias of hydrothermal origin.

Tectonic breccias are widespread on the property, particularly in silicified zones, where their presence is accentuated by the presence of iron oxides as earthy or specular hematite, geothite, limonite or jarosite. Types include crackle, mosaic and milled breccias, reflecting varying degrees of strain. On a larger scale, they are associated with silica ribs and elevated gold grades. Clasts are locally derived and are generally angular to sub-angular. Amount of matrix is variable and reflects the degree of milling. Pre- or syn-mineral breccias may contain significant amounts of sulphide or gangue minerals as cement.

Volcanic breccias interpreted as either flow tops/bottoms or lahars have been noted throughout the property. The “CZ” or “chaotic zone” unit at Küçükdağ is an example of a volcanic breccia thought to represent the bottom of a thick section of massive andesite. Clasts are subrounded, poorly sorted, and consist almost entirely of andesite. Clasts contain alteration rims similar to spilites, suggesting that they may have come in contact with water or wet sediments. A third class of volcanic breccias consists of tabular sheets of matrix-rich, poorly sorted, polymictic material interpreted as lahar deposits.

The term “hydrothermal breccia” can describe a large number of diverse breccia types, including those listed above when cemented by sulphide or gangue minerals. Several “hydrothermal” breccia types have been described at TV Tower, including diatreme breccias and tectonic or collapse breccias with significant cement of hydrothermal origin.

Two and possibly three diatreme bodies have been identified in the Küçükdağ resource area. The two well-drilled examples are carrot-shaped, and consist of poorly-sorted, subrounded, polymictic clasts with abundant matrix and variable amounts of cement, consisting largely of pyrite with lesser enargite, alunite, dickite and quartz. Another diatreme body has been revealed at Yumurudağ target. The diatreme is identified as an irregular, crudely funnel-shaped breccia body up to 300 m in diameter is exposed on surface at the top of Yumrudağ and in drill holes. It is composed of poorly sorted, rounded to subrounded, pebble- to boulder-sized clasts consisting of basement schist, serpentinite, sandstone, volcanic and intrusive rock, as well as clasts of the intrusive carapace breccia described above. Matrix consists of sand and rock flour variably cemented by silica and pyrite.

The high-grade Au-Ag-Cu, quartz-alunite-dickite-sulphide cemented breccia body at Küçükdağ, described below, may be classed as a tectonic and/or collapse feature with little matrix and zoned cement consisting of sulphide and gangue minerals.

In addition to localized hydrothermal breccias two large breccia bodies recognized at Yumurudağ and Hilltop. The Intrusive Contact Breccia (ICBx) is the oldest breccia type recognized and primarily involves the oldest intrusive phase QHFP. The matrix is primarily composed of intrusive rock and can host large blocks of basement schist or serpentinite. The diatreme breccia (DBx) at Yumurudağ is polylithic with rounded to subrounded clasts ranging from coarse grained to cobble sized and, rarely boulder sized. Generally the DBx unit is matrix supported but can be clast supported, with a matrix composed of rockflour gouge often clay altered. The unmineralized protions of the DBx show kaolinite, montmorillonite, dickite assemblages where as the mineralized sections are typically alunite, diaspore, pyrophyllite and typically silicified. Evidence of internal sorting, milling and streaming textures has been recognized. Individual clasts with banded quartz veins suggest the diatreme breccias post date the porphyry mineralization.

7.2.7 Descriptions of Target Areas

To date, approximately 11 targets have been defined by a combination of geophysical, geochemical and geological methods. Of these, three are high sulphidation epithermal (Küçükdağ, Kayalı and Yumrudağ), three are porphyry (Valley, Hilltop and Nacak), one displays both high and low sulphidation characteristics (Kartaldağ West), one is primarily a low sulphidation epithermal target (Kestanecik), two display characteristics of both low sulphidation and porphyry alteration (Columbaz and Tesbihçukuru), and one involves quartz-Fe-oxide mineralization (possible listwaenite alteration) in basement rocks (Gümüşlük). Target locations are shown in Figure 7.6. Idealized genetic models are outlined in Section 8. Additional targets have been tentatively identified but are at a relatively early stage of investigation.

The targets are described below, with additional details in sections 9, 10 and 14.

Küçükdağ Target: The Küçükdağ ("KCD") target is located in the northeastern part of the TV Tower property. Mineralization is hosted in a sequence of gently north-dipping agglomerate to fine-grained volcaniclastic rocks that are overlain by intensely silicified felsic ash tuff and ash-lapilli tuff, with ignimbritic volcanic rocks mapped at higher elevations and feldspar porphyritic andesite-dacite flows at lower elevations. This target is described in more detail in Hetman et al (2014) and summarized below.

A 750 m x 100 m zone of strong silicification brecciation is present on surface at the Küçükdağ target in association with laminated to thin-bedded ash tuff. Surface rock sampling of this material returned a high of ~50 g/t gold and up to 100 ppm silver. Samples are also anomalous in Ba, Sb, As, and Ga. Grid soil sampling outlined three areas of anomalous gold in soil. Quartz-alunite± dickite±kaolinite is closely associated with gold mineralization on surface.

The second drill hole into the zone, KCD-2, drilled in late 2010, resulted in discovery of a sulphide-cemented, hydrothermal breccia pipe with high gold, copper and silver content. This discovery hole returned 136.2 m grading 4.3 g/t Au, 0.68% Cu and 15.8 ppm Ag. Subsequent widely-spaced drilling suggests that the pipe is relatively steep and may flare into a sub-horizontal zone at the top. Additional mineralization in the form of a tabular, silver-rich zone above and to the north of the breccia body was also discovered in the course of drilling. Core photos and photomicrographs are presented in Figure 7.9. Stratigraphic unit descriptions and corresponding logging codes are compiled in Table 7.2.

In general, the Küçükdağ breccia and related gold mineralization are generally confined to a thick wedge of lithic lapilli tuff and to a lesser extent in an overlying sequence of reworked tuff, carbonaceous mudstone and conglomerate interpreted as a small fluvial-lacustrine basin.

Gold mineralization can be characterized with three end-member types: breccia hosted, vein hosted and vuggy quartz hosted. The main KCD breccia zone is characterized by the presence of relatively angular clasts and clast-supported character. Zoned cement types include multiple rims of silica, followed by pyrite, advanced argillic minerals, and coarse pyrite-enargite. Rims are present primarily on the upper surfaces of clasts, also suggesting a relatively passive environment of formation. Thin section analysis of the breccia (Schandl, 2012; Ross, 2013a; 2013b) shows the sulphide / sulphosalt assemblage present in the breccia cement to contain pyrite (with minor bravoite), enargite, tetrahedrite-tennantite, chalcopyrite and chalcocite, the latter of which is intergrown with tetrahedrite.

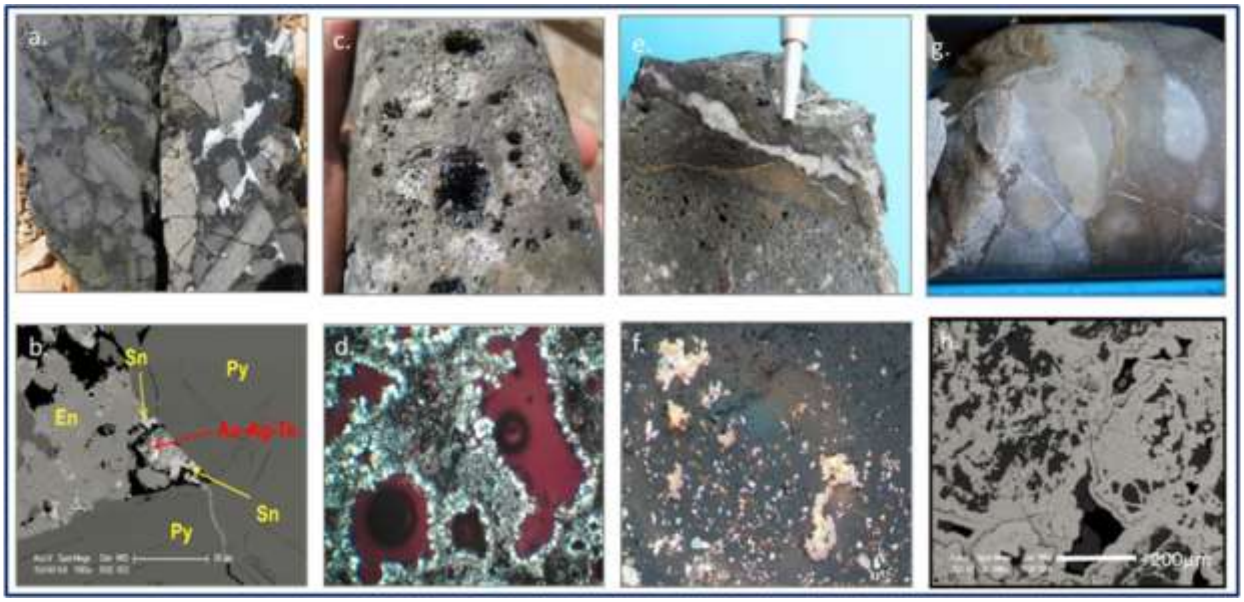
Gold-bearing vein arrays are widespread throughout the gold zone. They generally range from

0.5 to 1.0 cm thick, rarely thicker, and consist largely of enargite, alunite and pyrite. Grades are highly variable ranging from veins that are barren to veins returning grades up to 880 g/t Au over a 1.5 m-thick interval (KCD-50) bearing several veins with visible gold and/or calaverite.

Zones of vuggy quartz are common, particularly along the base of the lithic lapilli tuff unit. Gold-bearing vuggy quartz zones are dark grey and friable. Enargite may line vugs.

The silver-rich zone is primarily hosted in the fluvial-lacustrine sequence and overlying volcanic breccia. Silver grades in this zone typically range from 20 – 70 g/t Ag, with local areas of higher-grade material. Principle sulphide minerals are pyrite and marcasite, which are banded/zoned and very fine grained. Silver is intimately associated with pyrite and marcasite; dominant silver species identified by Hazen and Ross (2012b) include acanthite and stibiobismuthinite. Some of the zone is hosted in polymict breccia with a sulphide± sulphosalt±clay matrix. The clasts are dominantly subrounded to subangular.

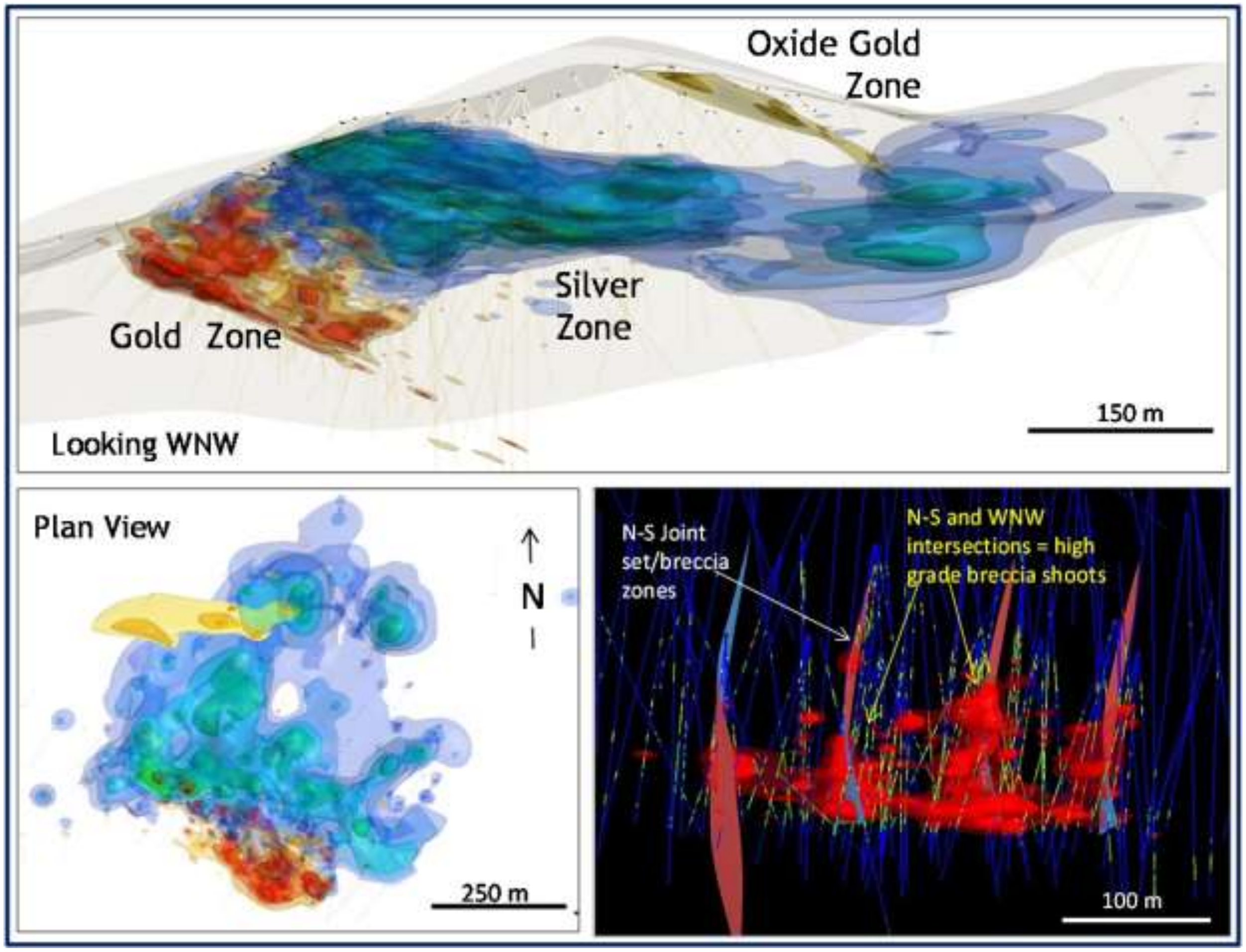
Figure 7.9: Photos and photomicrographs of mineralization at KCD



Photos, photomicrographs and SEM images from the KCD deposit: A) breccia with abundant enargite and pyrite; B) SEM image showing paragenetically late gold with enargite and tin, silver and tellurium-bearing minerals; C) vuggy quartz with enargite-lined vugs; D) transmitted light photomicrograph of vuggy quartz; E) vein in KCD-50 with native gold and calaverite. This interval assayed 880 g/t Au; F) reflected light photomicrograph of gold in quartz vein; G) Silver zone in core; H) SEM image of very fine grained botryoidal pyrite, marcasite and unknown silver minerals in the silver zone. Photomicrographs and SEM images from Ross (2012a).

Structural trends (joint sets, breccia zones, etc.) mapped on surface were merged with structural data collected from core samples to produce a Leapfrog model for grade distribution in the gold zone. Higher grades are associated with 1.) The Footwall Fault at the base of the gold zone; 2) WNW-striking, moderate to steeply south-dipping zones of jointing and brecciation; 3) N-S striking zones of jointing and brecciation, and 4) Intersections of structural zones. In the case of the latter, breccia pipes, or shoots, are developed. Silver zone mineralization appears to be controlled largely by host rock type, with some indication of control along N- to NNE-trending structures. Silver is also present with gold in the breccia shoots, suggesting that the breccias may have served as the plumbing to introduce silver-bearing fluids into the host rocks. The model is illustrated in Figure 7.10.

Figure 7.10: Leapfrog images of the KCD deposit



Leapfrog images of the KCD deposit including plan view and thick sectional views. Gold zone isosurfaces shown in yellow-orange-red; silver zone isosurfaces shown in blue and green. Image in lower right shows an oblique view to the north and illustrates the shoots (breccia zones) at the intersections of N-S structural zones with NW-trending, steeply south-dipping structural zones (structural surfaces not shown for clarity).

Kayalı Deposit: The Kayalı deposit, located in the southern part of the TV Tower Property, includes extensive outcropping zones of vuggy residual and massive quartz and strong advanced argillic alteration over a 2 km x 1.5 km area at the top of "TV Tower Hill", representing the highest elevations on the property (Figure 7.11). This area is characterized by the presence of extensive residual quartz ledges, hosted primarily in volcaniclastic rocks, quartz- alunite ledges variably developed in overlying feldspar-hornblende porphyritic volcanic flows, and WNW-ESE-striking, steeply SSW-dipping vuggy quartz ribs marking joint sets, brittle faults and breccia zones. The faults may have acted as conduits and traps for the mineralizing fluids.

Drilling initially focused on an area of elevated gold in rock samples marking a prominent quartz rib. TMST drill hole KYD-1 returned 114.5 m grading 0.87 g/t Au. The mineralized zone is characterized by the presence of brecciated and hematitized vuggy quartz after relatively fine-grained, tuff and volcaniclastic rocks (Figure 7.12). It extends from surface to a depth of up to 120 m. Grade is generally correlated with a higher degree of brecciation. The silicified interval is strongly oxidized.

Figure 7.11: Kayalı target geology, geochemistry and drill collars

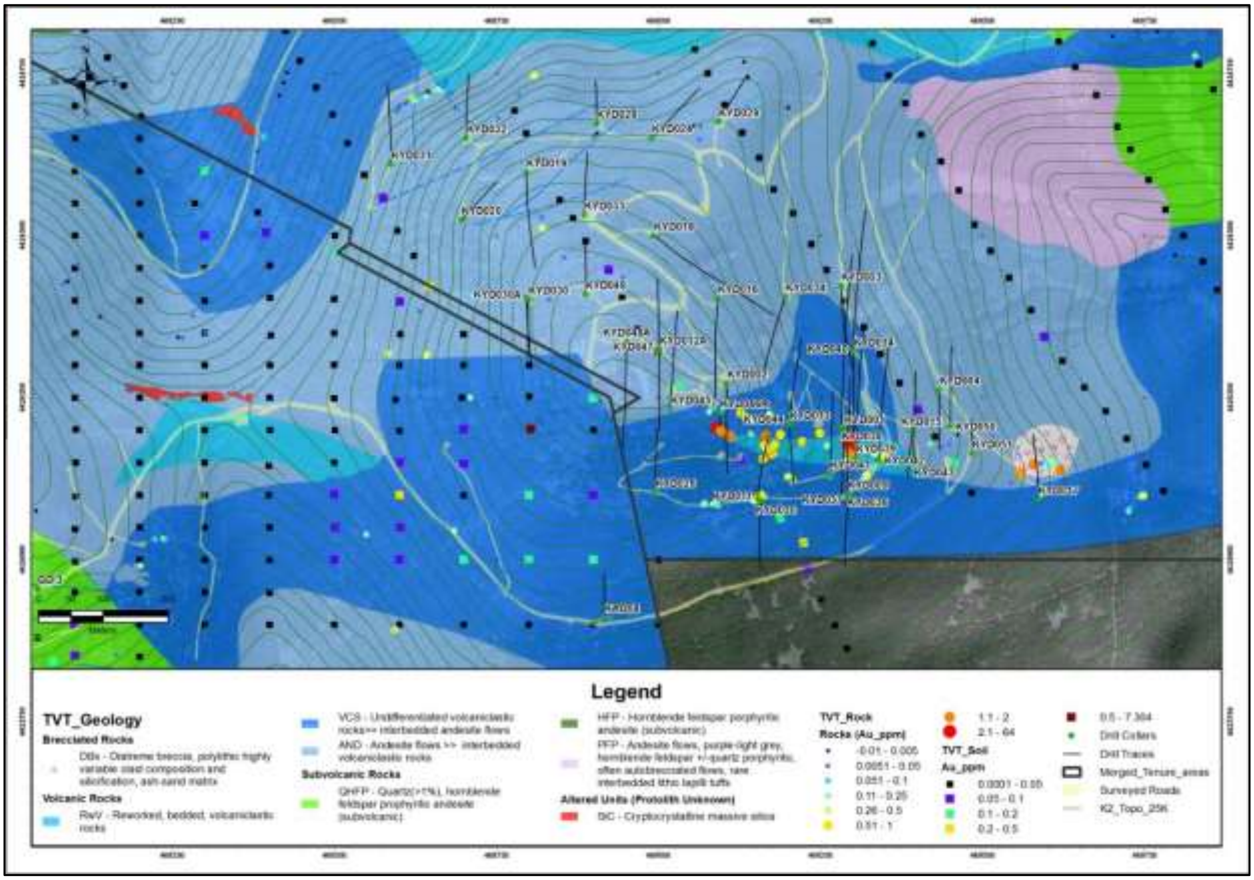
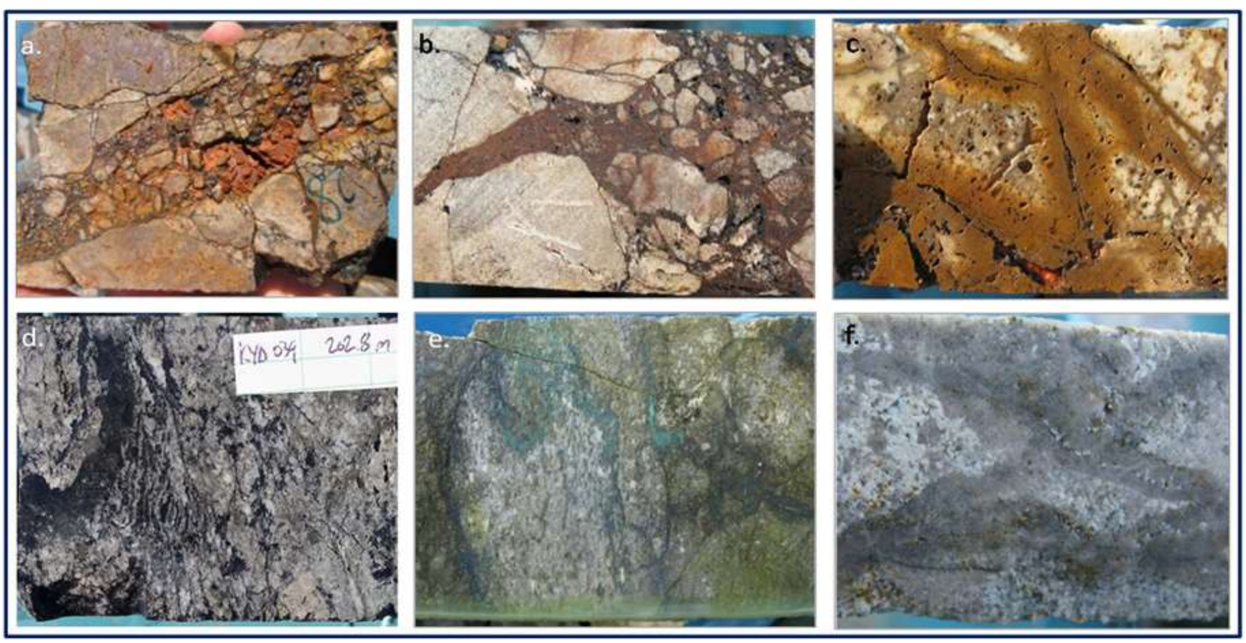


Figure 7.12: Core photos from the Kayalı HSE and Hilltop porphyry targets

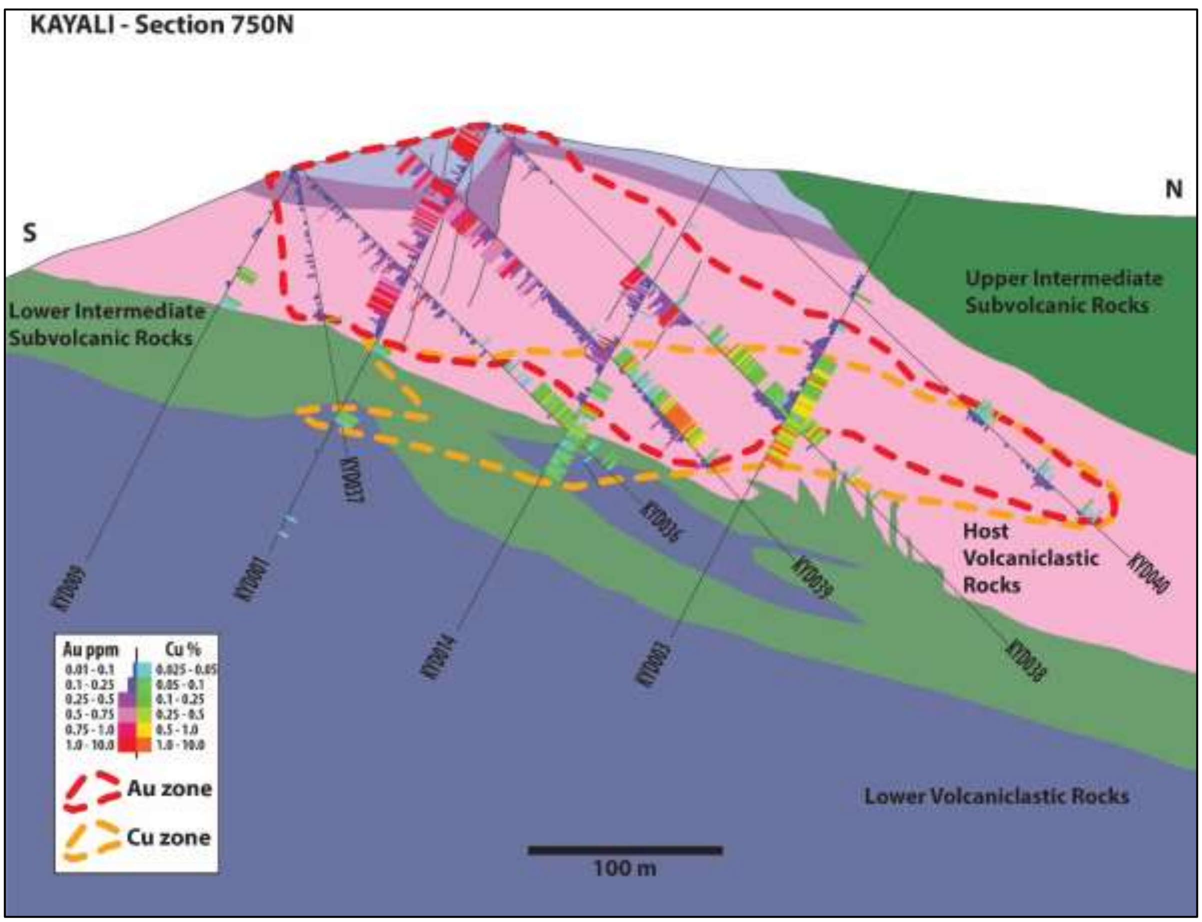


Kayalı and Hilltop targets in core. a. and b. two views of oxide gold mineralization, consisting of brecciated and silicified fine-grained tuff with hematite and limonite matrix/cement. c. vuggy silica with limonite-stained *fractures. d. and e. two views of supergene copper mineralization consisting of chalcocite and covellite with copper oxides. f. An example of porphyry-style alteration at Hilltop, consisting of quartz stockwork veins with axial lines, phyllic-altered matrix and disseminated chalcocite.*

Below the silicified zone, the hole passes into advanced argillic altered, feldspar porphyritic flows, and eventually into unoxidized rocks. At this boundary, a zone of supergene chalcocite and covellite is developed. Copper likely was present as enargite in the silicified zone but was subsequently leached and redeposited at the oxidation-reduction boundary. Drill hole KYD-02, which returned 88.6 m grading 0.78 g/t Au also tested this rib; however, subsequent drilling by TMST moved primarily into an area of quartz-alunite altered flows that did not yield significant results in drilling.

The Kayalı target was subject to detailed mapping and drilling to better understand the structural and stratigraphic controls on the distribution of gold mineralization. 3586.1 m of diamond drilling in 17 holes was completed in 2013. This drilling, oriented toward the north to cut the surface expression of mineralized ribs at high angles, identified at least two parallel ribs that have been tested over a strike length of approximately 500 m, and to a depth of up to 100 m. Logging subunits were defined with the goal of producing a coherent geological model and increasing continuity amongst geologists when assigning rock types within a varied volcaniclastic sequence. Continuity of lithological subunits between surface mapping and subsurface geology is a work in progress. An idealized cross-section is shown in Figure 7.13.

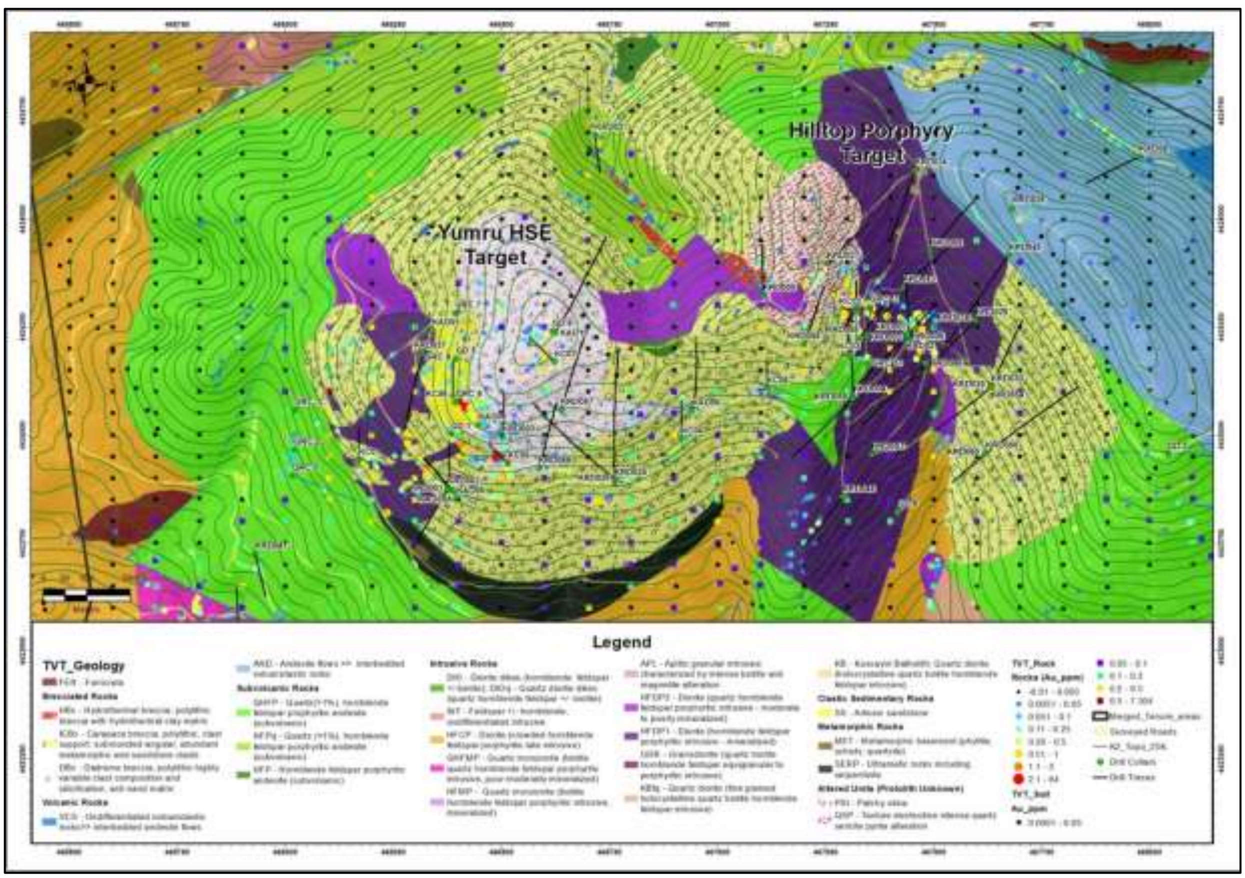
Figure 7.13: Idealized cross section through Kayalı displaying Au and Cu zonation as defined by drilling relative to simplified geological subunits



Yumrudağ Deposit: HSE mineralization at Yumrudağ was recognized by three previous operators, who drilled a total of approximately 20 holes into the system (Figure 7.14). Liberty Gold tested it with 8 additional holes. Host rocks include intrusive carapace breccias, with minor dacite, and to some extent the pre-porphyry QHFP intrusion and the diatreme body serving as host rocks to a much lesser degree. Hydrothermal breccias also host mineralization.

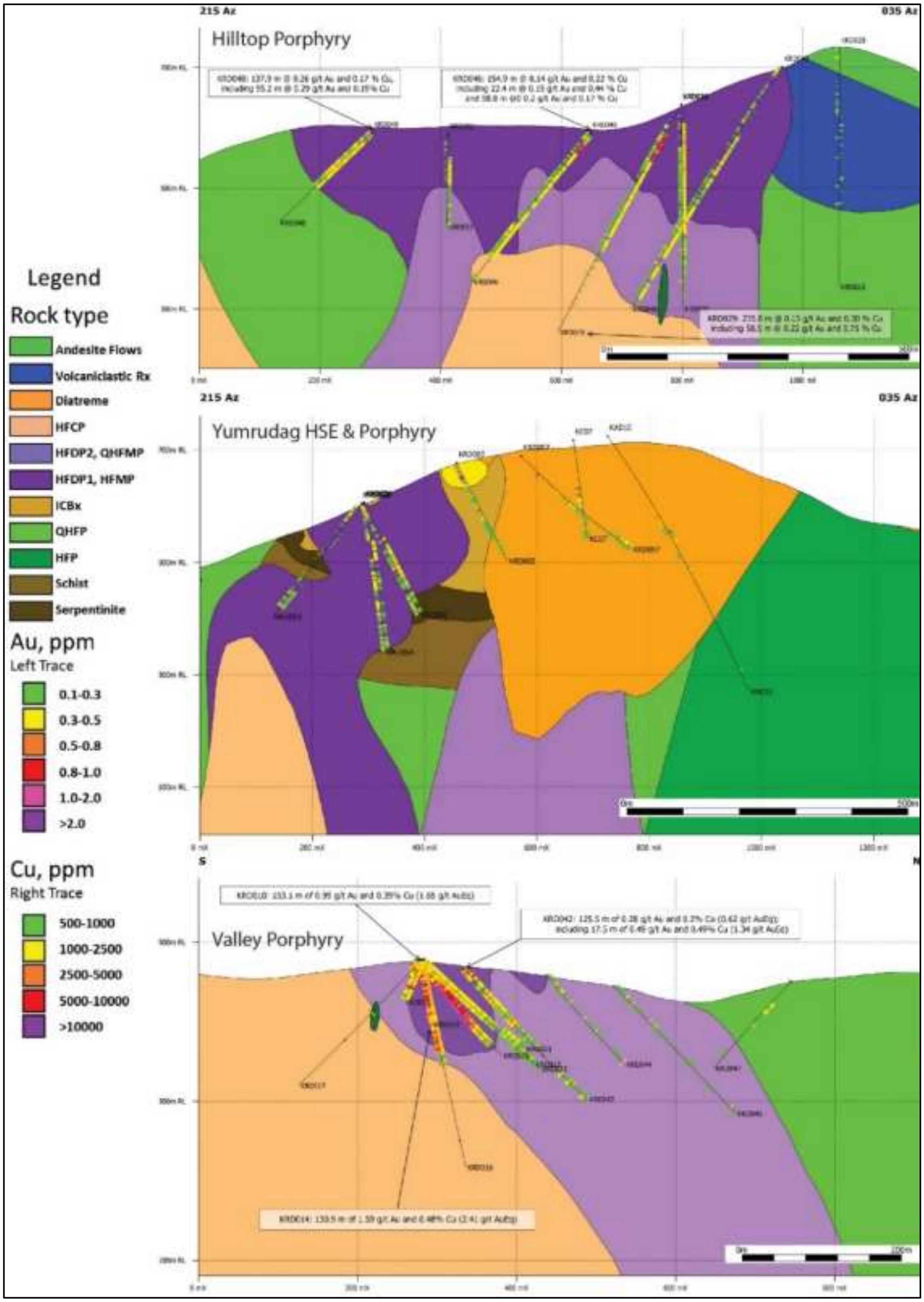
Host rocks are extensively altered to either pervasive or patchy quartz. The dominant advanced argillic assemblage at Yumrudağ is pyrophyllite-alunite-diaspore-kaolinite-dickite, with pyrophyllite commonly present as eroded, rounded patches up to several cm in diameter. Some alunite is present locally. Elevated gold is closely associated with NW-striking, steeply SW dipping joint sets, brittle shears and crackle breccias filled with limonite, goethite and hematite. Beneath the zone of quartz alteration, the host rock is dominantly intrusive in nature, and extensively kaolinite altered. At greater depth, quartz stockwork veins with center lines and sericite alteration are present, suggesting a transition into the porphyry environment. A variably-developed zone of disseminated chalcocite is present at a near-constant elevation, overprinting the high sulfidation alteration or the porphyry transition zone, depending on host-rock type. Starting within the supergene zone, trace to several per cent disseminated pyrite is present.

Figure 7.14: Yumrudağ and Hilltop deposit geology, geochemistry and drill collars



The Yumrudağ HSE zone is developed primarily along the west and south sides of a diatreme body, as described above (Figure 7.15). Below the zone of oxidation, the diatreme body contains abundant disseminated pyrite. Some intrusive clasts in the diatreme contain stockwork veins with center lines, suggesting that it post-dates the porphyry system. Above the supergene zone, areas of crackle breccia with iron oxide matrix and weak gold mineralization suggest that the diatreme predates at least some of the HSE gold mineralization.

Figure 7.15: Geologic cross sections and Au and Cu drill assays from Hilltop, Yumrudağ and Valley Deposits



The Ardic residual quartz ledge, located immediately east of Yumrudağ, exhibits similar alteration, mineralization and host rocks to the Yumrudağ system. It immediately overlies the Hilltop Porphyry system.

Hilltop Porphyry Au-Cu Deposit: The discovery outcrops consist of crowded quartz-hornblende-feldspar diorite porphyry intrusive rock exposed on surface at the collars of drill holes KC-2, KC-3 and KRD002, immediately beneath quartz-pyrophyllite altered volcanic rocks. The target was tested with three RC holes by Tüprag and one diamond drill hole by Chesser. Between late 2013 and 2015, Liberty Gold drilled 25 diamond drill holes into the target, which are further described in Section 10 (Figure 7.16).

The Hilltop porphyry center is located 1.5 km northeast of the Valley porphyry, between the Yumrudağ and Kayalı HSE systems. It is primarily hosted in two phases of the HFDP unit, interpreted to be syn- and late-syn mineral on the basis of intensity of alteration and mineralization, but otherwise compositionally indistinguishable. These, in turn, intrude the pre-mineral QHFP unit, and are underlain by basement metamorphic rocks and/or the post-mineral HFCP intrusive phase.

The center of the Hilltop porphyry system (as currently drilled) is exposed on surface in a steep valley and consists of densely quartz stockworked HFDP1 with a sericitized matrix (Figure 7.16). It intrudes silicified and pyrophyllite-altered rocks of unknown, possibly volcanic, protolith type (Figure 7.16a).

Figure 7.16: The Hilltop Porphyry system

A: Contact of the HFDP1 (syn-mineral) intrusion with overlying strongly silicified (volcanic?) rock. The *intrusion margin is chilled, clay altered and variably silicified, and contains areas of vuggy residual quartz. It is not clear whether the quartz alteration pre-dates or post-dates the intrusion, although radiometric age dating suggests the latter. B: Strong quartz stockwork alteration in sericitized and silicified HFDP1. C) Typical appearance of altered porphyry near the top of the system. Patchy K-feldspar alteration with strong sericite alteration and finely disseminated chalcocite. D: Quartz-sericite alteration with wavy quartz vein with center line. E: Alteration in the HFDP2 (late mineral) intrusion near the base of the system. Strong pervasive biotite alteration overprinted by fracture and vein-controlled quartz-sericite. There is relatively little copper or gold associated with this style of alteration.*

In drill core, the upper portion of the Hilltop porphyry is strongly leached, consisting mainly of quartz, sericite and iron oxide. Quartz is present as quartz stockwork and patchy areas of silicification. Some patchy areas of K-feldspar are also present. The first sulphides are in the form of chalcocite as sooty, fine-grained disseminations, and as coatings on pyrite with increasing depth. This zone of supergene chalcocite is variably present over a wide area over a fairly constant elevation. A NW-trending secondary control on the concentration of chalcocite is suggested by the drill data to date.

With increasing depth, sericite and patchy quartz alteration become less intense, K-feldspar becomes ubiquitous in the groundmass, with some areas of K-feldspar flooding, and some disseminated chalcopyrite and magnetite are preserved. Quartz stockwork veining, in the form of curved “A” veins and later straight “B” veins with center lines and associated pyrite and chalcopyrite, are ubiquitous throughout.

At greater depth, the late syn-mineral intrusive phase HFDP2 is dominant. It is affected by biotite alteration of the matrix, with disseminated pyrite and magnetite. Sericite is restricted to cross-cutting fractures. Veining consists largely of pyrite-dominant “D” veins with sericitized margins and late anhydrite veins. Similar alteration is present in basement metamorphic rocks at the same elevation.

Unlike the Valley porphyry, strong sericite alteration is often present to a depth of over 200 m from the top of the intrusion, with at least some chalcocite still present at that depth.

Gold is present at concentrations of 0.1 to 1.0 ppm and appears to be well-correlated with stockwork density. Copper is virtually absent from leached areas, is highest-grade near the top of the supergene zone, with concentrations ranging from 0.2 to locally over 4%, and is typically in the range of 0.08 to 0.2% in chalcopyrite-dominant (hypogene) mineralization. Laterally to the north and south, stockwork density is dramatically decreased or absent in the pre-mineral QHFP intrusion, and is largely absent in overlying or adjacent volcanic rocks, leading to sub-economic gold concentrations. Any copper present is a result of supergene processes. The system is still open to the west.

Valley porphyry Au-Cu Deposit: The Valley porphyry deposit was discovered in 2014 through follow-up of an elongate to the northwest, 1 km-long by 300 m-wide copper and gold-in-soil anomaly. To date, it is still incompletely drilled. Two quartz diorite intrusive phases, HFMP and QHFMP, are syn- and late-syn mineral with respect to the porphyry system, and host most of the mineralization. Both form thick dykes elongate to the NW-SW (Figure 7.17). The earlier of the two phases, HFMP, contains most of the higher-grade mineralization. The system is bounded abruptly on the southwest side by a thick, post-mineral HFCP intrusive body that truncates quartz veining. To the northeast, pre-mineral intrusive rocks assigned to the QHFP unit are clay altered to weakly sericitized but do not contain economic concentrations of copper or gold.

In the southeast and east portion of the Valley porphyry zone (Bull zone and Hilltop Roots zone), intrusive rocks contain disseminated and fracture-controlled chlorite, actinolite, magnetite, quartz and variable K-feldspar and secondary biotite.

Rocks in the central and western, highest-grade portion of the Valley porphyry system are affected by very strong K-feldspar-quartz-magnetite alteration, cut by strong quartz stockwork alteration, locally comprising up to 80% of the rocks (Figure 7.18). The host to this alteration is the HFMP unit, as well as rocks suspected to be a raft of the pre-mineral Kuşçayır pluton. Quartz veining includes early quartz-K-feldspar or quartz-only veins, followed by quartz-sulphide straight veins with axial lines, and late pyrite-dominant. Quartz-magnetite and quartz-magnetite-sulphide veins are ubiquitous throughout.

The Valley porphyry system is cut by discreet zones of quartz-sericite alteration up to 10 m wide, consisting of quartz stockwork and quartz veins up to 2 m wide in a strongly sericitized matrix. The alteration zones strike NE, ENE and WNW. The zones are paragenetically late, and it is not clear whether they represent late collapse of the porphyry hydrothermal system or are more closely related to the overlying HSE system.

Mineralization in the Valley porphyry consists of disseminated and quartz vein-hosted chalcopyrite-bornite in the core high-grade zone, and chalcopyrite-pyrite in flanking, lower-grade areas (Figure 7.18). Pyrite-only disseminated and vein controlled mineralization is present in the southeast part of the porphyry system. Trace molybdenite is locally present in late quartz stockwork veins. Gold is well correlated with copper over most of the zone, and appears to also be related to quartz stockwork density.

The top few meters of the Valley porphyry, where it is exposed on surface in the central high-grade zone, is partially oxidized, containing malachite and chalcocite.

Figure 7.17: Karaayı Valley Porphyry Deposit geology, geochemistry and drill collars

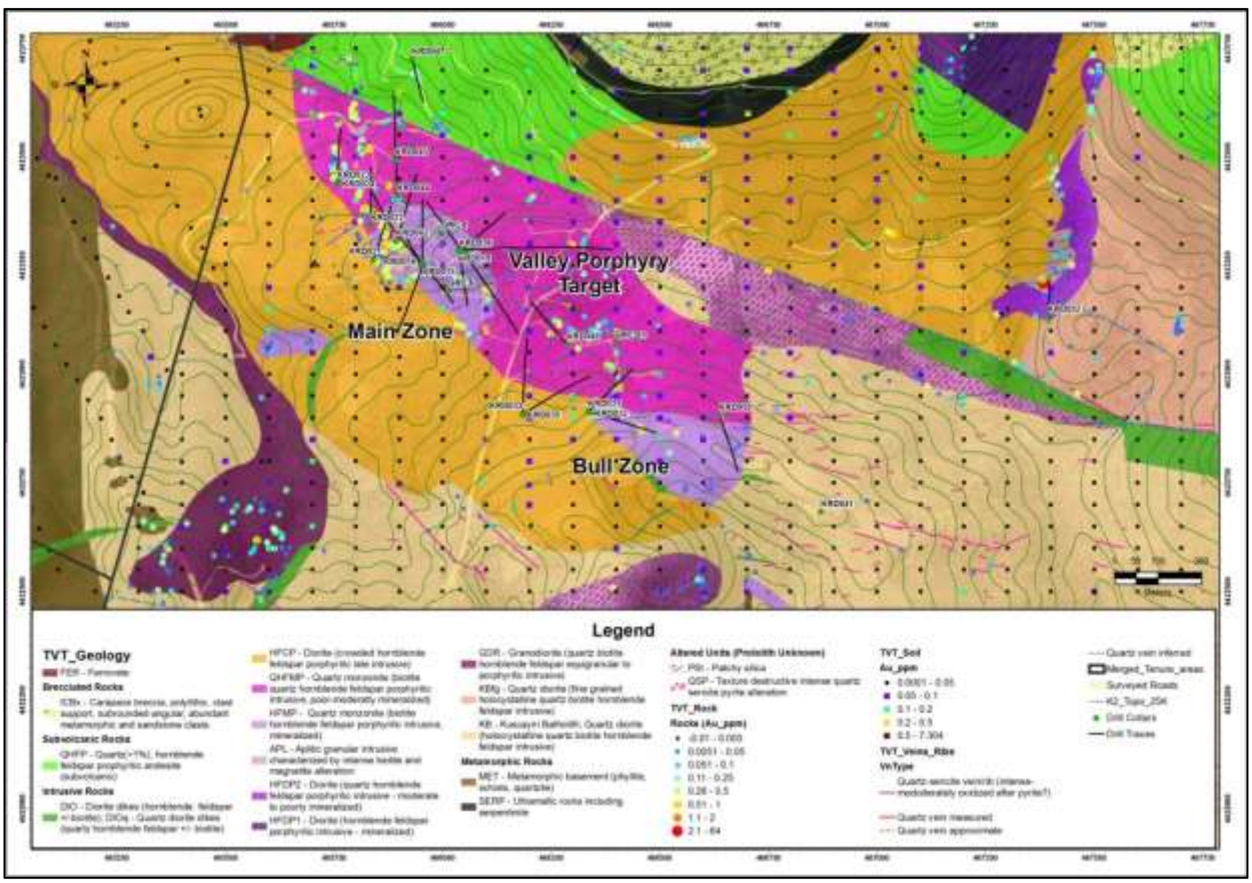
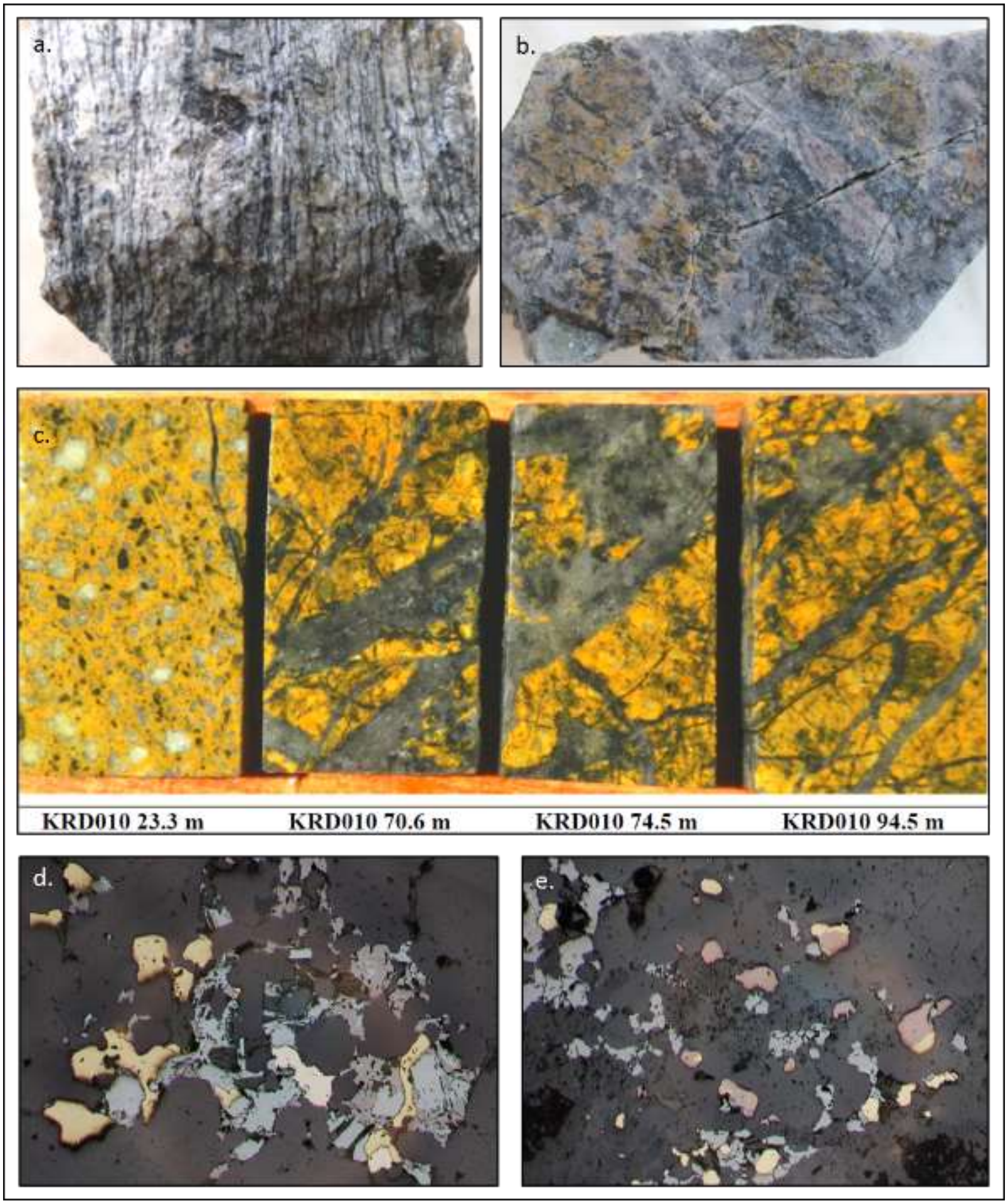


Figure 7.18: Valley Porphyry system



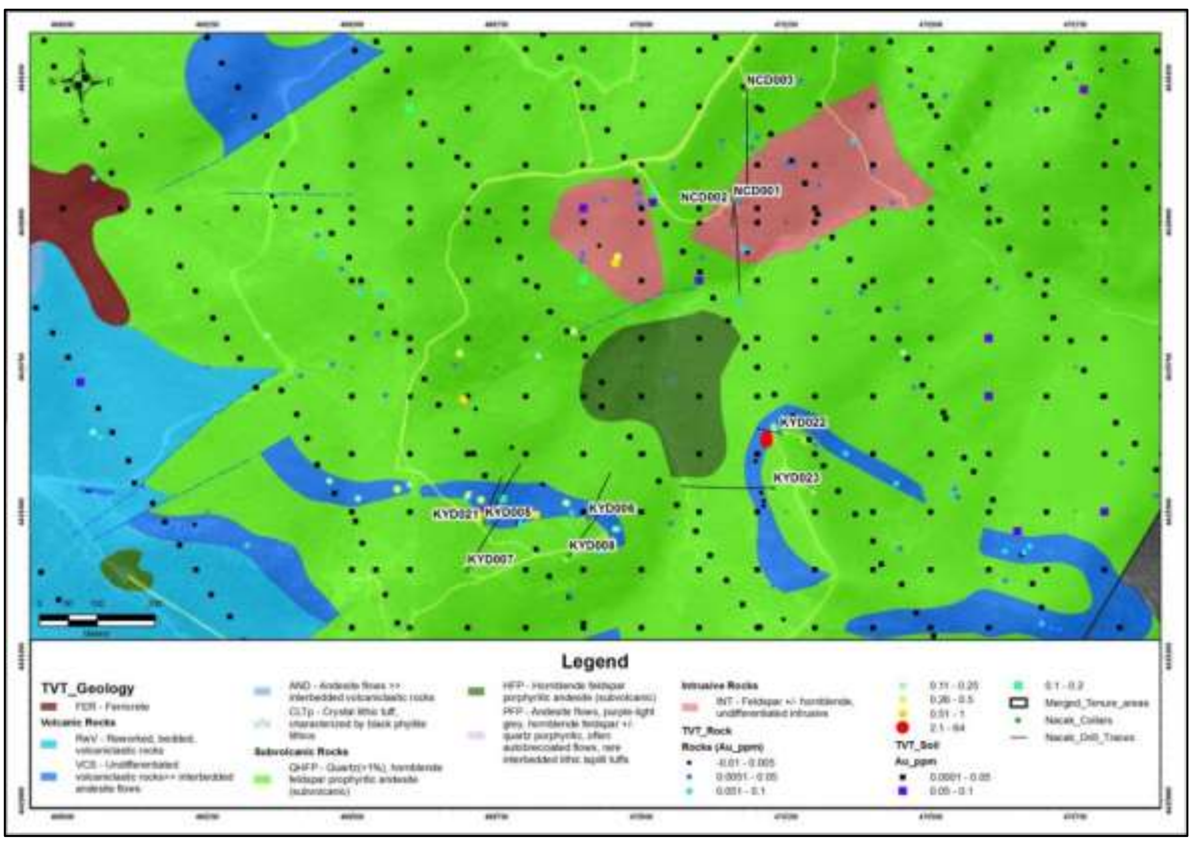
A) Hand sample of quartz-K-feldspar altered rock with a dense network of sheeted magnetite veinlets from the eastern margin of the Valley Porphyry (Hilltop Roots zone). B) Hand sample of quartz-K-feldspar altered rock with quartz stockwork and groundmass magnetite. C) Series of stained thin section cut-offs showing down-hole progression of alteration, primarily in the form of quartz-K-feldspar, magnetite and quartz stockwork (Ross, 2014a). D) Polished section from Valley Porphyry mineralized zones showing interlocking chalcopyrite, pyrite and magnetite, the latter partially replace by hematite (Ross, 2014b). E) Polished section from the highest grade core of the Valley Porphyry system, showing bornite-magnetite-chalcopyrite mineralization (Ross, 2014b). Field of view for both polished sections is 2 mm.

Nacak Target: The Nacak target is located to the northeast of the Kayalı target (Figure 7.19). It consists of a high sulphidation epithermal target and a porphyry target. The high sulphidation target is defined primarily by a gently north-dipping, tabular residual quartz ledge and related advanced argillic alteration with sporadic high gold values in rocks that crop out over a wide area. The ledge was targeted with ten drill holes by TMST with limited success. Mineralization is similar in nature to that discovered at the nearby Kayalı target, with massive to vuggy quartz-altered volcaniclastic rocks (ledges) cut by structural ribs characterized by the presence of hematitic breccia zones with elevated gold grades. It is possible that a detailed mapping program tasked with identification of silica ribs and related structures in this area might increase the odds of discovering significant gold mineralization.

The Nacak porphyry target consists of an area of coincident Au and Cu in soil present at lower elevations below the silica ledge. In this area, volcanic rocks contain areas of patchy silicification, locally with finely disseminated grey sulphide. Quartz stockwork veining representing possible “A” veins, cut by “B” veins with axial lines and locally cut by limonite veinlets (oxidized “D” veins?) was noted in outcrop. QSP alteration was noted in association with veining. These observations suggested the possibility of porphyry-style mineralization at shallow depth. Elsewhere in this area, K-feldspar-biotite altered monzonite with disseminated chalcopyrite and malachite was noted.

Three diamond drill holes totaling 1,116.2 m targeted porphyry-style alteration at Nacak in 2013. All three returned intervals of QSP alteration with weak sheeted quartz or stockwork quartz veining in feldspar porphyritic intrusive rocks. Two holes contained weak pervasive potassic alteration at depth. While anomalous copper and gold grades were noted in association with QSP alteration and stockwork veining, potentially economic grades were not encountered. Additional drilling may be warranted for this target.

Figure 7.19: Nacak target geology, drilling and geochemistry



Sarp / Columbaz Target: The Sarp / Columbaz area, located in the east-central part of the property was explored by TMST as a high sulphidation epithermal target (Figure 7.20). The area was targeted on the basis of an extensive cap of mostly massive grey quartz/silica alteration with patchy areas of advanced argillic alteration, a large area of highly anomalous soil and rock samples, and a large IP chargeability high. It was noted that the ridge was cut by a series of steeply dipping E- to ESE-striking faults and breccia zones.

Surface rock saw-cut channel sampling of some of the breccia zones returned up to 2.2 g/t Au. TMST drilled ten holes through the silica cap, which returned generally disappointing results. The best results were from three ~7 m intervals from different holes, ranging from 0.27-0.50 g/t Au. Liberty Gold believes that a number of these holes may not have tested the intended breccia targets due to alignment of the drill holes entirely within the footwalls of the zones.

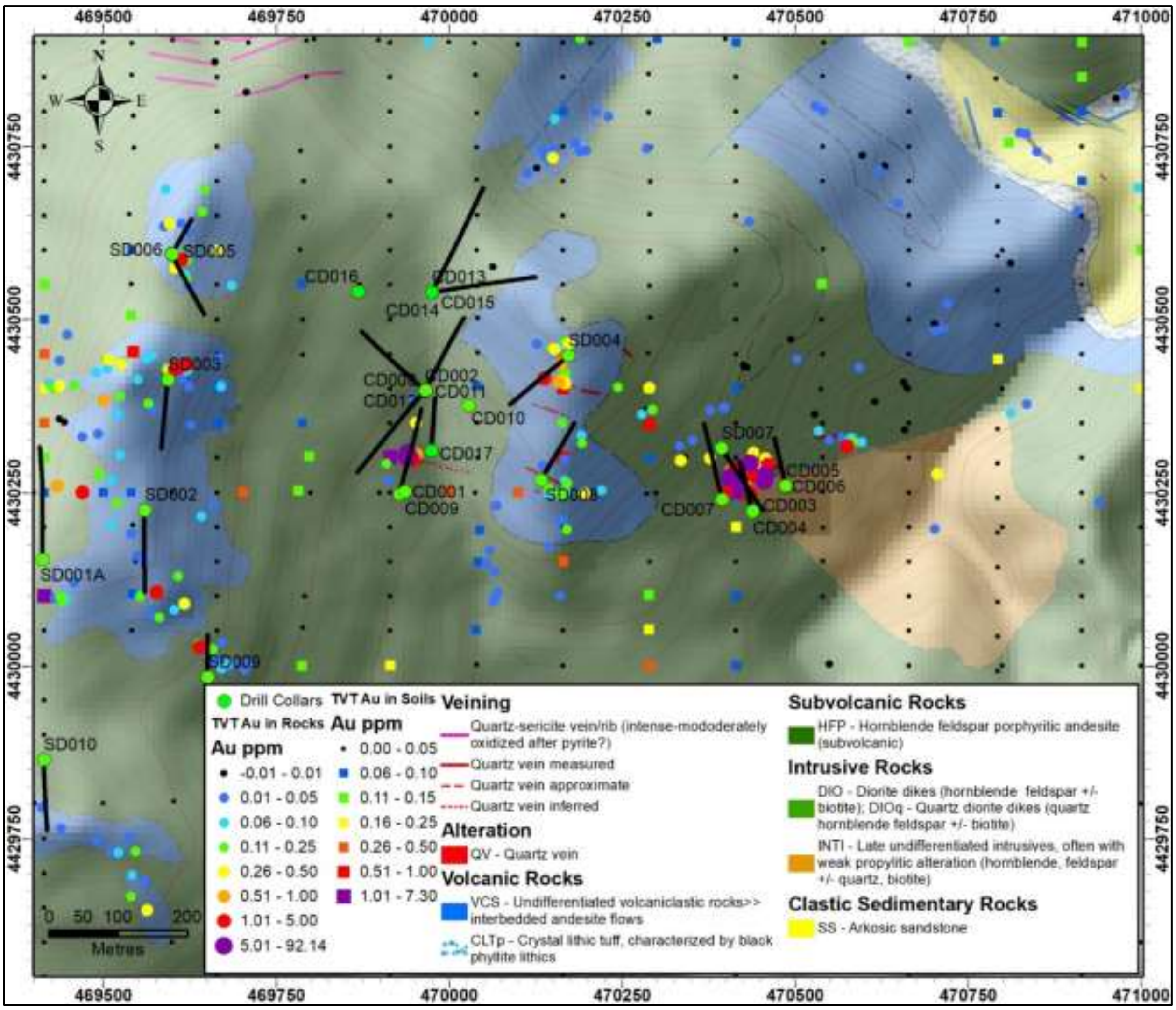
Consultant Peter Grieve located several possible tree casts on the southern shoulder of Kurtoldu Tepe, a few hundred metres south of Sarp summit, hosted in fine chalcedonic silica with rare chalcedonic cemented breccia. The tree casts indicate this was the paleosurface at the time of mineralization. Grieve postulated that the massive silica cap might more closely represent a high-level outflow zone over a low sulphidation epithermal system. This idea, coupled with unusually high gold in rocks (up to 10 g/t Au and 39 g/t Ag) and soils in the eastern "Columbaz" part of the target area near hole SD-07, led to a detailed mapping and sampling effort resulting in identification of three low sulphidation Au-Ag veins. The low sulphidation veins trend ~240˚/60˚to 85˚ (below SD-04 and SD-04A), ~085˚/75˚ (below SD-07) and ~085˚/55˚. The veins are hosted at a contact between pyritic andesite and silicified dacitic tuff. A number of diagnostic low sulphidation textures were noted in the veins, including colloform and crustiform banding associated with brecciation. One float sample displaying ginguro textures returned high Au and Ag grades with values of 35 g/t Au and 396 ppm Ag.

Liberty Gold drilled 12 diamond core holes at the Columbaz target area in 2014. Five of the holes tested the main (eastern) zone of quartz veining. While the holes located the down-dip extension of the vein system, intercepts were narrow and averaged less than 1 g/t gold. A few of the holes also intersected fine-grained volcaniclastic rocks affected by vuggy quartz alteration at depth, similar to stratigraphy and alteration at KCD, but the rocks contained only anomalous gold.

Drill holes CD001 and CD002 tested a vein at the west end of the vein target. Both holes intercepted a number of clay-altered fault zones containing quartz vein rubble exhibiting textures consistent with low sulphidation epithermal veins at depth. The vein was determined to dip steeply to the north. The faulted quartz vein zones in these holes generally returned gold values of >1 g/t. These zones in subsequent holes return individual assays intervals grading up to 24 g/t Au and a high of 13.2 metres grading 3.32 g/t Au in CD008. Starting near the bottom of CD002, host rocks began to resemble porphyritic shallow intrusive rocks and show signs of porphyry-style alteration, including weak pervasive QSP alteration and areas of weak quartz- and quartz-magnetite stockwork veinlets.

Five additional holes were drilled in 2014 to follow up on encouraging results in CD002, resulting in the discovery of a gold-copper mineralized porphyritic intrusive stock at depth, and a subsequent five holes drilled in 2020, all of which are described in more detail in Section 10. Hole CD010 contains a number of features that establish the alteration and mineralization to be porphyry in nature and related to porphyritic intrusive rocks (Figure 7.21). CD010 appears to have been drilled on the margin between biotite hornfelsed sedimentary rocks (possibly the arkose unit near the base of the volcanic assemblage in this area) and biotite-hornblende-feldspar porphyry intrusive rocks. There are many areas of breccia with hornfels clasts and intrusive matrix. Weak to strong QSP alteration is present throughout the hole, ranging from pervasive to fracture controlled. A weak to moderate stockwork of quartz and quartz-magnetite veins and veinlets is present over much of the length of the hole. Quartz veins generally have QSP altered margins. The bottom several tens of meters of the hole are dominated by a crowded porphyry intrusive rock with coarse hornblende and medium feldspar phenocrysts, which has K-feldspar-biotite-magnetite altered groundmass. From top to bottom over a vertical distance of over 400 metres, alteration in this hole advances from clay to sericite to biotite, consistent with a porphyry system and similar to relationships seen in the Hilltop porphyry system.

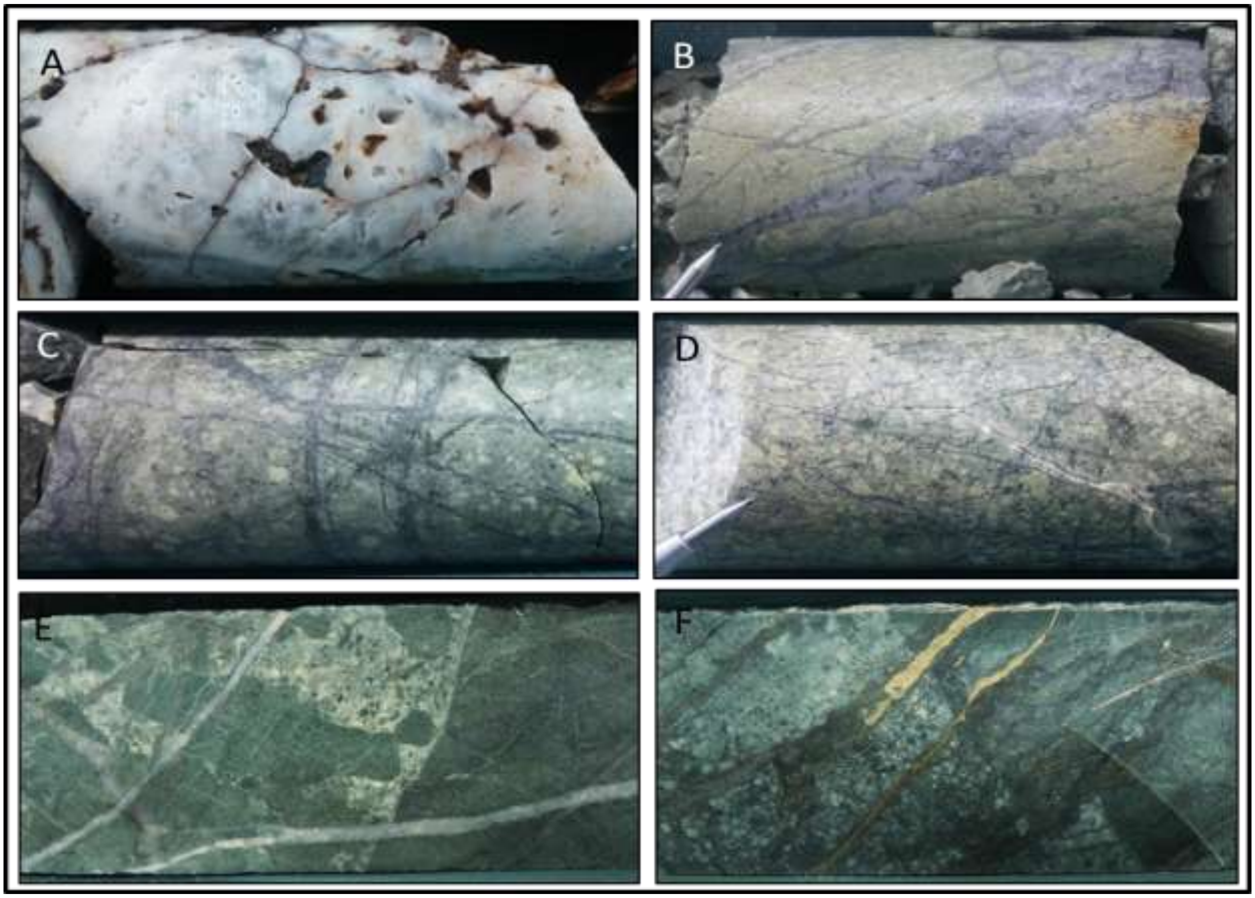
Figure 7.20: Sarp and Columbaz geology, surface sampling and drilling



Stockwork veins are variably developed in the Columbaz porphyry system (Figure 7.21). Many of the veins are composed of thin bands of grey quartz with variable fine-grained magnetite. Centre-line quartz B veins are subordinate. Gold values range from 0.1 to 0.3 g/t in the porphyry mineralized rock, with copper in the range of 0.1 to 0.3%. To date, the best results related to porphyry mineralization are achieved in CD012, which returned 499.1 metres grading 0.36 g/t Au and 0.13% Cu from surface. Gold appears to be correlated with stockwork density. Copper minerals are very fine grained and difficult to identify until into the potassic altered zones, where fine disseminations and veinlets of chalcopyrite are present both within the intrusive rocks and the hornfelsed wall rocks.

Drilling has clearly demonstrated the presence of a porphyry Au-Cu system at depth in the valley between Sarp and Columbaz. The porphyry mineralization consists of weak to moderate quartz stockwork hosted in QSP altered volcanic rock and porphyritic intrusive rock, giving way to strongly potassic altered, coarser intrusive rocks at depth. The system is open to the north, west and east. It is upgraded locally by the presence of cross-cutting epithermal quartz veins with locally high grades.

Figure 7.21: Examples of alteration at Columbaz



Examples of alteration at Columbaz. A: low sulphidation epithermal vein fragment in clay-altered fault zone; B) sheeted quartz veins and veinlets in matrix of sericite-altered volcanic rock; C) quartz-magnetite stockwork veinlets in weakly sericitized porphyritic (shallow intrusive?) rock; D: quartz-magnetite stockwork veinlets in sericite altered monzonite porphyry; volcanic rock with biotite hornfels partially retrograded to chlorite, brecciated with porphyritic intrusive matrix; cut by quartz veins; E: same, cut by chalcopyrite veins.

Kestanecik Target: The Kestanecik target is located in the northwestern portion of the property. The target hosts low sulphidation epithermal quartz veins with associated argillic alteration zone and stockwork veining over an area measuring approximately 800 x 600 m (Figure 7.22). The vein system is approximately 200 m wide with an observed approximate strike length of 800 m. The veining is fissure-fill style with individual veins up to 6 m wide in zones up to 20 m wide. Veins primarily strike WNW with steep dips. A single 1 to 2 m-wide vein in the extreme southeast of the target area strikes N-S. Silicification in the target area is extensive; the margins of the veins have an envelope of illite-montmorillonite, with a target wide propylitic halo. The alteration, from early to late stage, consists of:

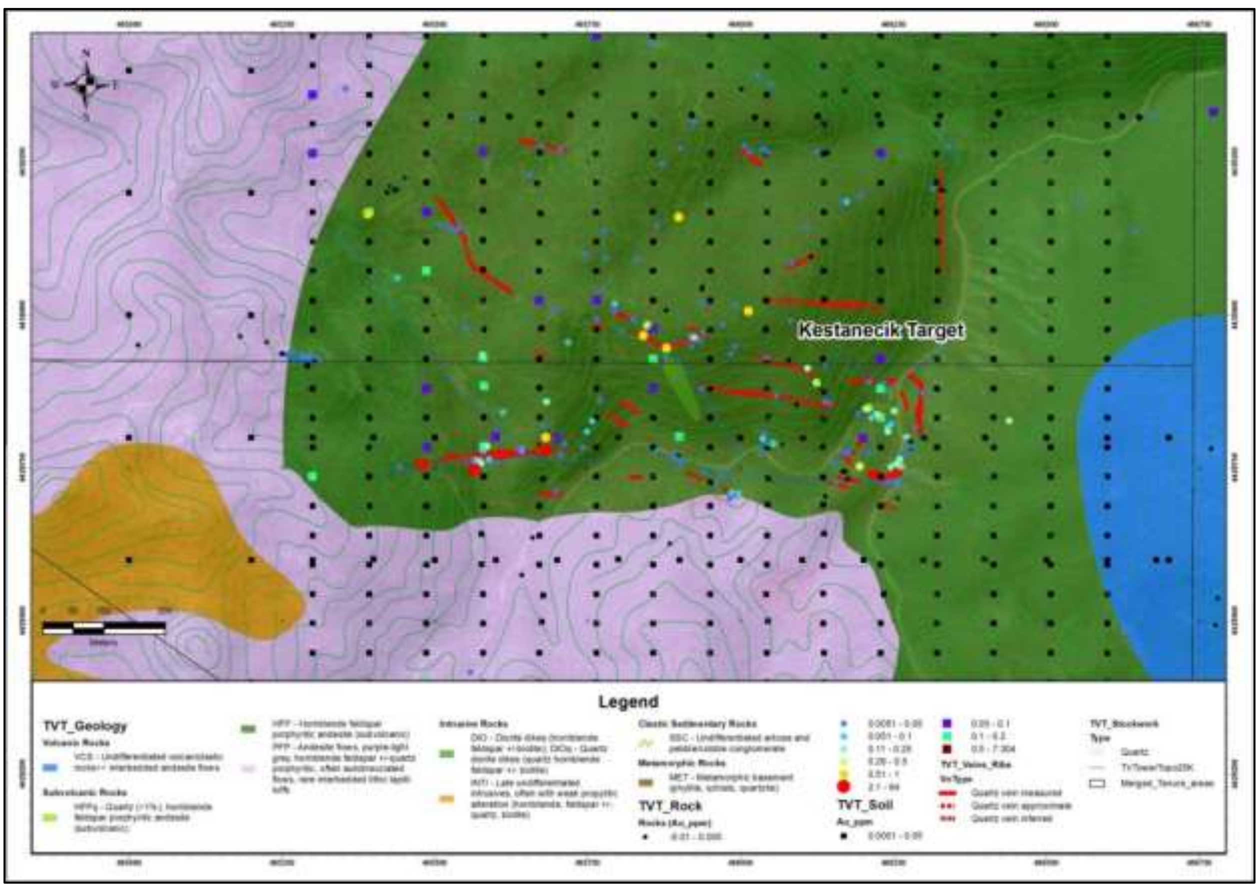
- Propylitic (chlorite) alteration – on a district scale as the background alteration facies.
- Pyrite ± silica alteration of subvolcanic andesite (oxidizes to limonitic, white leached

outcrops often with limonitic boxwork). This style is normally texture preservative in unoxidized rock. The pyrite occurs as disseminations, replacement of mafic minerals, and minor veinlets.

- Massive silica replacement of dacitic tuffs.
- Weak quartz-alunite alteration.
- Widespread (up to the width of the system ~300 m) argillic alteration related to low sulphidation veins and stockwork cutting the earlier pyrite alteration. This style is identified in the field by limonitic / jarositic staining over argillic alteration which is sometimes texture destructive.
- Milled-matrix breccia veins – typically <0.5cm wide distinguished by the ripped up brecciated black phyllite clasts, strongly argillic ± silicified feldspar porphyritic rock all typically in a dark gray sandy groundmass.
- Narrow (<1.0 m) zones of silicification adjacent to low sulphidation veins and stockworks; strongly texture preservative.

The initial interpretation, based on vein textures, is that the exposed portion of the vein system is below the boiling zone, but the rapid rise in topography away from the area indicates potential for preservation of shallower parts of the system.

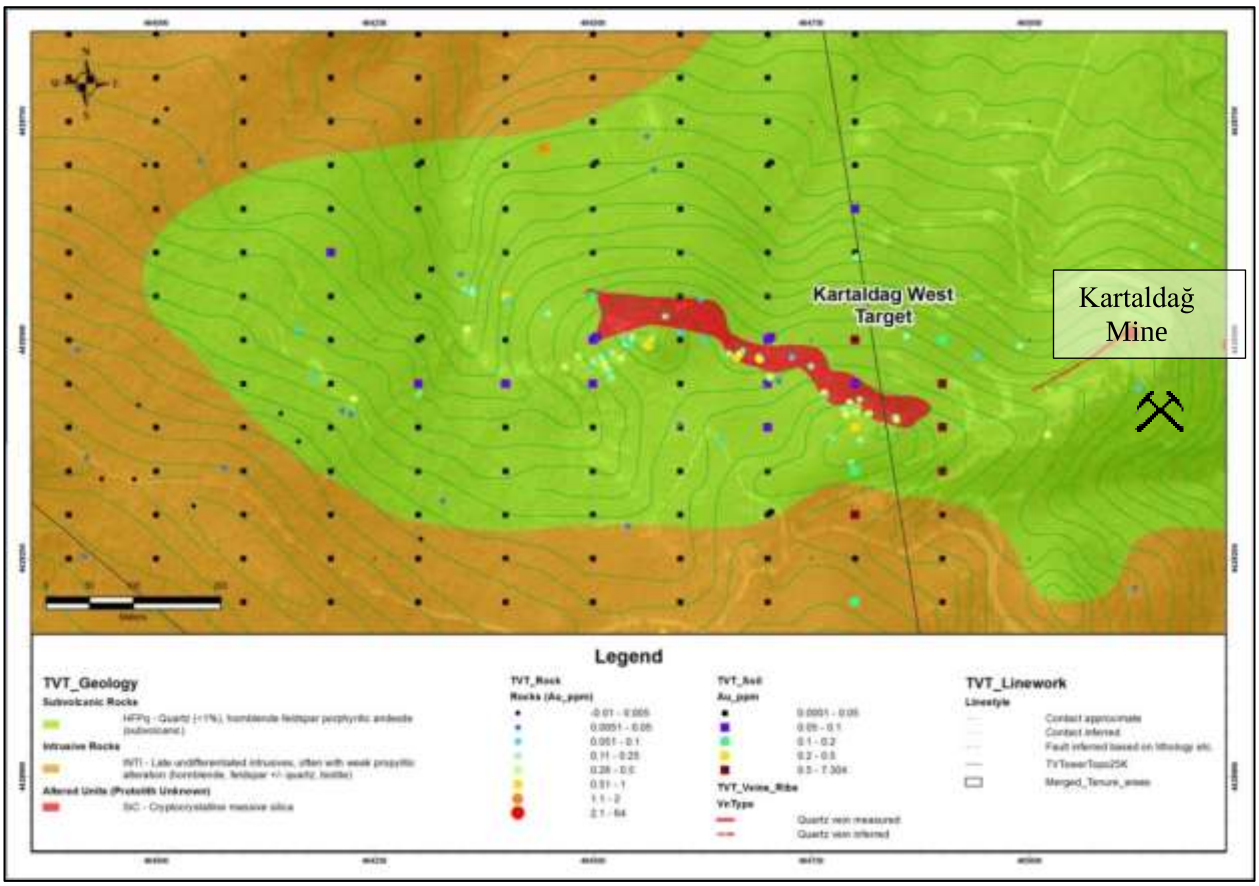
Figure 7.22: Kestanecik target alteration and surface geochemistry



Rock chip sampling has returned values up to 2.64 g/t Au and 294 g/t Ag, although most samples returned relatively low values for Au and Ag. The Kestanecik target is a relatively low priority for drilling, given the spotty and generally low grades for Au and Ag in surface sampling.

Kartaldağ West: The Kartaldağ deposit (described in Section 16 "Adjacent Properties") is located within an inlier to the TV Tower Property and is described as an intermediate sulphidation epithermal deposit reputed to have returned high gold and silver grades in small-scale historic mining from a NE-trending zone of silicification, quartz veining and sulphide mineralization. It is located a short distance to the south of the Kestanecik target. A resistant, E–W-trending rib of silica-alunite alteration continues westward from the mine for at least 200 m onto the TV Tower Property Figure (7.23). This rib is cored by a steep, iron oxide stained breccia zone. Within the breccia zone, clasts of epithermal quartz vein material were noted. Rock sampling has returned up to 0.9 g/t gold, with most samples returning at least anomalous values. The presence of quartz vein material in the breccia raises the possibility of a low sulphidation vein system at depth. Strong argillic or advanced argillic alteration with low sulphidation epithermal vein material in float extends up to 1 km west of the rib.

Figure 7.23: Geology and geochemistry of the West Kartaldağ target

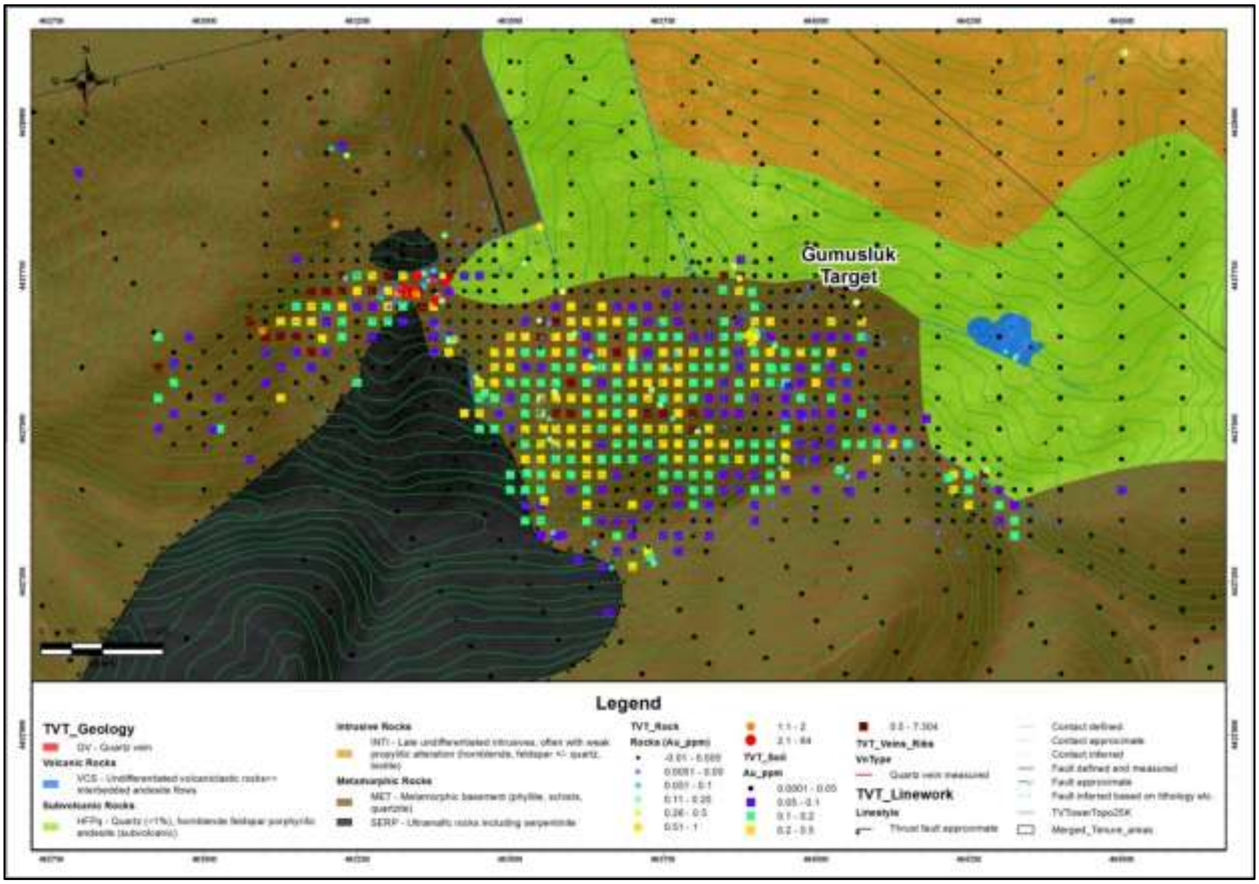


The operators of the Kartaldağ Mine carried out extensive drilling in the area over 2013 and 2014, including a large number of holes on the north (hangingwall) side of the rib/vein up to the tenure boundary. A drill test of the Kartaldağ West target is a high priority, with sites planned at regular intervals on the north side of the rib to test a possible down-dip extension.

Gümüşlük Target: The Gümüşlük target area is underlain by metamorphic rocks, including phyllite, marble, and serpentinite (Figure 7.24). Zones of gossanous material, skarn alteration and quartz veins with green mica (fuchsite?) were noted in reconnaissance traverses through this area, which had returned anomalous Au, Ag and Cu from widely-spaced soil samples. Alteration of this type is consistent with a listwaenite lode gold setting. Results from rock sampling were disappointing (generally > 2 g/t Au with most >1 g/t Au, relative to Au values in soil samples, leading to a conclusion that mineralization might be recessive in nature.

For this reason, Liberty Gold conducted a detailed, 50 x 50 m infill soil grid over the area, for a resulting 25 x 25 m sample spacing, which returned a 1.2 km-long gold in soil anomaly with individual samples returning over 5 ppm Au. The best gold in rock results are from pervasively silicified shists, a 10m quartz vein and vein breccia and gossonous quartz-carbonate-fucsite (?) altered ultramafic rocks. The structural controls in this area are not well understood, NE/SW faults or the folded schists may focus the silicification and mineralization.

Figure 7.24: Geology and surface sampling at the Gümüşlük target



Tesbihçukuru Target: The Tesbihçukuru target was defined largely on the basis of the presence of a very large area of massive quartz alteration (Figure 7.25). This ledge is developed largely in dacite, lying a few hundred meters above the contact with basement metamorphic rocks. Limited soil and rock sampling suggests that the ledge is largely barren. Within the ledge, a number of NW-trending, brecciated ribs were noted by Liberty Gold, as well as areas of Fe-oxide cemented crackle and mosaic breccia; most of these contained no or low- grade gold.

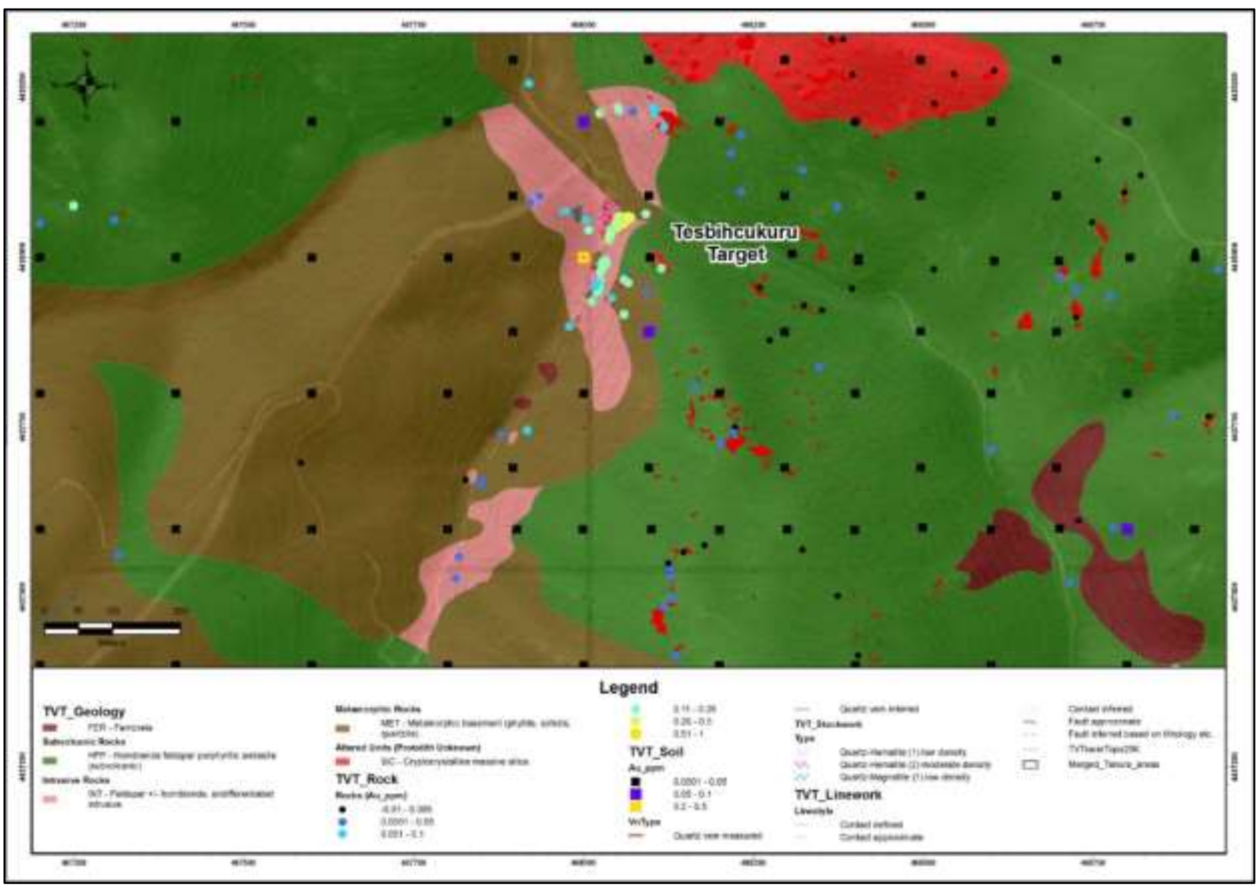
TMST identified an area on the southern boundary of the target below the ledge that returned anomalous gold in rock samples from quartz stockwork-altered volcanic rocks immediately above the contact with the undifferentiated intrusive rocks. The stockwork veins are comby and contain axial lines typical of veins in porphyry systems, and are accompanied by clay, silica and iron oxides. Across the valley to the south, TMST located more quartz stockwork veining, with samples returning up to 0.5 g/t Au. This area lies on the northern edge of a bull's eye magnetic anomaly with a shape and size similar to other porphyry targets on the property. The stockwork zone appears to lie immediately above the contact with the basement metamorphic rocks, but the overlying volcanic rocks might conceal an intrusion to the south of the stockwork zone.

Throughout the 2015 exploration field season mapping and sampling on the southwest side of the drainage, in the area of the historic 0.5 g/t Au stockwork samples, confirmed the basement schists are intruded by two distinct intrusive phases. A coarser-grained quartz biotite ornblende feldspar intrusive phase is noted to be more widespread with less quartz (<1% quartz), than the finer grained biotite quartz hornblende feldspar phase which can carry up to 10%, often embayed quartz phenocrysts. Recent mapping efforts have noted these two phases but not enough detail work has been done to confidently separate the two phases.

A road cut along the side of an access road allowed for several 10+ m continuous saw cut channel samples. Highlights from this sampling include 0.17 ppm Au over 16m and 0.18% Cu over 10m.

Several sheeted vein directions measured within the best mineralized parts of the intrusives show a dominant direction of the sheeted veins in a NW/SE direction with a secondary set of sheeted veining in a NE/SW direction. The best mineralized portion of the intrusive coincides with the highest density of quartz+magnetite+hematite stockwork and sheeted veins. Phyllic altered schists with quartz stockwork veining along the margin and preserved as rafts within the intrusive have also returned anomalous Au and Cu mineralization.

Figure 7.25: Geology and Au in rock and soils samples at Tesbihçukuru

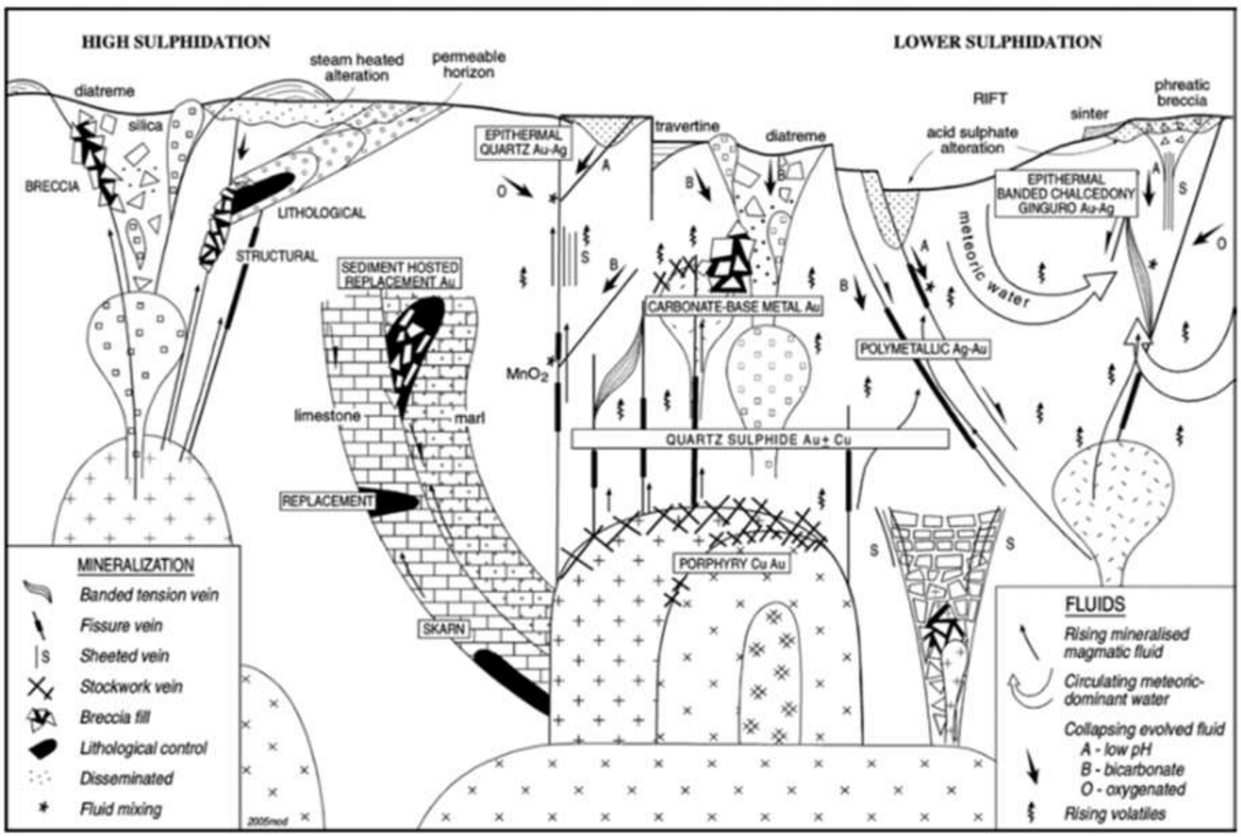


8. DEPOSIT TYPES

The TV Tower Exploration Property is interpreted to contain multiple zones of gold mineralization nested within a large, highly-altered volcanic center or centers. Many of these target areas have widespread epithermal alteration with supporting geophysical and geochemical signatures typical of those seen at other high sulphidation gold (Kirazlı, Ağı Dağı), low sulphidation gold (Kestanelik -Lapseki), and porphyry copper-gold deposits (Halilağa) within the Biga Peninsula.

The targets defined to date at TV Tower are classified as either low sulphidation epithermal gold-silver, high sulphidation epithermal gold-silver±copper, gold-copper porphyry mineralization, or listwaenite lode gold mineralization. An intermediate sulphidation deposit lies immediately adjacent to the property and examples of this type may be present within it. Descriptions of the deposit types found on the TV Tower property are found below and illustrated schematically in Figure 8.1. The geological models being applied in the investigation of mineral deposit types, and on which the exploration program was based, are discussed below and referenced in Section 7.

Figure 8.1: Schematic illustration of deposit types at TV Tower



Schematic illustration of the genetic relationship between the types of mineralization found at the TV Tower property (Corbett, 2005).

8.1 High / Intermediate Sulphidation Epithermal

The terms high, low and intermediate sulphidation are based on the sulphidation state of the sulphide assemblage. High and intermediate epithermal Au-Ag (±) base metal deposits are typically located between the surface and a shallow degassing intrusion. These deposits are commonly associated with centers of magmatism and volcanism. Where preserved, high sulphidation systems have a large silica or quartz lithocap which can be many times larger than the potential mineralized body at depth. Fluid inclusion work indicates an emplacement depth of within 1.5 km of the paleosurface (Figure 8.1). Ore bodies are commonly located proximal to volcanic vents and are hosted by structural conduits and permeable rocks. The compositional range of rocks genetically related to high sulphidation deposits is relatively narrow, primarily intermediate calc-alkaline rocks. Intermediate sulphidation deposits span a broader range of rock types. Residual silica is the principal host of high sulphidation ore (Sillitoe, 1991; White and Hedenquist, 1990; Buchanan, 1981).

General high and intermediate sulphidation features include:

- Depth of formation: 0.5 to 1.5 km
- Setting, typical host rock: volcanic dome, diatreme, volcaniclastic and clastic sedimentary rocks.
- Deposit form: Disseminated, veinlet, breccia.
- Ore textures: Replacement, massive sulphide, breccia and veins.
- Alteration: Vuggy residual quartz, advance argillic (alunite, pyrophyllite, diaspore, dickite, sericite), argillic (kaolinite), anhydrite, barite
- Sulphides: Enargite / luzonite, chalcopyrite, tetrahedrite / tennantite, sphalerite, covellite, pyrite
- Metals: Au, Ag, Cu, Bi, Te, Sn
- Fluid: > 2 wt% NaCl to 4-5+ wt% NaCl to variable depending on depth of emplacement.

One of the most common characteristics of high sulphidation deposits is alteration zoning outward from the ore body (Figure 8.2). Ore is hosted in vuggy residual quartz, with grades decreasing at the edge of the silicic core. Outward from the vuggy silica zone is a zone of advanced argillic alteration, grading from pyrophyllite in the core to kaolinite in more distal areas. An outermost zone of propylitic alteration is also normally present. The total thickness of the zone of advanced argillic alteration can be as narrow as 1 m but may be as wide as 100 m. This pattern of alteration zonation indicates progressively less acidic conditions outward from the pathway of acid fluid flow (Hemley et al., 1969, 1980; White, 1991). Alunite is commonly an early alteration and gangue mineral, whereas anhydrite and barite are relatively late.

Gold mineralization is associated with very fine-grained quartz, which in turn may be present as tabular bodies exploiting more permeable stratigraphic horizons (ledges) or fault zones (ribs). Breccia bodies are also common hosts. Gold is associated with pyrite, as well as the As-Cu mineral enargite or its lower-temperature dimorph, luzonite. Copper-arsenic sulphides typically form early in the paragenetic sequence, followed by gold and associated pyrite, tennantite-tetrahedrite, chalcopyrite, and tellurides; these sulphides indicate a lower sulphidation state than enargite.

Intermediate epithermal systems are a blend of the above outlined high sulphidation model and that of the low sulphidation model described below.

8.2 Low Sulphidation Epithermal

Low sulphidation epithermal Au-Ag deposits are hosted primarily in volcanic rocks, and were first described as a separate deposit class by Lindgren (1933). Low sulphidation epithermal deposits are formed at shallow depths from hydrothermal systems related to volcanic activity. Low sulphidation deposits typically display all or most of the following characteristics (e.g., Sillitoe, 1991; White and Hedenquist, 1990; Buchanan, 1981):

- Hosted in volcanic rocks ranging from andesite to rhyolite in composition.
- Alteration consists of quartz, sericite, illite, adularia and silica. Barite and fluorite may also

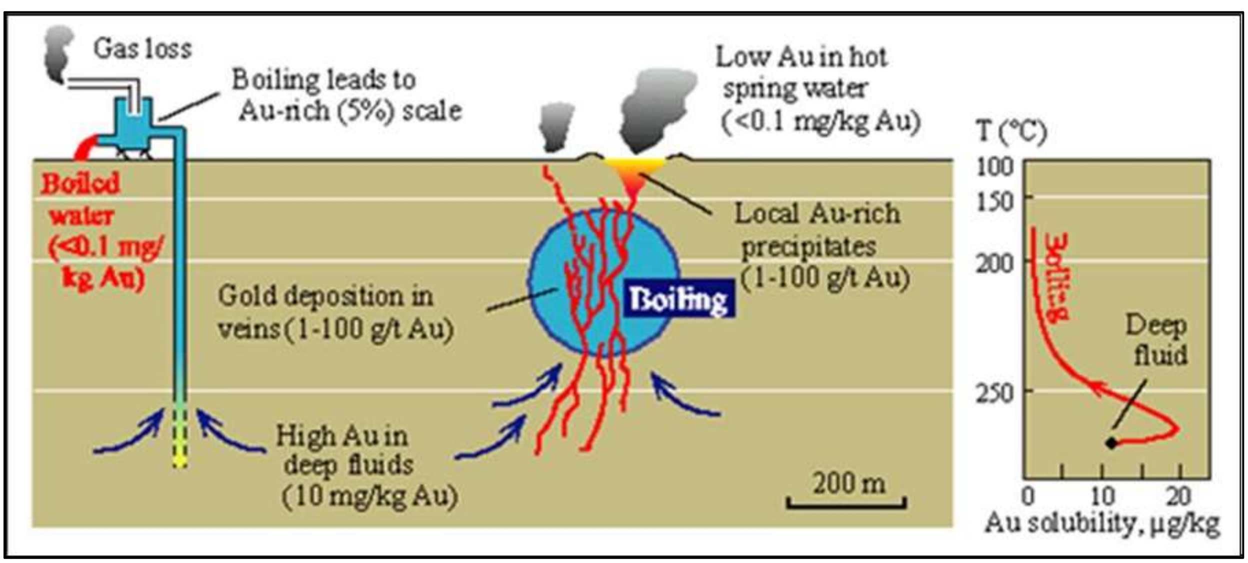
be present.

- Mineralization hosted in quartz and quartz-carbonate veins and silicified zones.
- Silica types range from opal through chalcedony to massive quartz. Textures include crustiform and colloform banding, drusy, massive and saccharoidal varieties. Calcite may form coarse blades, and is frequently replaced by quartz.
- Deposits of this type may be overlain by barren zones of opaline silica.
- Sulphides typically comprise less than 5% by volume.
- Sulphides average up to several per cent and comprise very fine-grained pyrite, with lesser sphalerite, galena, tetrahedrite and chalcopyrite sometimes present.
- Gold may be present as discreet, very fine grains or may be silica or sulphide refractory.
- Gold and silver grades are typically low, but may form extremely high grade “bonanza” ore shoots.
- Common associated elements include Hg, As, Sb, Te, Se and Mo.

Low sulphidation gold-silver epithermal systems commonly precipitate gold from hydrothermal fluids in near-surface hot spring environments. The mechanism most commonly evoked for gold precipitation is boiling. As pressure decreases in fluid rising to the surface, boiling occurs. The physical and chemical changes that accompany boiling cause breakdown of the gold-bearing chemical complexes and result in gold precipitation (Figure 8.2). Because pressure from the overlying fluid column or rock column constrains the level at which boiling occurs, the location of the boiling zone commonly lies within a particular vertical range. However, this depth can change significantly with changes in the water table, sealing of the system, burial of the system through deposition of volcanic rocks, or emergence due to tectonic uplift. The boiling zone is typically within 500 m, and rarely more than 1 km of the surface at the time of mineralization.

Epithermal mineralization usually occurs within volcanic or intrusive host rocks that are contemporaneous with or only slightly older than the mineralizing hydrothermal system. Low sulphidation epithermal mineralization can occur as end-member styles ranging from disseminated, through stockwork veins and veinlets, to discrete high-grade bonanza veins.

Figure 8.2: Schematic model for precipitation of gold



Schematic model for precipitation of gold from boiling fluids in a low sulphidation epithermal gold system (Hedenquist, et al., 1996).

A local Turkish example of a low sulphidation deposit is Koza Altın İşletmeleri A.Ş’s Ovacık Gold

Mine which has produced over 1.2 million ounces of gold. The Ovacık ore body consists of two epithermal quartz veins hosted in andesitic volcanic rocks. The gold occurs within fractures as free gold grains which are 5 micron wide. A lesser quantity of the gold and silver values are found as electrum. Sulphide mineralization is minimal. Typically the ore is non-acid generating with only trace amounts of Sb, Hg, Se, As and other heavy metals.

8.3 Porphyry

Porphyry copper-gold deposits are widely distributed at convergent plate margins, in association with arc-related volcanic and intrusive rocks of intermediate composition. They typically occur in association with skarn and intermediate- to high sulphidation epithermal base and precious metal deposits. They range in size from tens of millions of tonnes to billions of tonnes of mineralized material. Some of the largest Cu-Au porphyry systems include Grasberg (Indonesia), Oyu Tolgoi (Mongolia) and Bajo de Alumbrera (Argentina). Worldwide, typical hypogene grades of porphyry deposits range from 0.2% to 0.8% copper. Copper to gold ratios vary widely in Cu-Au porphyry deposits, but a Cu%: Au ppm ratio of 1:1 is not uncommon.

The following description of porphyry deposits is after Sillitoe (2010).

Porphyry deposits are typically centred on polyphase stocks and porphyry dyke swarms, with skarn deposits formed adjacent to and epithermal deposits formed above the porphyry mineralization (Figure 8.3). The metal endowment of a porphyry system is related to the geochemistry of the oxidized magmas that contribute to the formation of the stocks and dykes, with gold and / or molybdenum commonly found in association with copper. Porphyry deposits typically occur in association with Mesozoic and Cenozoic intrusions, probably as a result of poor preservation of older rocks.

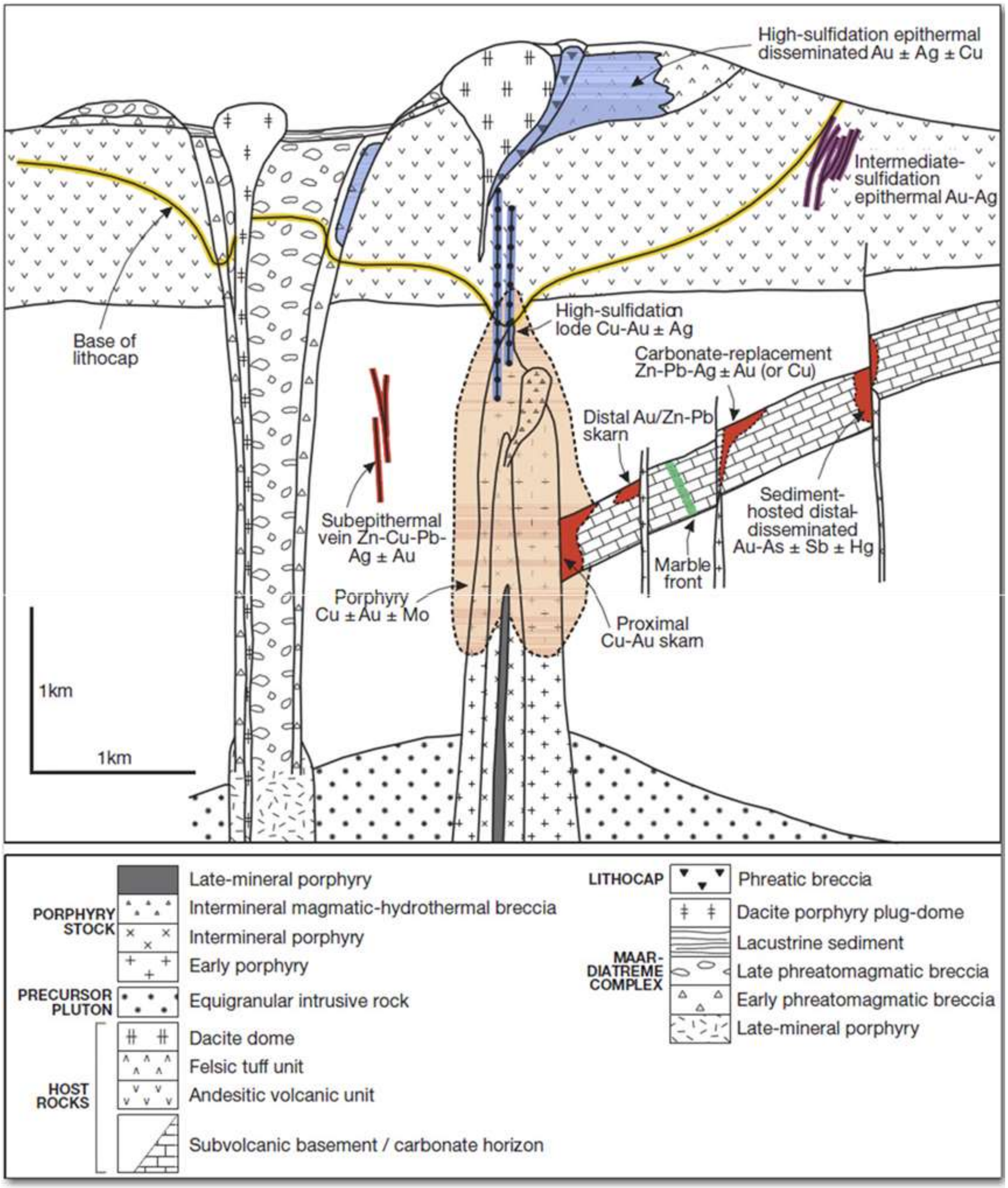
Porphyry systems are typically zoned from a potassic altered (biotite-potassium feldspar) core overlying barren, calcic-sodic altered rock, upward through phyllic altered (sericite or chlorite-sericite) margins to propylitic altered (chlorite-epidote) rocks (Figure 8.4). Porphyry systems also grade upward into advanced argillic, argillic and silicic alteration related to epithermal mineralization. Alteration zoning may be complex and overlapping due to successive injections of magma into country rocks. The vertical distance between porphyry mineralization and overlying epithermal mineralization may range from one telescoped kilometer to several un-telescoped kilometers.

Hypogene copper mineralization is disseminated and veinlet-hosted, and zoned from bornite-rich in the core through chalcopyrite to pyrite in distal areas. Magnetite (in Cu-Au porphyries) and molybdenite (in Cu-Mo porphyries) are common accessory minerals.

Quartz veins and veinlets as stockworks and sheeted arrays are ubiquitous in these systems, and typically occur in a sequence from early quartz-feldspar A-veins, through quartz-sulphide (mainly chalcopyrite-molybdenite) B-veins with potassic-altered margins to late, sulphide-dominant (primarily pyrite) D-veins with phyllic altered margins (Gustafson and Hunt, 1975). Veining in Cu-Au deposits may differ slightly, with quartz-magnetite-chalcopyrite and magnetite-dominant M-veins present or dominant (Arancibia and Clark, 1996).

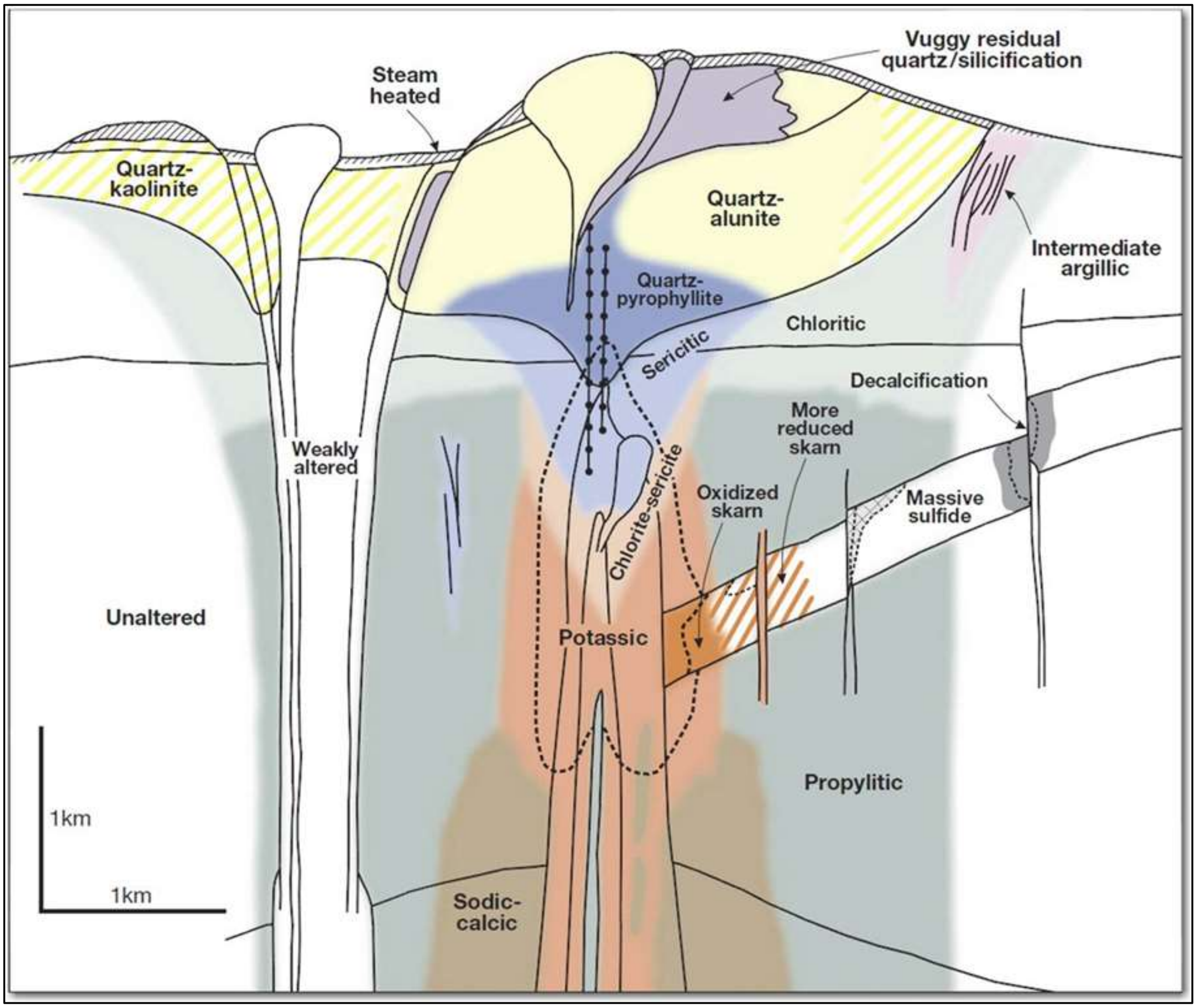
Due to the large amount of disseminated pyrite in most porphyry systems, these systems are susceptible to supergene weathering and leaching. Copper is oxidized and leached from areas above the water table and deposited as chalcocite and other supergene copper minerals at or near the water table, leading to enrichment in copper grades. Supergene chalcocite enrichment can increase grades locally by 200-300% or more, with a significant impact on the overall economics of these deposits.

Figure 8.3: Schematic cross section through a porphyry system



Sillitoe, 2010

Figure 8.4: Generalized alteration zoning pattern for porphyry and epithermal deposits



Sillitoe, 2010

8.4 Listwaenite Lode-Gold

The Gümüşlük target contains gold associated with iron oxide, quartz and green mica. This style of alteration and mineralization is located in quartz-mica schist in sheared rocks in the immediate footwall of a serpentinite body. This style of mineralization may be characterized as listwaenite lode gold mineralization. This type of mineralization is characterized by the presence of quartz, green chromium mica (fuchsite) and carbonate minerals (Ash and Arksey, 1990). Deposits of this type are found in active continental margin areas throughout the world, and are associated with serpentinitic or ophiolitic rocks. The most familiar example is the Mother Lode district in California, USA. The Kaymaz deposit in western Turkey is also thought to be a listwaenite lode-gold occurrence.

9. EXPLORATION

Exploration work prior to 2012 and the assumption of operatorship of the property by Liberty Gold is described in Section 6.0 (History). All subsequent (non-drilling) exploration work from 2012 through 2020 by Liberty Gold is described in this section and tabulated below in Table 9.1. Exploration activities exclusive of drilling include:

- Property-wide lithologic, alteration and structural mapping
- Property wide soil sampling
- Infill soil sampling on selected targets
- Prospecting and rock sampling on a reconnaissance and target scale
- Whole rock and thin section analysis on select surface and drill samples
- U-Pb geochronologic dating
- Spectral analysis of surface and drill core samples
- Airborne EM and magnetic survey
- Ground magnetic survey at Karaayı
- IP survey over the Valley, Gümüşlük, Kartaldağ West, Sarp/Columbaz and Tesbihçukuru targets.

Table 9.1: Summary of Liberty Gold exploration statistics, 2012-2020

Liberty Gold Exploration Statistics	2012	2013	2014	2015	2020	Total
Rock Samples	740	766	636	430	29	2,601
Soil Samples	2,641	2,628	792	0	0	6,061
Thin Section Samples	19	19	34	24	0	96
Whole Rock Samples	0	23	97	0	0	120
AgeDating Samples (MDRU)*	0	4	2	5	0	11
Airborne Geophysics (Line Km)	801.5	0	0	0	0	801.5
Ground Magnetics (Line Km)	0	0	221.35	0	0	221.35
IP (Line Km)	0	0	54	37.8	0	91.8
RC Drill Holes**	0	11	0	0	0	11
Core Drill Holes	59	99	46	21	5	225
Drilling (meters)	**11,810.50**	**25,607.60**	**12,548.90**	**5,315**	**3020.7**	**56,303**

**MDRU = Mineral Deposits Research Unit, University of British Columbia*

***Does not include water monitoring wells*

9.1 Mapping

Regional (1:10,000 to 24,000-scale) and detailed (1:1000-scale) mapping in 2012 through 2015 was conducted primarily by Liberty Gold employees April Barrios and Ken Raabe, with assistance from Alper Büyüksolak and other Orta Truva staff. The mapping effort was focused on producing high-quality geological and alteration maps of the entire property. In addition, detailed mapping was carried out over the Küçükdağ, Küçükdağ SE, Gümüşlük, Kayalı, Kestanecik, Kartaldağ West, Yumrudağ, Hilltop Porphyry, Valley Porphyry, Nacak Porphyry and Sarp/Columbaz targets, in order to aid in drill site selection (See Section 7, target descriptions). The mapping focused on the structural and lithological controls on mineralization in the identified targets. Mapping was carried out using a combination of ArcPad (primarily for outcrop and structural point data) with paper map bases for sketching contacts. Property scale lithologic and alteration mapping is also presented in figures 7.3 and 7.4.

In 2015, a large portion of the Karaayı tenure was mapped in detail to assist in development of porphyry targets and to understand the various intrusive phases, alteration, and structural geology. Accuracy of the property-wide alteration mapping was increased with the SWIR analysis of an additional 580 surface samples. The mapping program was led by April Barrios, Project Geologist with Liberty Gold, with assistance from Liberty Gold and Orta Truva staff in Turkey and consultant Craig Bow.

9.2 Surface Geochemistry

9.2.1 Soil Sampling

Grid-based soil sampling was carried out from 2012 through 2014 by Liberty Gold. Wide-spaced sampling on a 200 x 200 m grid was carried out to link together patchy existing soil survey coverage and sample all parts of the property. Infill sampling was carried out to reduce spacing to 100 x 100 m in selected target areas, including Küçükdağ, Kestanecik, and areas to the north, Nacak and Kartaldağ West. The Karaayı area was sampled on a 50 x 100 m grid in order to expand the existing survey in the northern tenure block. The sample spacing over the Gümüşlük target was further reduced to a 25 x 25 m spacing in order to learn more about the distribution of mineralization over a recessive-weathering area with virtually no outcrop. Soil sampling results for all programs, including historical ones, are presented in figures 9.1 and 9.2.

Soil sampling was carried out by Orta Truva staff and local hires under the supervision of a geologist. Sample numbers were pre-assigned and programed into a hand-held GPS. Sample sizes averaged approximately 1 kg. All assaying was carried out by Acme Labs. Soil samples were sieved to -150 mesh, and 30 gram samples were subject to aqua regia digest, followed by analysis by ICP-MS and Au by fire assay with AA finish. Rock samples were crushed and pulverized, followed by analysis of gold by fire assay with ICP-ES finish and 41 trace elements by ICP-MS.

When the data were compiled with previous geochemical surveys, some edge effects, as well as artifacts resulting from different assay labs and analysis/digestion methods were noted. For this reason,

Consulting geochemist David Heberlein (Heberlein Geoconsulting, Vancouver, B.C.) was engaged to “level” the results from the various surveys in order for them to be more directly comparable.

9.2.2 Rock Sampling

Rock sampling was carried out both in conjunction with regional and target mapping and as stand-alone prospecting efforts. Rock sampling encompasses prospecting grab samples, chip samples, and saw-cut channel samples over selected vein outcrops and roadcuts. Gold results for rock samples are presented in Figures 9.3.

Various sampling techniques were used for different purposes as detailed below:

- Grab samples: used during prospecting as a way of identifying whether any gold, silver or copper is present in the rocks. Grab samples are intended to be selective, and thus results in a high expected bias.
- Chip samples: Used to get a more representative sample across a vein or (if a bulk deposit type such as a porphyry) outcrop. Some high bias can be expected as the geologist is likely to sample the most prospective looking rock, but less than for grab samples.
- Saw-cut channel samples were used in areas of massive or vuggy quartz or porphyry alteration where grab samples indicated the presence of gold, silver and/or copper and a more representative sample was desired.

Figure 9.1: Au in soils (all sampling programs)

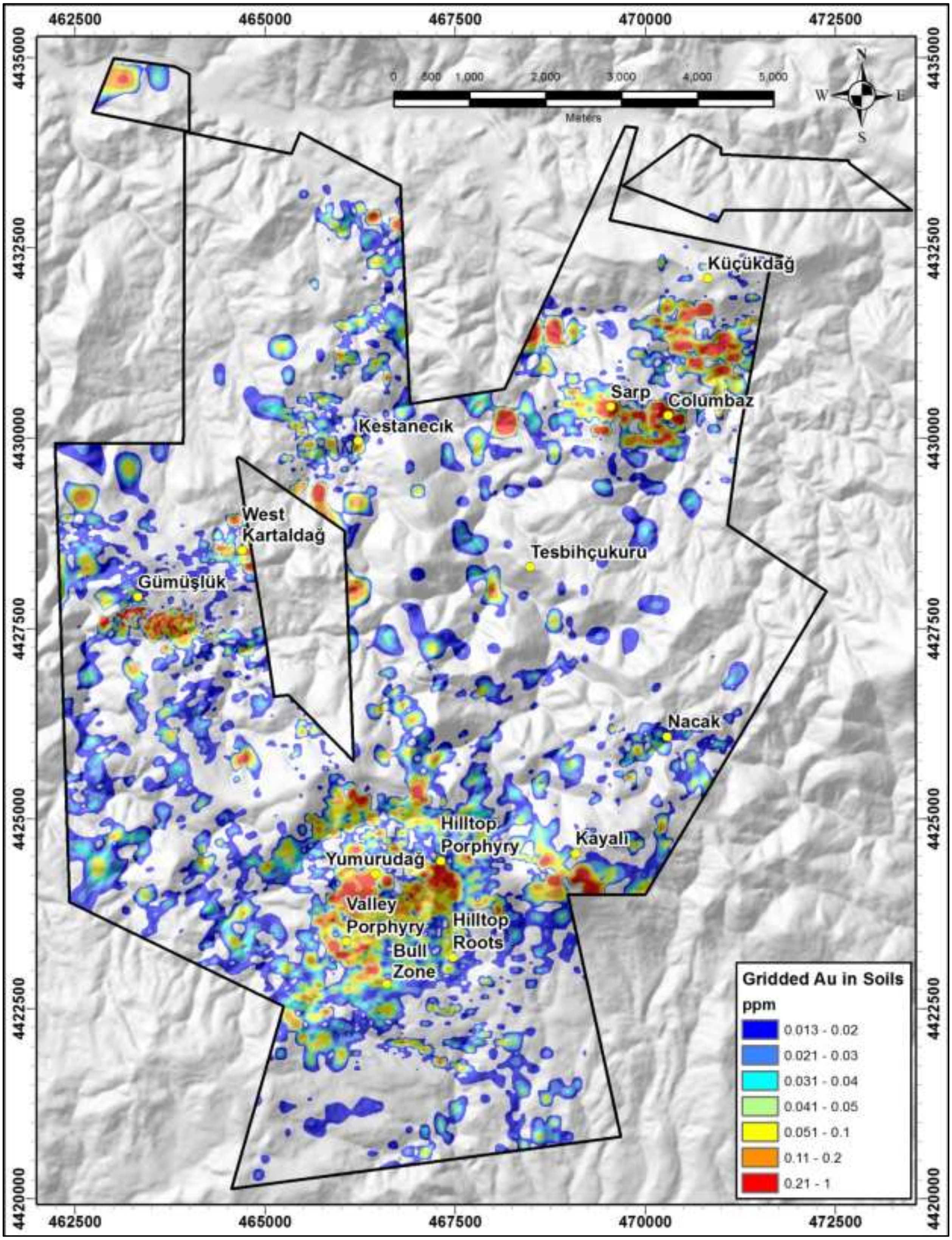


Figure 9.2: Cu, Mo, Ag and As in soils (all sampling programs)

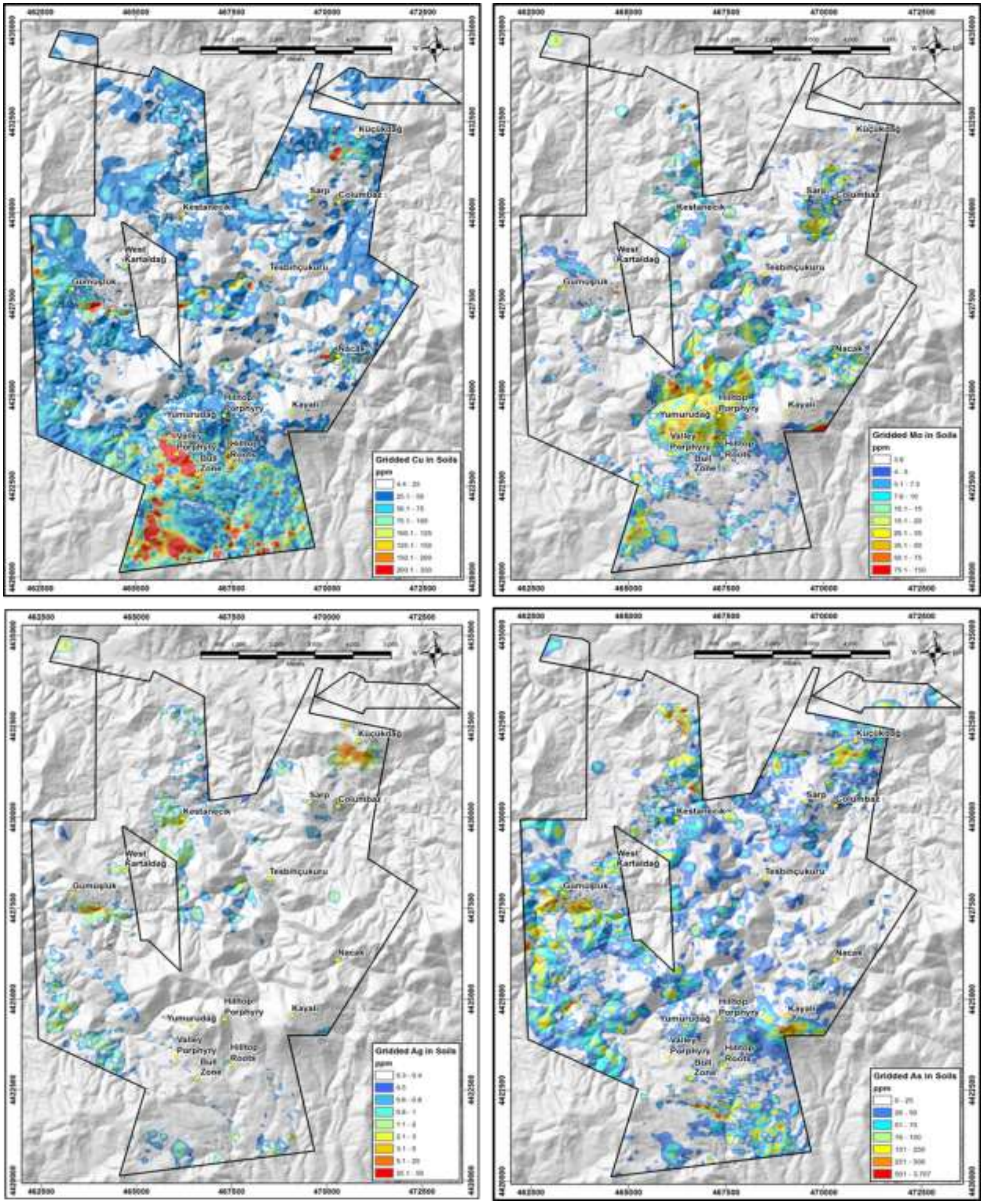
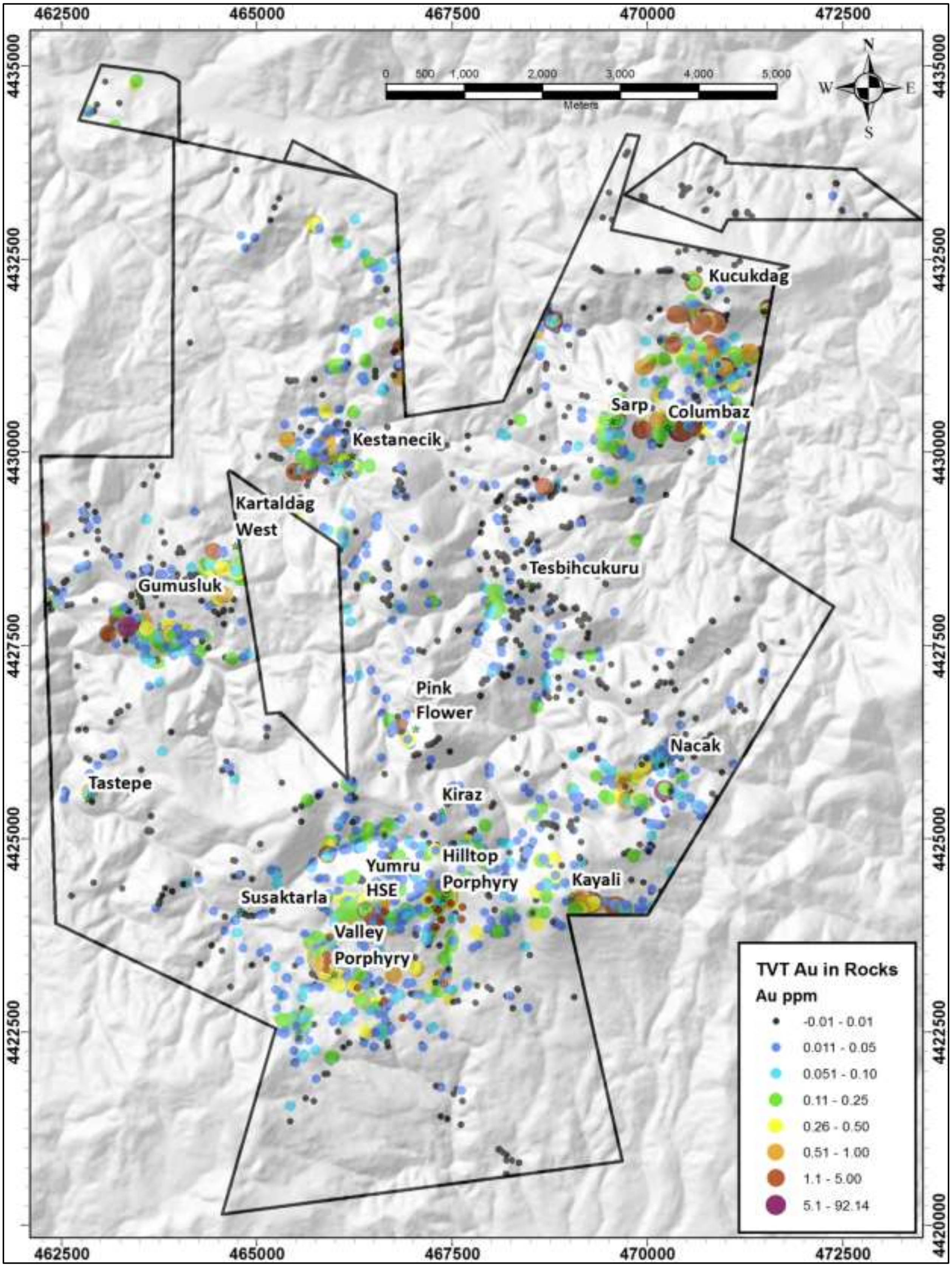


Figure 9.3: Gold in rock samples (all programs)



Assaying was carried out by Acme Labs using standard sample preparation and the analytical techniques described above for soil samples.

As of the effective date of this report, Liberty Gold has collected 6061 soil samples and 2601 rock samples from throughout the TV Tower property.

Highlights from geochemical sampling include:

- Soil sampling at Gümüşlük identified an anomaly, defined by the 100 ppb Au contour, approximately 1,200 m long in an E-W direction and 400 m wide in a N-S direction, including gold assays of up to 6100 ppb. A large area of this anomaly exceeds 200 ppb. The highest values from rock sampling from this area 2.2 and 1.2 g/t Au with numerous samples returning+20 g/t Ag and very high Cu, As, Sb, Pb and moderately high Zn values.
- Soil sampling in the higher elevation areas at Karaayı, expanding on soil sampling carried out by Chesser, generated a very large area of anomalous Au in soil measuring over 2 km long, referenced to the 50 ppb Au contour (Figure 9.1).
- Also at Karaayı, a large Cu in soil anomaly was identified in the lower elevation area south of Yumrudağ. This anomaly is elongate to the NW-SE, with dimensions of approximately 1200 m x 400 m as defined by the 200 ppm copper contour, with individual samples up to 1800 ppm Cu (Figure 9.2). Gold in soil is also elevated in this area, with individual samples up to 800 ppb Au. This area was drill tested in 2014 and led to the discovery of the Valley porphyry system.
- Follow-up mapping around rock and soil anomalies at Sarp revealed the presence of a low sulphidation vein system, called the Columbaz vein system, with gold in rock samples up to 92 g/t and silver up to 396 ppm. The vein system is over 1 km long in float. It was drill tested in 2014, leading to discovery of the Columbaz porphyry system.

9.3 Spectral Analysis

In 2014 Anna Fonseca (SRK) was contracted to conduct a spectral study at Karaayı and Columbaz. 215 surface rocks were analyzed and 1608 drill core samples. An additional 1371 drill core samples over 5 holes were analyzed by Liberty Gold staff using a TerraSpec Halo Mineral Identifier. In 2015 Liberty Gold staff analysed 550 surface samples and 92 complete drillholes. In addition all historic spectral data, whose spectral files still existed, were re-analysed using the Spectral Geologist Software. This allowed for the calculation of adsorbtion features and indices for all data.

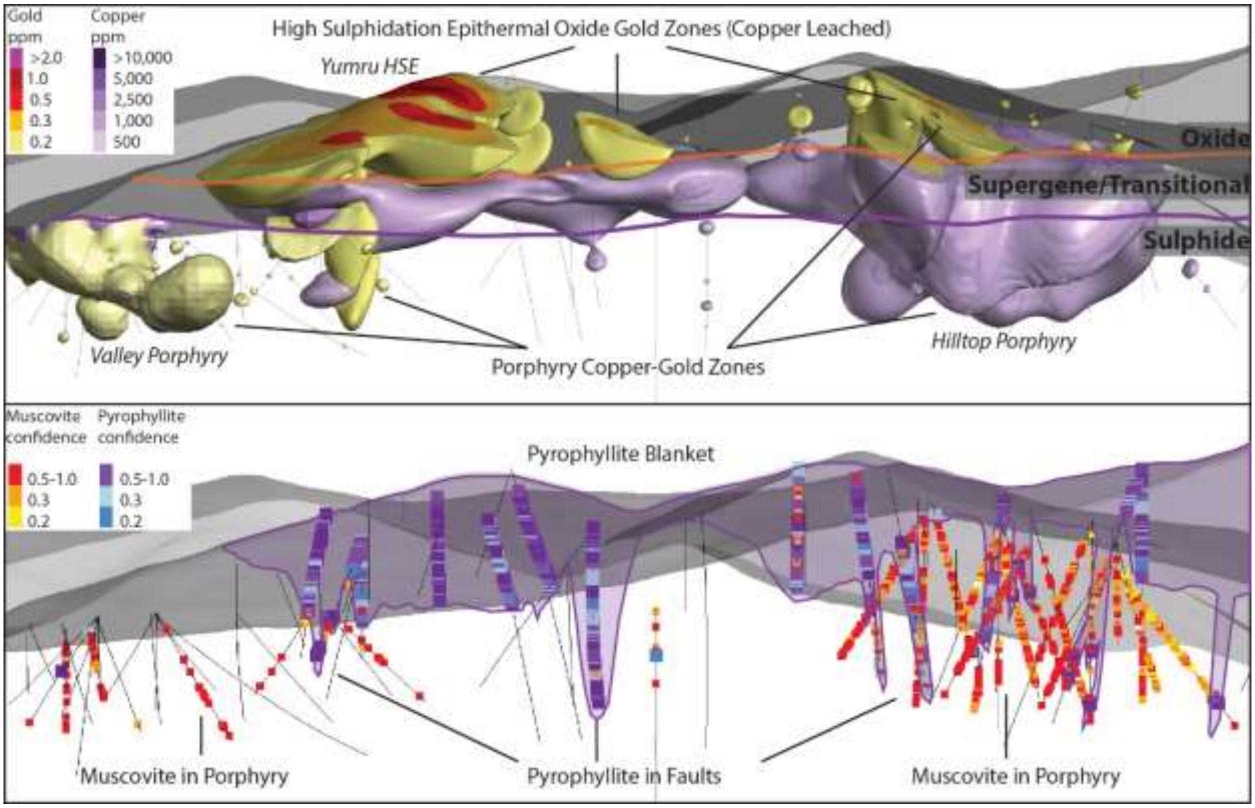
Combining surface spectral analyses with the historic spectral data distinguishes two dominant advanced argillic alteration assemblages: (AARG1 (alunite ± kaolinite ± dickite) and AARG2 (alunite ± pyrophyllite ± diaspore ± kaolinite ± dickite). AARG 1 assemblages at Küçükdağ and Kayalı show a strong correlation to high sulphidation epithermal gold mineralization, whereas the more pyrophyllite-rich AARG2 assemblage is present immediately above the porphyry targets (Columbaz, Yumrudağ, Hilltop; Figure 9.4).

9.4 Geophysics

9.4.1 Airborne Mag and EM survey

A 801.5 line-km airborne magnetic (Figure 9.5) and electromagnetic (not shown) survey was conducted by Fugro Airborne Surveys during the first two weeks of November, 2012, using an AS350-B3 helicopter. The survey utilized was Fugro's Helitem time domain electromagnetic system, which provides simultaneous measurement of three components (X,Y,Z) of the secondary anomalous response; dB/dt is measured and a B-field is calculated for all three components. Transmitter dipole moment used was 2-million Am^2. The pulse width was 4 ms sampled across 30 time gates. Ancillary equipment included a cesium vapor magnetometer, GPS receiver and radar altimeter. The survey included the entire TV Tower Property (including the Karaayı license), with a line spacing of 125 m and a (helicopter) height above ground of 83 m. QA-QC was carried out by Intrepid Geophysics Ltd. (Campbell, 2012).

Figure 9.4: K2 long section looking north



Top: modelled Au and Cu (top) as rough epithermal and porphyry proxies, respectively. Bottom: Pyrophyllite blanket representing epithermal to porphyry transition with underlying muscovite zones representing porphyry mineralization.

Magnetic data show the presence of a large, strongly magnetic body situated under the Karaayı-Kayalı area and extending to the northeast, probably related to the Kuşçayiri batholith (Figure 9.5). Outcropping andesitic volcanic and subvolcanic rocks and intrusive rocks in the valley bottoms are well- defined by the magnetic survey with a weak to moderate magnetic response and well-defined WNW and NE-trending fabric. Altered dacitic volcaniclastic rocks and other clay-altered and silicified strata at higher elevations are distinguished by a low magnetic response.

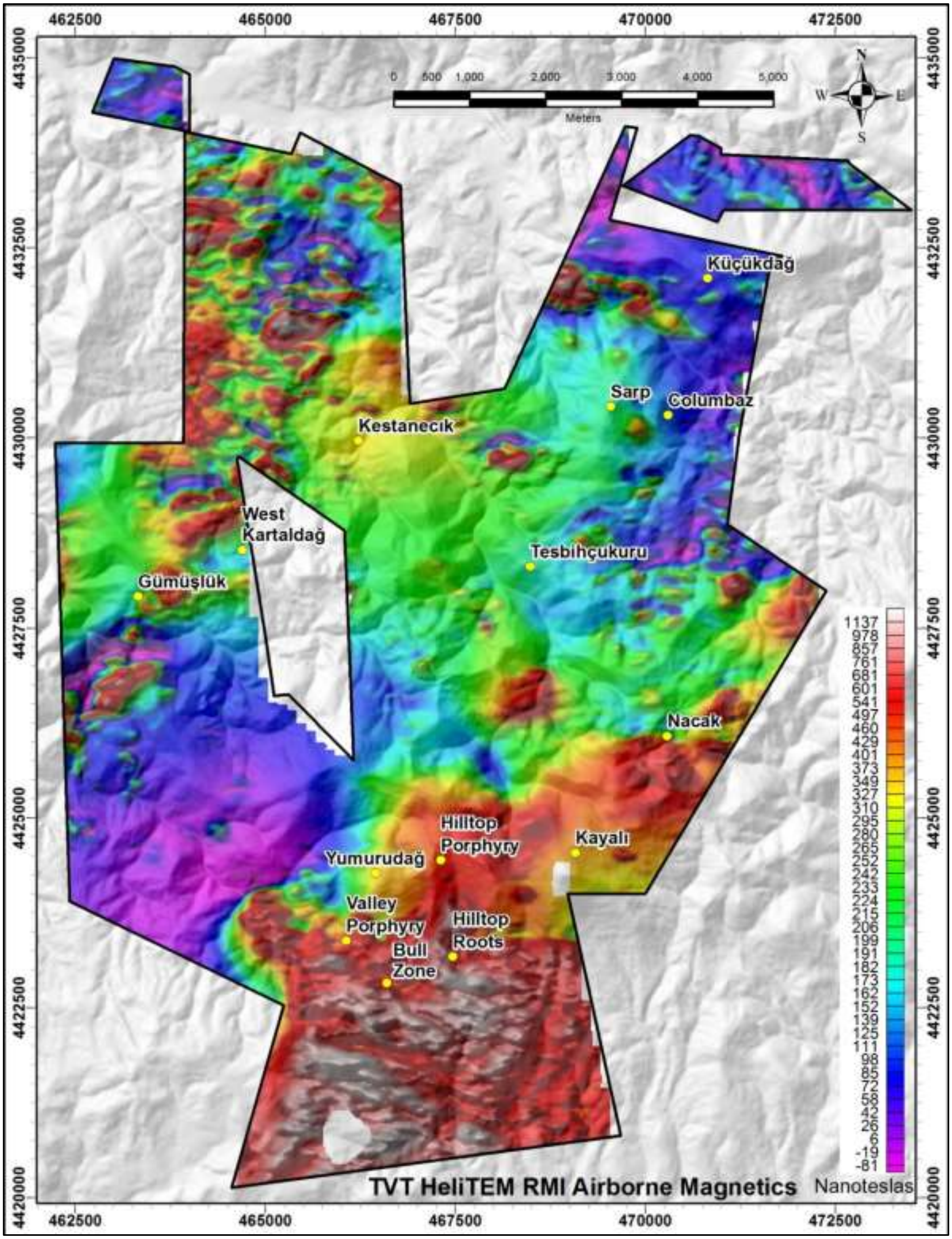
With the exception of the northeast corner of the property, rocks on the TV Tower property are characterized by relatively low EM response. WNW-trending EM conductors mapped on the NE portion of the property, in the vicinity of the KCD deposit, might suggest either the presence of semi-massive sulphide or carbonaceous strata. As of the effective date of this Technical Report, the EM data have not been positively linked to specific stratigraphic units or mineralization.

9.4.2 Ground Magnetic Survey

A ground magnetic survey over the southern portion of the Karaayı license, as well as smaller grids over the Gümüşlük – West Kartaldağ and Tesbihçukuru targets, was undertaken in November and December 2014, concurrent with an IP survey (Wright, 2015). The contractor was

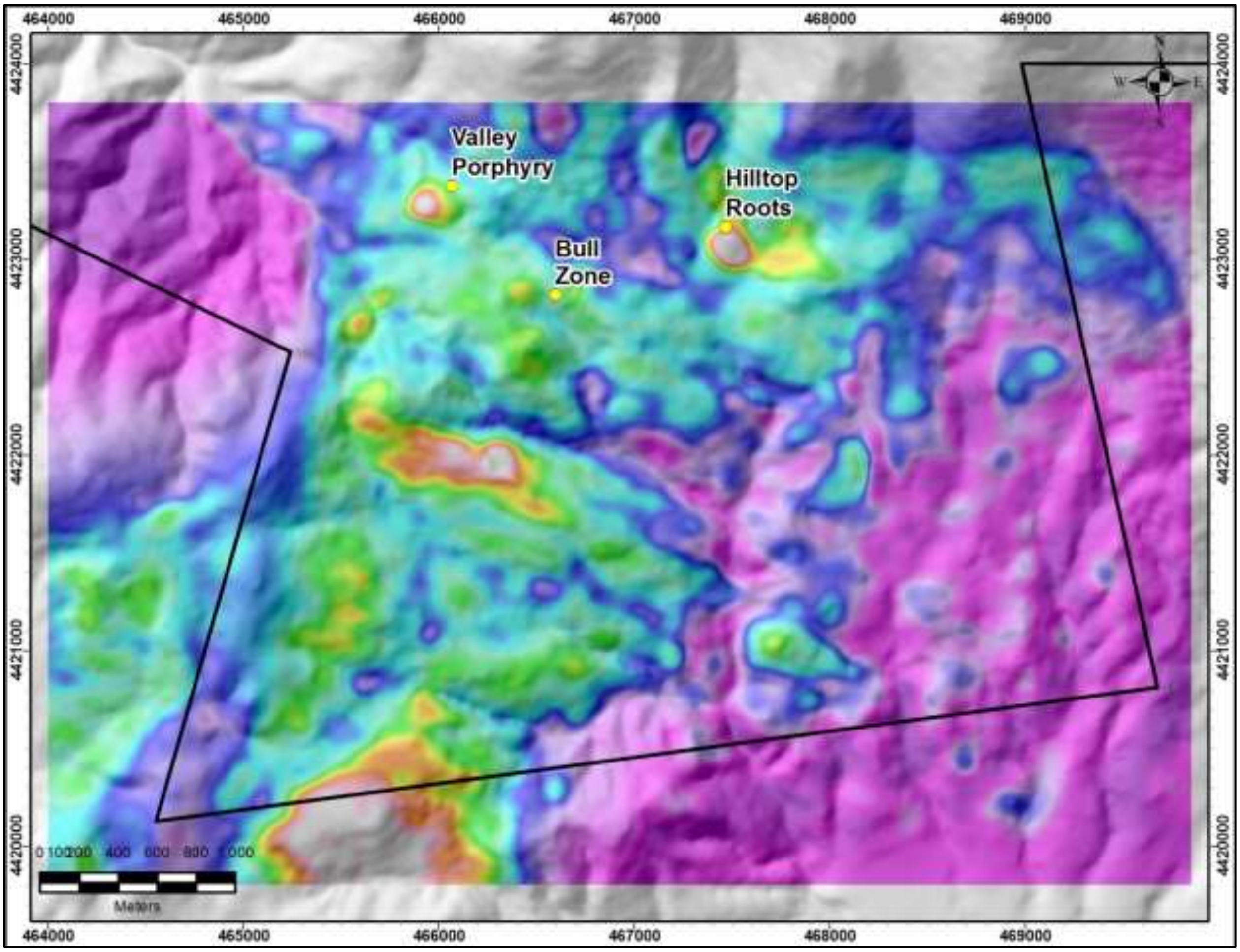
Zeta. Data were collected as discrete points at 25 m spacing on 100 m spaced north-south lines. Instrumentation was a Scintrex Envi magnetometer with base.

Figure 9.5: Airborne magnetic map of residual magnetic intensity



The diurnally corrected total field data were gridded with a kriging algorithm at a spacing of 25m or 25% of the line spacing. The resulting grid was then filtered with a nine point Gaussian filter to yield the final total field (TF) product. This product was reduced to the pole (RTP) with a USGS algorithm using a declination of 4.7° and inclination of 57.2°. In addition, a first vertical derivative (RTP_VD) was computed directly from the RTP, as well as a total horizontal derivative (RTP_HG). Finally, the analytic signal (AS) was computed directly from the total field. The RTP survey results are shown in Figure 9.6.

Figure 9.6: Reduced to pole ground magnetic survey extents over Karaayı license

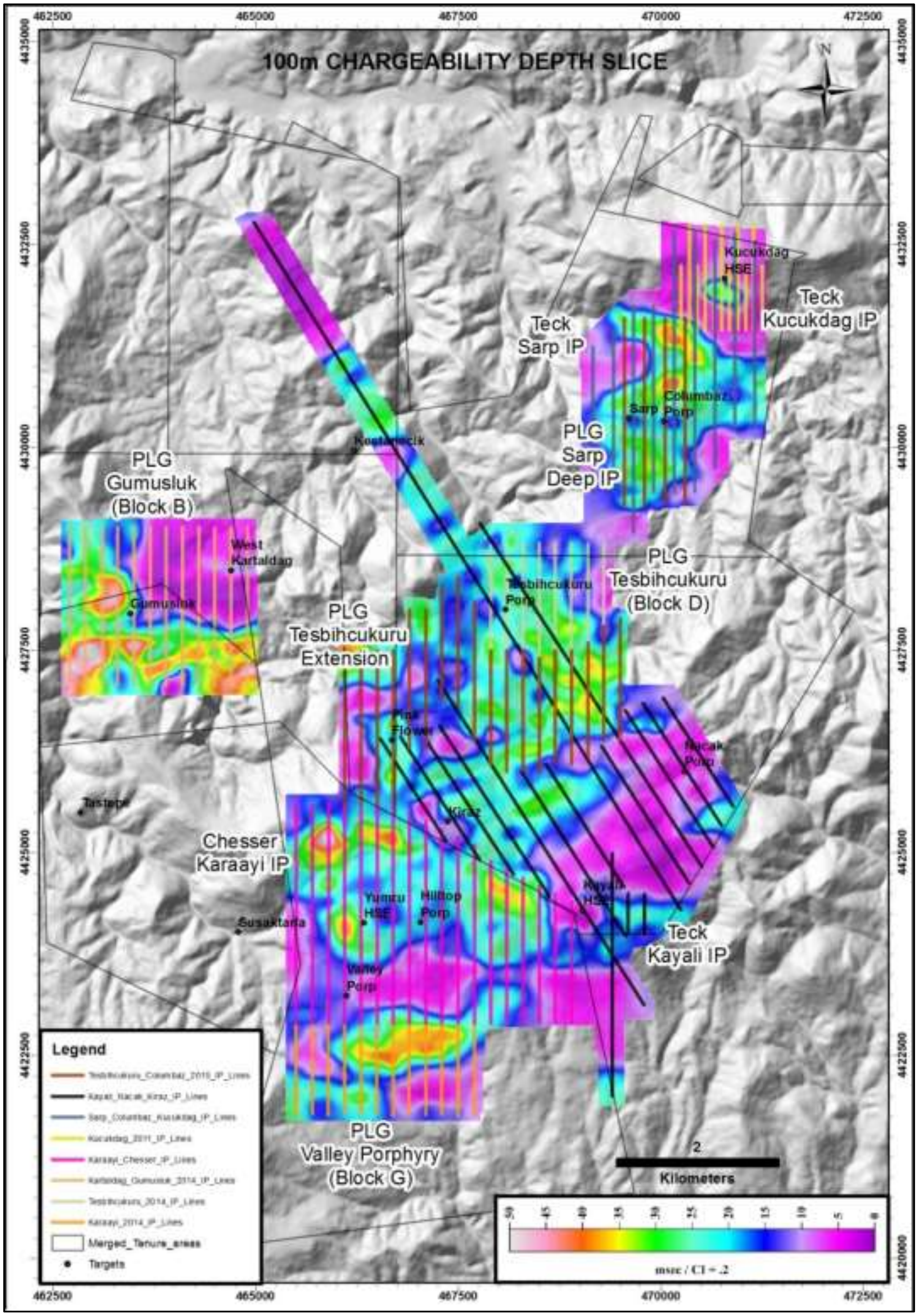


9.4.3 IP Survey

An IP survey was carried out over three blocks on the TV Tower Tenure from November, 2014 through January, 2015 which was later followed up by infill and extension surveys in mid-2015. The contractor was Zeta for both surveys. The surveys were carried out over the Valley Porphyry (Block G), Gümüşlük – West Kartaldağ (Block B) and Tesbihçukuru (Block D and extension) and Sarp (Infill) targets. IP survey lines were designed with 200 m-spaced lines except Sarp surveys. Sarp IP surveys were designed to infill the previous IP studies which were layed as 250 m-spacing. IP lines and results are shown on Figure 9.7.

Each survey block consists of 200m spaced, north-south pole-dipole array lines with a=100m and reading n = 1-6 except deep IP surveys at Sarp. At Sarp, a two stage a-spacing is applied in order to succeed deep penetration. Two stage a-spacing is applied as north-south pole-dipole array lines with a=100m, n= 1-3 and a=300m. n=4-6. Instrumentation consisted of an Elrec Pro receiver and Zonge GGT-2 transmitter. Lines were established with a Magellan 100 DGPS.

Figure 9.7: IP Surveys on the TV Tower property, all companies



Numerical data for the IP survey included apparent resistivities in ohm-meters (ohm-m) and chargeabilities as Newmont standard values in milliseconds (msec). These data were converted to two text files (.avg and .stn) for each line. The AVG files contained the averaged and edited data for a given line, and the STN file contains the station survey locations in UTM 35N / ED 50 coordinates. Data quality for the entire survey is reasonable after editing of noisy data.

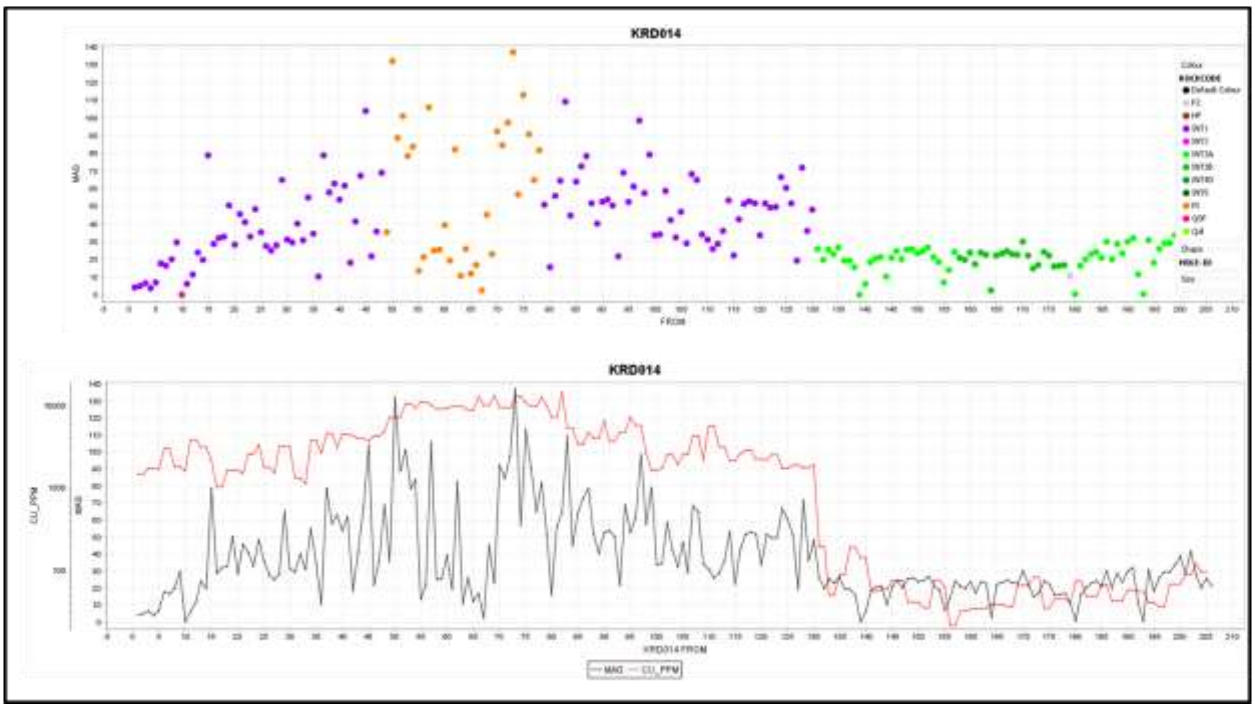
Data were subject to the Zonge TS2DIP 4.20e smooth model Res / IP inversion program followed by inversion. The IP inversion model for a given line extends laterally from the outer electrode / pot locations to a depth of approximately 200 to 500 m as determined by the 2% sensitivity limit.

9.4.4 Magnetic Susceptibility

Magnetic susceptibility measurements were carried out on drill core from the 2014 drill program at Karaayı. A sample down-hole plot for KRD014 is shown in Figure 9.8.

The magnetic susceptibility data is shown on the upper plot, colour coded by rock type. Magnetic susceptibility appears to be discriminating between strongly and weakly mineralized rocks, with hydrothermal magnetite likely contributing to the strong magnetic response.

Figure 9.8: Example plot of magnetic susceptibility in KRD014



10. DRILLING

All drilling on the TV Tower Property (for which data is available) has been carried out between 2004 and the effective date of this Technical Report. Drilling by TMST was carried out in two separate campaigns in 2010 and 2011, and drilling by Liberty Gold was carried out between 2012 and 2015 and in 2020. These programs are discussed separately below. Property-wide drilling statistics are compiled in Table 10.1. Liberty Gold drilling by target is compiled in Table 10.2. Drilling by previous operators (Eurogold, Tuprag, Chesser and TMST) is described in Section 6 of this report.

10.1 Liberty Gold Drilling (2012 – 2015)

First-phase drilling by Liberty Gold in 2012 commenced in August, 2012 and continued through to the end of January, 2013. The main objective of the 2012 drilling program was to test the extent of mineralization at the Küçükdağ target, pursuant to estimation of a Au-Cu-Ag resource. Between these dates, a total of 71 diamond core holes were drilled (including one that was abandoned) for a total of 14,441.1 m.

The 2013 drilling program encompassed resource definition at Küçükdağ and target testing at the Kayalı, Nacak Porphyry and Karaayı targets. A total of 23,093.6 m was drilled in 87 diamond core holes and 1927.5 m in 11 RC holes. An additional 282.0 m of RC drilling was carried out to install two groundwater monitoring wells.

Table 10.1: Compilation of drilling at TVT by company

Company	RAB		RC		CORE		TOTAL	
	Holes	Metres	Holes	Metres	Holes	Metres	Holes	Metres
Eurogold[2]	7	1,046.6	13	1,144			20	2,190.6
Tüprag[2]			8	1,380.5			8	1,380.5
Chesser[2]					13*	2,964.5	13	2,964.5
TMST					92**	19,630.2	92	19,630.2
Liberty Gold 2012					71*	14,441.1	71	14,441.1
Liberty Gold 2013			13***	2,209.5	87****	20,884.1	100	23,093.6
Liberty Gold 2014					46	12,548.9	46	12,548.9
Liberty Gold 2015					21	5,315	21	5,315
Liberty Gold 2020					5	3020.7	5	3020.7
Property Total	7	1,046.6	34	4,734.0	335	78,804.5	376	84,585.1

**includes one abandoned hole: KCD082A*
***includes 8 abandoned holes 660.8 m: KCD12, KCD19A, KCD028A, KCD032A, KYD012, KYD030, SD01, SD04A*
****includes 2 water monitoring wells: KCMW1, KCMW2*
*****includes 2 abandoned holes: KCD082A, KCD174*
[2]Provided to Liberty Gold by Chesser

Table 10.2: Liberty Gold drilling by target, 2012-2015 and 2020

Drill Target	RC		CORE		TOTAL	
	Holes	Meters	Holes	Meters	Holes	Meters
Küçükdağ	10*	1,882.5	134***	29,339.2	144	31,221.7
Kayalı	1**	45.0	16*	3,541.1	17	3,586.1
Nacak Porphyry			3	1,116.2	3	1,116.2
Yumrudağ HSE[1]			8	2,253.6	8	2,253.6
Valley porphyry[2]			27	5,861.7	27	5,861.7
Hilltop porphyry[3]			25	7,687.0	25	7,687.0
Sarp-Columbaz			17	6,411.0	17	6,411.0
Water monitoring	2	282.0			2	282.0
Total	13	2,209.5	230	56,209.8	242	58,419.4

[1]KRD001, 003, 025, 026, 037, 053, 055 and KRD057 were included in Karaayı HSE
[2]KRD010-024, 031-033, 035, 036, 041, 042, 044, 045, 047, 049 and 050 were included in Valley Porphyry
[3]KRD002, 004-009, 027-030, 034, 038-040, 043, 046, 048, 051, 052, 054, 056 and 058-060 were included in Hilltop Porphyry
**includes 1 abandoned hole: KCD045R*
***includes 1 abandoned hole: KYD046R*
****includes 2 abandoned holes: KCD082A, KCD174*

The 2014 program focused on the Valley and Hilltop porphyry targets at Karaayı, as well as a test of the Columbaz target. A total of 12,549 m was completed in 46 holes.

The 2015 drilling program focused on the Valley and Hilltop porphyry targets to test the extent of the mineralization at both targets. In addition to those, 3 holes were collared at Yumrudağ HSE target to confirm the geological model and test the mineralization extent. A total of 5,315 m was completed in 21 holes.

Drilling results are summarized below. Mineralized intercepts are reported as drilled thicknesses. True widths of the mineralized intervals are interpreted to be between 50 to 100% of the reported lengths; the irregular nature of mineralized zones precludes greater specificity with regard to true widths.

A Turkish drill contractor, Pozitif Sondaj Sanayi ve Ticaret Ltd. Şirketi (“Pozitif”), was contracted to complete the diamond core drilling. The drill rigs used were Pozitif-built PD-500 rigs with depth capacities of 500 m. The majority of the holes were completed with HQ (63.5 mm) tools; KCD-56 was drilled with PQ (85 mm). Drill collars with an “A” suffix reflect abandonment of the previous hole on the same site due to poor ground conditions. Down-hole surveys were carried out using a DeviTool PeeWee Multishot survey tool, with an accuracy of ±0.5 degrees on the azimuth and ±0.1 degrees on the inclination. Down-hole surveys were conducted by the Pozitif’s drilling supervisor upon reaching the target depth of each drill hole. Down-hole surveys were taken at the end of the drill hole and at each 50 m down-hole interval including the 10 m and 25 m readings which increases the precision of the near-surface surveys. The results were downloaded from a PDA by the supervisor as a pdf file and delivered to the drill geologist.

The collars locations were surveyed with a Trimble R3 GPS with an L1 receiver and antenna, with an accuracy of ±10 mm+1ppm^2 RMS in the horizontal and 20 mm+1ppm^2 RMS in the vertical direction. Collars are currently marked with a 1 m-long piece of casing; drill hole identifiers are welded directly on the pipe.

In 2012 and 2013, core was delivered by Pozitif each morning to TMST's core logging facility in the nearby town of Etili for logging and processing. Starting from 2014, logging activities were moved to a new facility northwest of the property near Çanakkale.

Pozitif also served as the RC drill contractor. RC holes were drilled using a Gemex MP 1000 HOA rig, capable of drilling to a depth of 400 m with 4" outside diameter rods or 300 m using 4.5" rods. Driconeq DR 102 rods with an outside diameter of 4" were used on the TV Tower project. A Sandvik RE004 hammer with a variety of bit sizes was used.

Dry samples were obtained using a standard cyclone and riffle splitter. Sample sizes averaged between 5 and 10 kg, with the rest of the sample discarded in the sump. A small amount of sample from each bag was washed and placed in a numbered chip tray. A geologist was on site at all times to monitor the sampling and log the chips in a preliminary fashion. Additional logging was also carried out in Etili.

A wireline was installed on the rig to facilitate down-hole surveying. Surveys were taken every

50 m down-hole using a non-magnetic Reflex Gyro survey instrument that could be used inside the drill rods.

RC drilling is not common in Turkey, and the RC program served as a Liberty program to determine the suitability of this fast, low-cost method for the rocks at TV Tower. A number of RC holes were abandoned due to getting stuck in clay-rich altered volcanic rocks, some requiring more than a week to extract the rods from the hole (when successful). An attempt to drill the siliceous rocks at Kayalı resulted in a similar situation after 43.5 m in the first hole. It was determined that RC drilling is not feasible at TV Tower and the attempt was abandoned.

In 2020, a Turkish drill contractor, Mebsis Mühendislik Sanayi ve Ticaret Anonim Şirketi ("Mebsis"), was contracted to complete the diamond core drilling. The drill rig used was a Mebsis-built Tetra 2500 rig with depth capacities 2000 m. All of the holes were completed with HQ (63.5 mm) tools. CD-013, CD-014 and CD-015 Down-hole surveys were carried out using a DeviTool PeeWee Multishot survey tool, with an accuracy of ±0.5 degrees on the azimuth and ±0.1 degrees on the inclination. CD-016 and CD-017 Down-hole surveys were carried out using a DeviFlex Rapid non-mangentic instrument, with an accuracy of ±0.01 degrees on the azimuth and ±0.2 degrees on the inclination. Down-hole surveys were conducted by the Mebsis' drilling supervisor upon reaching the target depth of each drill hole. Down-hole surveys were taken at the end of the drill hole and at each 200 m down-hole interval including the 10 m and 100 m readings. The results were downloaded from a PDA by the supervisor as a pdf file and delivered to the drill geologist.

10.1.1 Küçükdağ Target

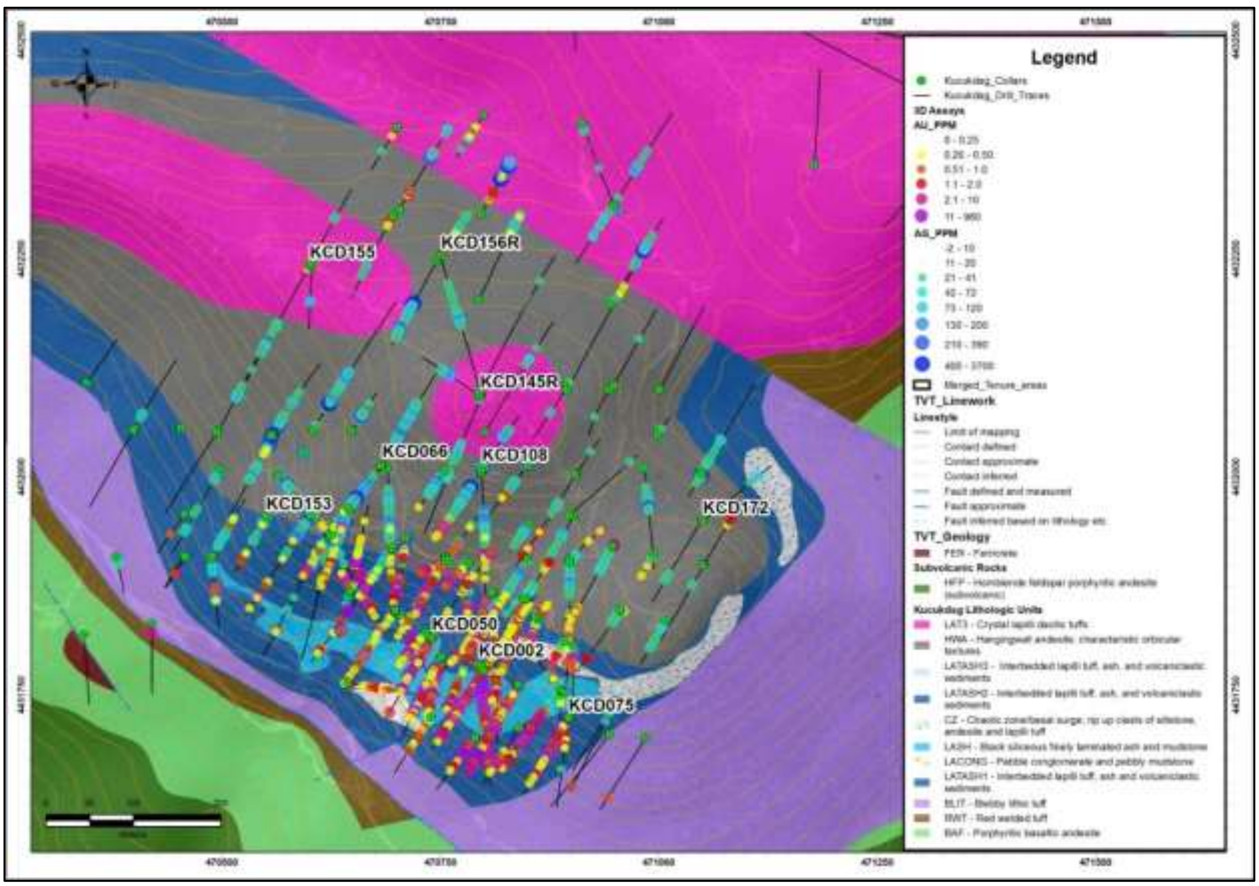
Drilling at Küçükdağ, including 134 diamond drill holes totaling 29,339.2 m and 10 RC holes (Figure 10.1) totaling 1,882.5 m, returned a number of significant intercepts, including high-grade Au-Ag-Cu, long intercepts of moderate Au grade, and moderate-grade Ag mineralization. Drilling was carried out on 25 m-spaced sections oriented 210-030 to test flat to moderately north-dipping stratigraphy and a generally WNW-ESE elongate zone of gold mineralization. Multiple holes were fanned from most drill sites. True widths of the mineralized intervals are interpreted to be between 50 to 100% of the reported lengths; the irregular nature of mineralized zones precludes greater specificity with regard to true widths. Highlights (drilled widths) include:

- KCD039: From 21.0 to 158.1 m, 137.1 m averaging 5.94 g/t Au, 12.6 g/t Ag and 0.53% Cu (gold breccia zone)
- KCD050: From 117.5 to 129.5 m, 12.0 m averaging 227 g/t Au, 9.8 g/t Ag and 0.46% Cu (gold vein / stratiform overlap)

- KCD075: from 38.5 to 132.0 m, 93.5 m averaging 2.33 g/t Au, 9.1 g/t Ag and 0.17% Cu (vein, breccia zone)
- KCD142: from 174.5 to 219.7 m, 45.2 m averaging 15.3 g/t Au, including 386 g/t Au over 1.5 m (gold vein, stratiform overlap)
- KCD094: from 52.0 to 187.5 m, 135.5 m averaging 85.9 g/t Ag (silver zone)
- KCD101: from 13.4 to 86.4 m, 73.0 m averaging 102 g/t Ag (silver zone)
- KCD108: from 53.0 to 175.7 m, 122.7 m averaging 93.0 g/t Ag (silver zone)

Drilling clearly differentiated a gold-rich zone of mineralization, located primarily within the BLIT lithic lapilli tuff unit, and characterized by gold hosted in breccia “pipes”, veins and zones of vuggy quartz. The zone measures approximately 300 x 450 m. A nearly flat-lying blanket of silver-rich mineralization lies over the top of the gold zone and extends northward from it. This zone as currently defined by drilling extends over an area of approximately 650 x 650 m, and is up to 100 m thick. Late in the drilling program, a north-dipping zone of oxide gold mineralization was identified in the northwestern part of the drill grid. It overlies the silver zone.

Figure 10.1: Geology and drill holes, including 3D assays, in the Küçükdağ resource area

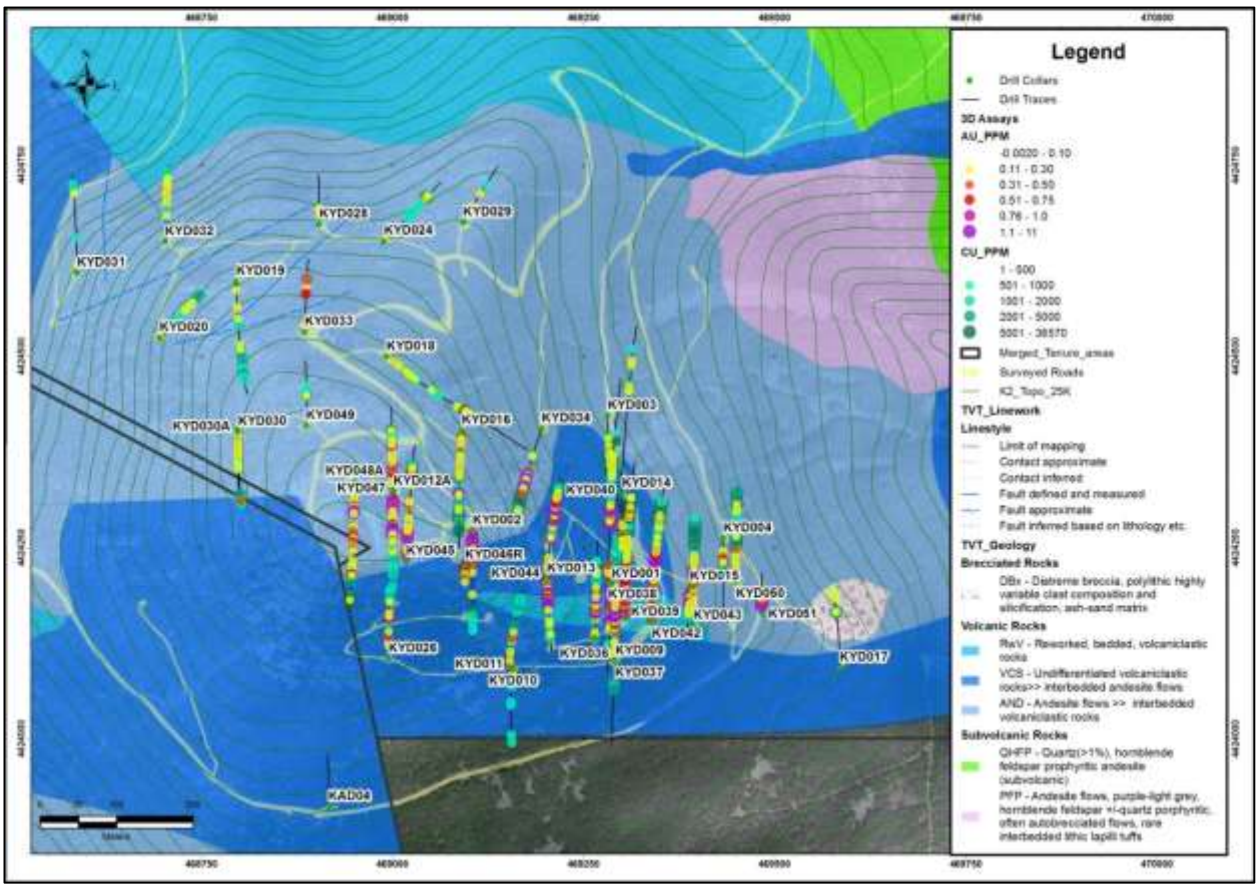


10.1.2 Kayalı

Liberty Gold drilled 16 diamond core holes and one RC hole for a total of 3,586.1 m in the Kayalı target, testing for the presence of low to moderate-grade gold in oxide and supergene copper mineralization (Figures 10.2 and 10.3). Relogging and modelling of previous holes suggested that low-grade gold was primarily hosted in a thick, gently north-dipping sheet of strongly silicified volcaniclastic rocks and tuff (ledge). Gold grade appeared to be elevated in areas where the ledge was cut by WNE-ENE-striking, steeply south dipping, hematite-bearing breccia zones, joints and faults (ribs). For this reason, drill holes were generally oriented toward the north to cut ribs at high angles, and where possible were drilled on 50 m-spaced, N–S-oriented sections. True widths of the mineralized intervals are interpreted to be between 50 to 100% of the reported lengths; the irregular nature of mineralized zones precludes greater specificity with regard to true widths. Highlights from this program include:

- KYD039: From 1.6 to 149.3 m, 147.7 m averaging 0.41 g/t Au, including 81.0 m averaging 0.60 g/t Au.
- KYD043: From 74.0 to 114.6 m, 40.6 m averaging 0.85 g/t Au.
- KYD046R: From 0 to 45.0 m, 45.0 m averaging 1.35 g/t Au, including 3.0 m averaging 15.9 g/t Au.
- KYD051: From 15.8 to 48.9 m, 33.1 m averaging 1.96 g/t Au, including 17.4 m averaging 3.42 g/t Au.

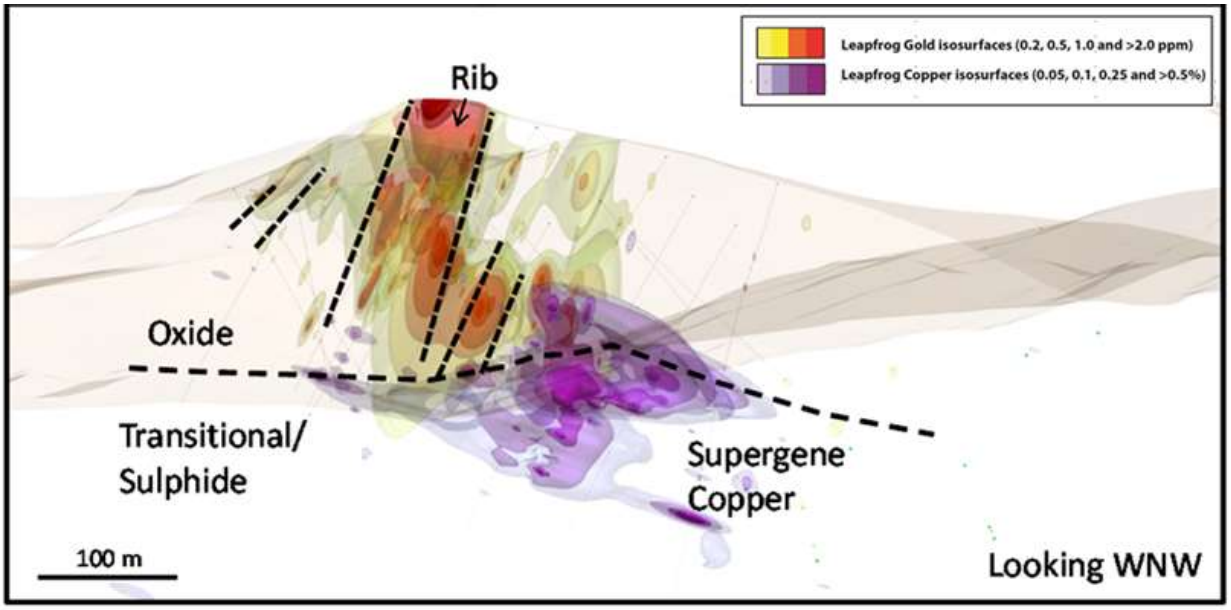
Figure 10.2: Drill holes at the Kayalı target



Drilling generally supported the ledge-and-rib model, with good continuity along strike of at least two ribs. The zone in general is approximately 450 m long and is open in both directions. Considerable additional drilling will be needed to define the zone.

The initial drilling program by TMST identified significant copper in some drill holes. Additional drilling by Liberty Gold has confirmed the existence of a blanket of supergene copper mineralization immediately beneath the oxidized, gold-bearing silica ledge in some locations (Figure 10.2). The main copper species consist of chalcocite and covellite, with copper concentrations locally > 4%. The best copper intercept in 2013 drilling is in KYD039, which returned 34.1 m averaging 1.29% Cu from 185.9 to 220.0 m.

Figure 10.3: Kayalı area Leapfrog interpreted section through gold and copper zones



10.1.3 Nacak Porphyry

Three core holes for a total of 1116.2 m tested the Nacak porphyry target in 2013. The drilling provided evidence for the presence of a weakly-developed porphyry system in this area, including partially overlapping zones of phyllic and potassic alteration and zones of weak sheeted quartz veining. Anomalous copper, gold and molybdenum were encountered in each hole. Additional drilling should be contemplated in the future.

10.1.4 Karaayı 2013 Confirmation Drilling

Liberty Gold drilled five confirmation diamond drill holes on the Karaayı tenure in October, 2013, totaling 1,328.7 m. KRD001 and 003 were drilled at the Yumrudağ HSE target, KRD005 targeted zones of vuggy quartz prospective for oxide gold mineralization at the Ardıç HSE target, and KRD-2 and 4 targeted the Hilltop porphyry target, returning long intervals of moderate to intense quartz stockwork in phyllic- to potassic-altered feldspar-hornblende-biotite- quartz porphyry.

True widths of the mineralized intervals are interpreted to be between 50 to 100% of the reported lengths; the irregular nature of mineralized zones precludes greater specificity with regard to true widths. Highlights from this program include:

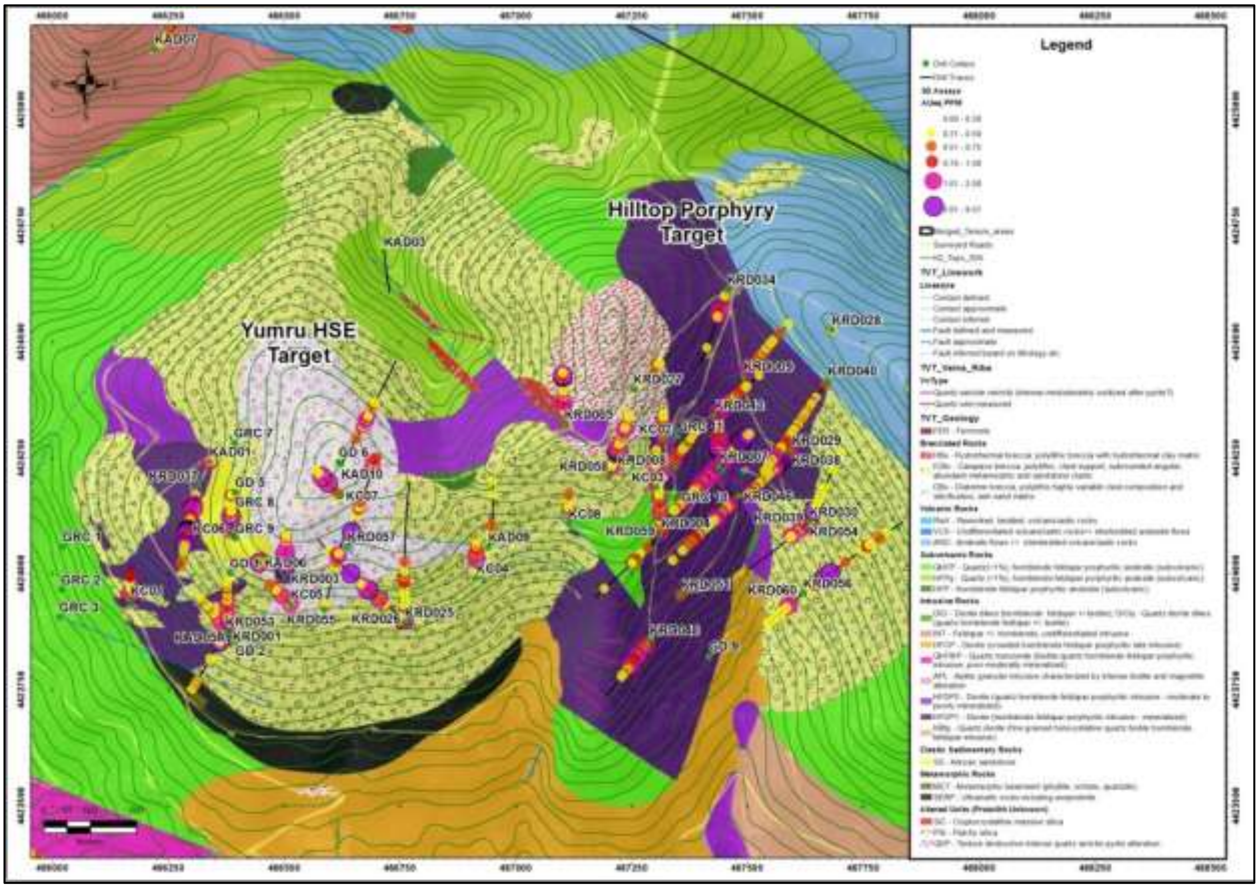
- From 5.2 to 125.0 m, 119.8 m averaging 0.80 g/t Au, including 35.0 m averaging 2.00 g/t Au in KRD-3.
- From 13.3 to 238.1 m, 224.8 m averaging 0.30% Cu and 0.13 g/t Au, including 0.59% Cu and
- 0.18 g/t Au over 37.0 m in KRD-2.

The Liberty Gold 2013 program at Karaayı confirmed the potential for significant shallow oxide gold mineralization similar to the Kayalı target, as well as the presence of Cu-Au porphyry mineralization. As well, a number of holes encountered supergene chalcocite under the oxidized gold mineralization and partially overlapping the top of the porphyry system.

10.1.5 Yumrudağ Target

Liberty Gold drilled six holes in the HSE targets at Karaayı in 2014 and 2015, including KRD025, 026, 037 (2014 drilling) and KRD053, 055 and 057 (2015 drilling), respectively (Figure 10.4).

Figure 10.4: Yumrudağ HSE (left) and Hilltop porphyry (right) targets

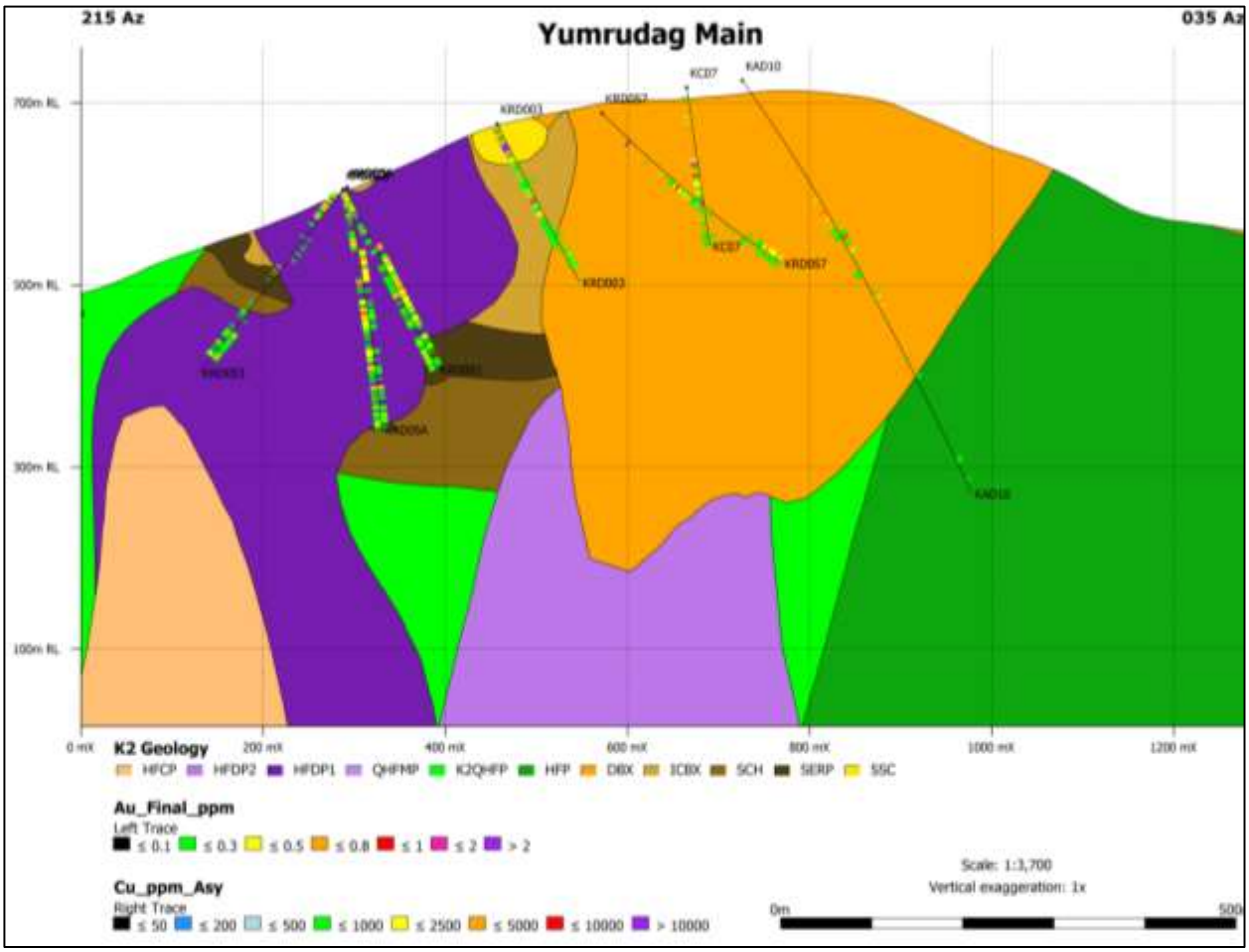


KRD025 and 026 were fanned from the same pad to the southeast of Yumrudağ. Both returned low grade gold intercepts at the tops of the holes, including 0.50 g/t Au over 20.4 metres from 9.7 to 30.1 metres. These holes appear to have intersected the bottom of the HSE silica ledge. KRD037 was drilled on the northwest side of the main Yumrudağ gold target, and extended mineralization to the northwest, intersecting Cu-Au bearing center-lined quartz veins in porphyrytic rock, cut by gold-bearing high angle quartz-iron oxide breccias.

KRD055 and KRD057 were located on NE-SW fence on the southeast margin of the best mineralized section of Yumrudağ target. KRD055 offsets the gold mineralization in KRD003 and KRD057 offsets the gold mineralization in KC07 as well as filling a significant gap along trend. Despite the fact that those holes intersected some of the strongest hematite crackle brecciation observed at Yumrudağ, no significant high grade gold-oxide mineralization could be noted. Both holes returned short intervals of low grade gold, including up to 0.11 g/t Au over 34.4 metres from 147.5 to 181.9 metres. The drilling shows a strong west-northwest trend to gold mineralization related to a structural rib.

KRD053 was located on the southern end of the Yumrudağ and targeting the Yumrudağ Porphyry into southern mag anomaly with gold bearing quartz veins in adjacent drillholes and on surface (Figure 10.5). Weak to moderate grade gold oxide mineralization was intersected on the top of this hole reaching up to 0.3 g/t Au over 20.1 metres between 10 and 30.1 metres in addition to the deeper mineralized porphyry intercepts reaching up to 0.19 g/t Au over 36 metres between 198 and 234 metres, respectively. The hole proved to be a good proof of concept hole for the intrusive carapace breccia model; drilling through trace qtz veins within QHFP and ICBX for 100 metres, before drilling into 50 metres of massive serpentinite underlain by a fault and 30 metres of schist before coming out of the megablock into qtz veined QHFP. Unfortunately after 45 metres of qtz veined intrusive, it was cut by the post-mineral HFCP, which placed important constraints on the late intrusive.

Figure 10.5: Cross section through Yumrudağ looking NW with modelled geology and Au and Cu on selected drill traces.



10.1.6 Hilltop Porphyry Target

Based on encouraging initial results in 2013, Liberty Gold drilled 12 holes in 2014 and 11 additional holes in 2015 in the Hilltop porphyry system (Figure 10.4). These holes included two additional holes from the collar of KAD02 and KRD2 and one additional hole from the collar of KC03 serving as infill, and twenty step-out holes around the northwestern, northern, eastern, southern and southeastern sides of the drilled area. KRD006 was drilled in a northeasterly direction from the site of KRD002, aimed directly under and largely orthogonal to steeply-dipping stockwork alteration in surface outcrops, and returned 0.22 g/t Au and 0.26% Cu over 261 metres from surface. Also of note was KRD029, collared to the southeast of KRD006 but angled to the southwest, which returned 0.22 g/t Au and 0.75% Cu over 58.5 m, starting from shallow depth.

The higher copper content reflects the presence of a chalcocite blanket at shallow depth, with individual sample intervals returning >1% Cu. This intercept was followed up with a vertical hole, KRD038, from the same site, and KRD030 and KRD039 from a site located approximately 100 metres to the south. All of these holes returned higher than average copper values at the tops of the holes, reflecting the presence of supergene chalcocite.

KRD040 and KRD043 tested the northern extent of the mineralized porphyry body. Both holes returned low grade mineralization over long intercepts, including 0.13 g/t Au and 0.15% Cu over 235.2 metres between 137.7 and 372.9 metres and 0.11 g/t Au and 0.28% Cu over 105.7 metres between 18.7 and 124.4 metres. Several high grade intercepts were noted, correlated with vein density. As intersected on the southeastern extents of the mineralized body, the continuity of the shallow copper blanket was extended north, with individual sample intervals returning >1% Cu.

Holes KRD046, KRD051 and KRD048 were step outs on the main zone of the mineralization through south with 100 metres of spacing from each other (Figure 10.5). All holes intersected the best mineralized porphyry body in long intervals which nearly doubled the mineralization footprint of the Hilltop Porphyry; however in KRD051, it is noted that the barren post-mineral intrusive body cut through the older phases which suggests that there might be numerous small bodies of late barren intrusives in the area. KRD046 and KRD048 returned with nearly the best intercepts of Hilltop porphyry reaching up to 0.26 g/t Au and 0.17% Cu over 137.9 meters from the surface between 2 and 139.9 metres (Figure 10.6).

Based on the 2015 drilling, the Hilltop Porphyry zone is still open to the north, east and south. KRD028 to the northeast returned only low grade results, suggesting that no further step out drilling is necessary in that direction, and there is likely limited room to expand the zone in a westerly direction. Additional drilling to the south and east are highly recommended in the upcoming drilling programs in order to establish the limits of the porphyry system and to generate enough data to carry out a resource estimate.

Figure 10.7 is a long section through a conceptual leapfrog model encompassing drilling to date in the Valley, Yumrudağ and Hilltop areas. The gold and copper geochemistry highlight oxidized gold mineralization in the leached residual silica cap at high elevations, a relatively flat-lying zone of copper mineralization associated with supergene processes, and the Cu-Au porphyry “roots” at depth.

Figure 10.6: Hilltop porphyry target cross section looking west showing modelled geology and gold and copper assays on drilling.

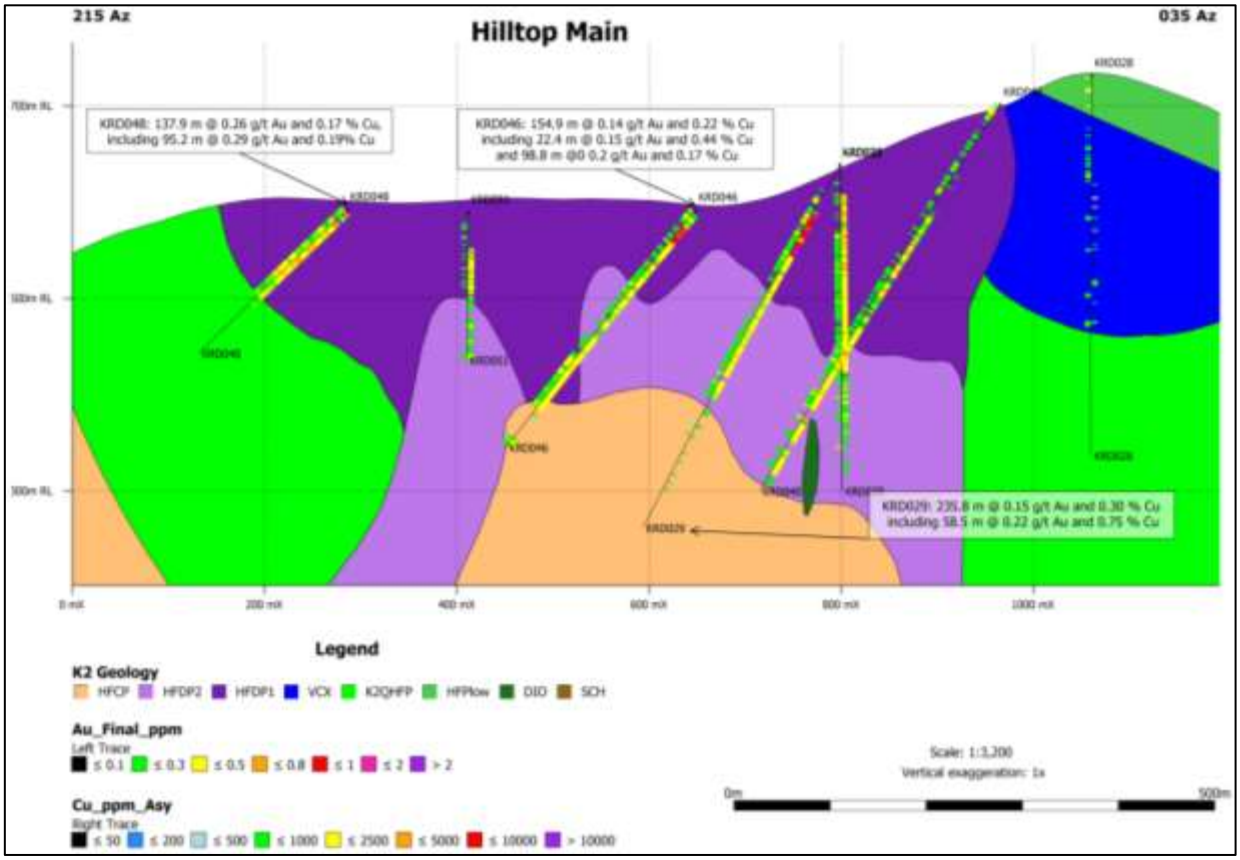
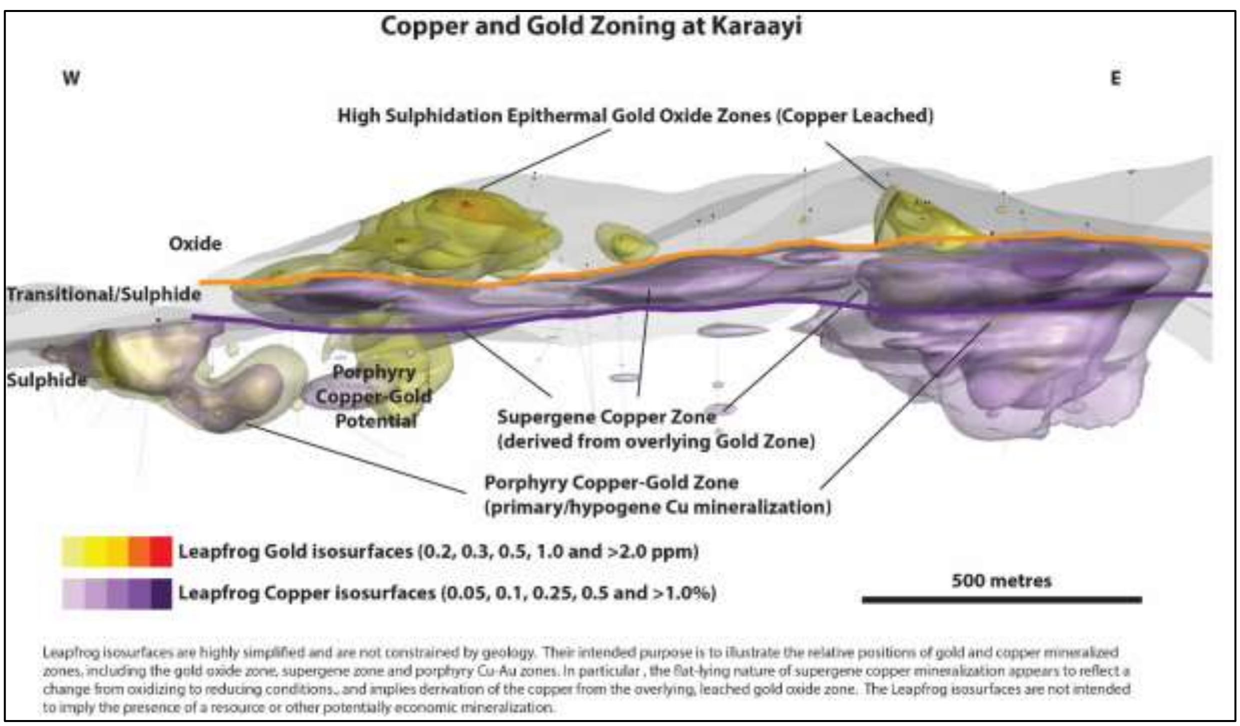


Figure 10.7: Long Section through the Valley, Yumrudağ and Hilltop Targets



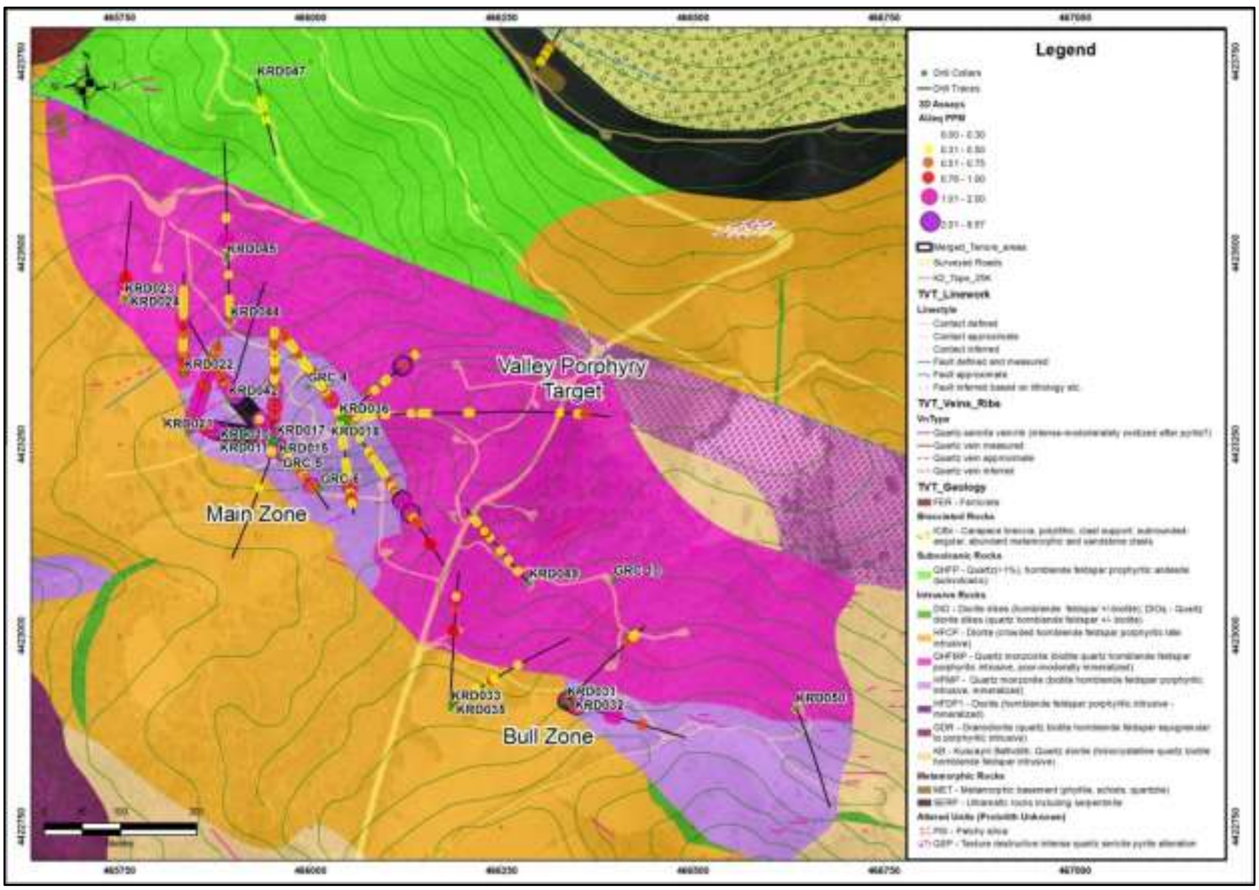
Long section view is to the north and encompasses most of the drill holes on the Karaayı tenure. The Valley porphyry system is on the left; Hilltop to the right.

10.1.7 Valley Porphyry Target

Grid soil sampling, rock sampling and mapping established the presence of porphyry mineralization over a 1200 m-long by 400 m-wide, northwest-trending area south of Yumrudağ. This area was previously tested with several short, vertical RC holes by Eurogold, but the data was (and is currently) unavailable. Two drill sites, located approximately 100 metres apart, were permitted by Chesser in the area of the previous drilling. The westerly of the two sites was chosen for an initial test. It was directed to the northwest under a small gully with near-continuous exposure of K-feldspar-magnetite altered intrusive rock cut by northeast-striking zones of QSP alteration. Grab samples from this area had returned Au assays up to 2 g/t gold.

The discovery hole, KRD010, returned 0.63 g/t Au and 0.27% Cu from surface (Figure 10.8). At approximately 42 metres down-hole, stockwork quartz-magnetite alteration intensified, accompanied by disseminated and vein-hosted chalcopyrite and bornite. This interval, from 41.8 to 119 metres returned 77.2 metres grading 1.5 g/t Au and 0.53% Cu.

Figure 10.8: Valley porphyry target cross section looking west showing modelled geology and gold and copper assays on drilling.



Additional holes were fanned from this and the second drill site to the east. Highlights include:

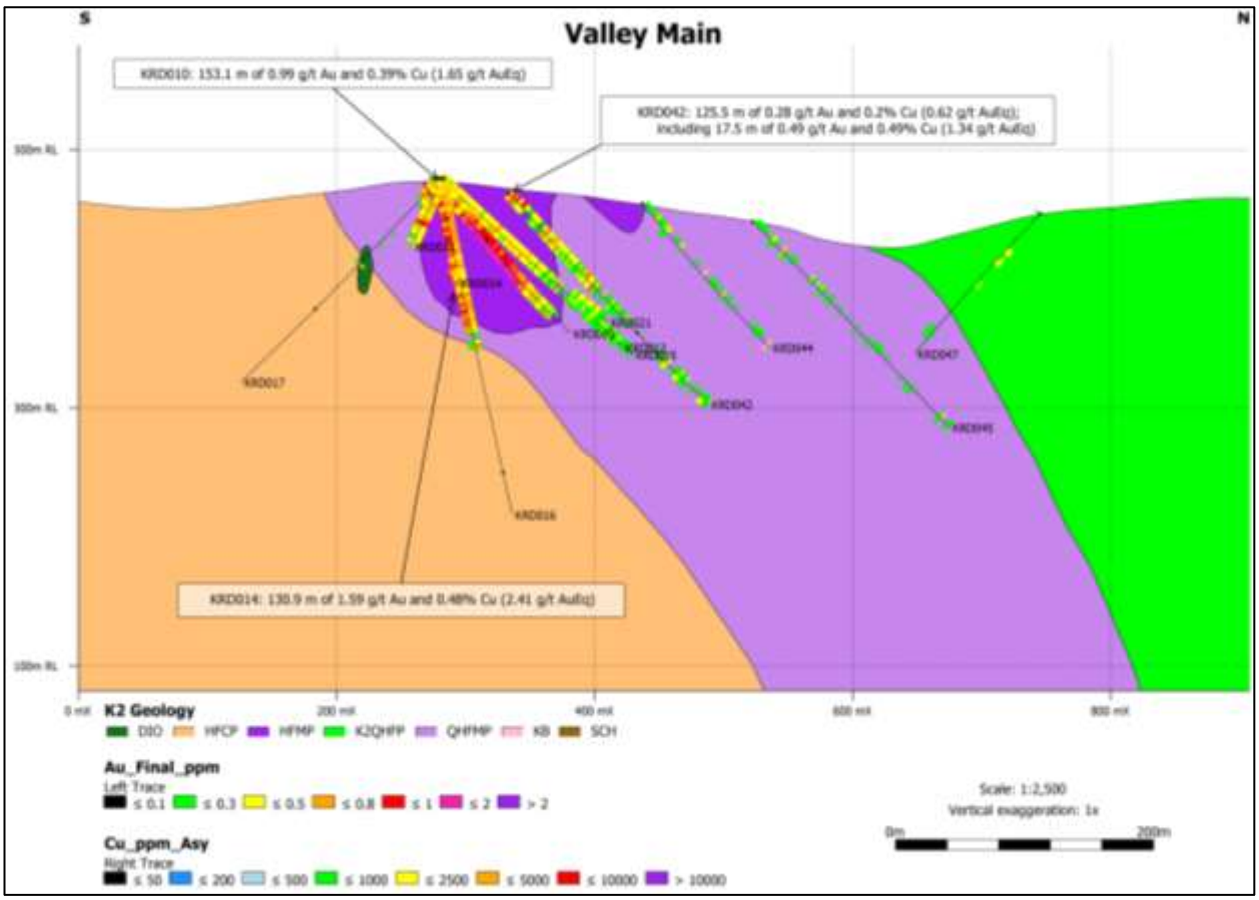
- KRD014: 1.59 g/t Au and 0.48% Cu over 130.9 m from surface, including 2.74 g/t Au and 0.77% Cu (4.06 g/t AuEq) over 60.4 m;

- KRD016: 0.63 g/t Au and 0.27% Cu over 134.7 m
- KRD042: 0.28 g/t Au and 0.20% Cu over 125.5 m from surface

The highest Au and Cu grades cluster relatively tightly around the discovery hole KRD010 and KRD014. Both holes drilled to the NNW and WNW respectively and intersected a barren post mineral intrusive HFCP at depth that cuts off mineralization to the SW of the discovery zone. Seven holes on trend to the northwest showed diminishing grades northwestward from the discovery hole, with a high of 0.45 g/t Au and 0.20% Cu over 143.2 m in KRD021, located immediately NW of KRD010. Mineralization is still open along strike to the NW, with drillholes KRD022 and KRD024 as the northwesternmost holes intersecting copper and gold mineralization underneath strongly mineralized surface samples.

A fence of holes was drilled to the north in 2015 to test the width of the mineralization. Weak copper and gold mineralization in sparse quartz veining and potassic alteration was intersected in all holes, with intensity decreasing to the north.

Figure 10.9: Valley porphyry N-S cross section showing Leapfrog modelled geology and Au and Cu on drillholes



Six holes were drilled on trend to the southeast in the “Bull Zone”. The westerly two of the Bull Zone holes were drilled from a site constrained by permitting, and were located too far to the southwest to hit the shallow mineralization exposed on surface to the northeast. The easterly two holes, KRD031 and KRD032, returned 0.76 g/t Au and 0.16% Cu over 13.4 m, and 0.57 g/t Au and 0.31% Cu over 18.1 m respectively, starting from surface. Additional drilling has been carried out with two holes in 2015 for further test to the north and east. KRD049, the hole testing the northern extension, could achieve to hit low grade and limited mineralization; however KRD050, the holes testing the eastern extension, could not hit any significant mineralization.

10.1.8 Columbaz Low Sulphidation Epithermal Vein Target

The Columbaz Target, manifested on surface by the 1 km-long trend of epithermal quartz veins south of Columbaz Hill and east of Sarp Daği, was tested with a total of 12 drill holes in 2014, leading to the discovery of the Columbaz porphyry system (Figure 10.10).

The east end of the target, comprising the majority of the outcropping quartz veins, was tested with drill holes CD003 through CD007, from three sites spaced 50 metres apart and located to the south of the (steeply south dipping) main vein. While all of the holes intersected the vein, gold grades were relatively low, with a high of 0.63 g/t Au over 11.1 metres, including 6.4 metres grading 1.01 g/t Au in CD007. Silver grades were generally low, although a 2.9 m-long interval in CD006 returned 40.4 g/t Ag, including 1.0 m grading 109 g/t Ag. The grades encountered in drilling were similar to results obtained in surface channel sampling of vein outcrops.

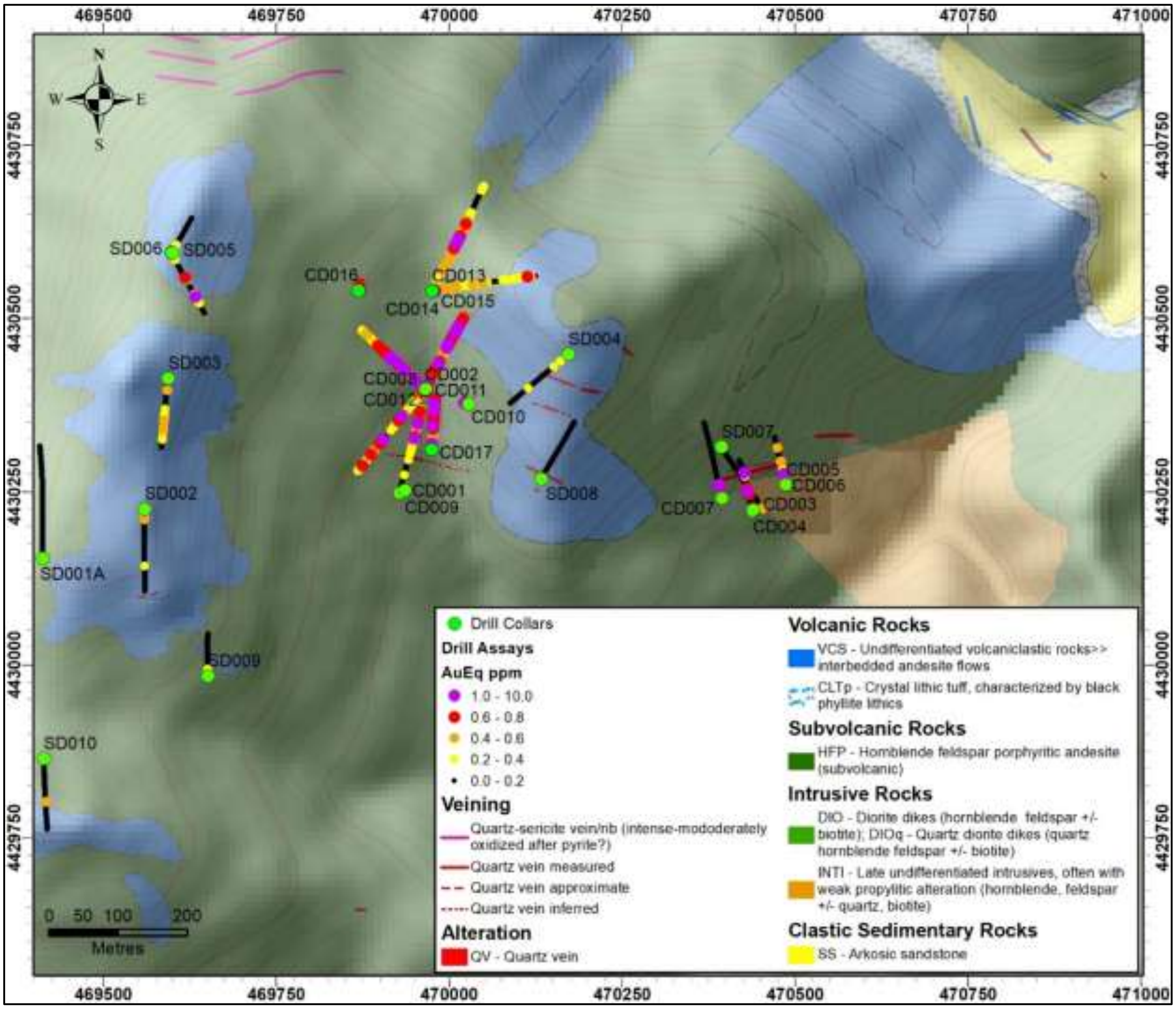
Across a gully to west of this target, quartz veins outcropping along an old drill road were initially targeted by CD001 and CD002. Both drill holes intercepted several epithermal quartz veins, which were strongly brecciated and clay altered. A high of 1.6 metres grading 6.46 g/t Au was obtained in CD002, with a high of 0.8 metres grading 3.93 g/t Au in CD001. Silver values were low. Follow-up holes CD008 through CD012 also intersected several strongly brecciated and clay altered intervals with quartz vein rubble. Highlights include (drilled width):

- CD008: 7.8 metres grading 8.41 g/t Au and 8.32 g/t Ag, from 111.8 to 119.6 metres
- CD008: 10.8 metres grading 3.96 g/t Au and 3.97 g/t Ag, from 245.4 to 256.2 metres, including 3.9 metres grading 9.89 g/t Au.
- CD011: 0.9 metres grading 10.7 g/t Au and 10.6 g/t Ag from 145.9 to 146.8 metres
- CD012: 0.09 metres grading 5.80 g/t Au and 11.7 g/t Ag from 267.2 to 268.1 metres

True thicknesses are estimated to be approximately 50% of the drilled length. The two intercepts in CD008 both contained individual assay intervals returning >20 g/t Au.

The drilling has provided proof of concept that low sulphidation epithermal veins project to depth, and on the west side of the target, include zones of high grade mineralization.

Figure 10.10: Columbaz porphyry (left) and LS Vein target showing drilling and 3D assays



10.1.9 Columbaz Porphyry Target

The Columbaz porphyry target was discovered through drilling, as there are no obvious surface manifestations of a porphyry system at depth. A bull's eye magnetic anomaly over the discovery zone was noted in hindsight. Evidence of porphyry-style alteration and low-grade Au and Cu mineralization was first encountered in the form of stockwork quartz veinlets pervasive sericite alteration in CD002, which returned 215.9 metres grading 0.22 g/t Au and 0.05% Cu from 4.5 to 220.4 metres. Follow-up holes CD008 and CD010 through CD012, drilled to the north of CD002, returned long runs of quartz- and quartz-magnetite stockwork veining hosted in sericite-altered volcanic and porphyritic intrusive rocks. These holes bottomed in biotite hornfels and biotite-altered, coarsely porphyritic intrusive rock. Highlights include:

- CD008: 357.7 metres grading 0.60 g/t Au and 0.11% Cu (0.80 g/t AuEq) (includes high grade intervals related to epithermal quartz veins)
- CD010: 208.7 metres grading 0.30 g/t Au and 0.16% Cu (0.58 g/t AuEq)
- CD011: 381.8 metres grading 0.34 g/t Au and 0.10% Cu (0.50 g/t AuEq), including 169.0 metres grading 0.37 g/t Au and 0.13% Cu (0.59 g/t AuEq)

- CD012: 499.1 metres grading 0.36 g/t Au and 0.13% Cu (0.59 g/t AuEq) including 178.4 metres grading 0.55 g/t Au and 0.20% Cu (0.89 g/t AuEq) and including 59.5 metres grading 0.60 g/t Au and 0.25% Cu (1.03 g/t AuEq).

Drill hole CD012, drilled toward the north, contained the highest vein density and alteration intensity. The system was open to the north, east and west, but was limited by CD002 and CD009, which returned relatively low grade Au and Cu values. A schematic cross section of simplified geology and drilling is shown in Figure 10.11.

2015 deep IP geophysics studies confirmed the possible continuity of the porphyry system through north-northeast thanks to the bull's eye IP anomaly. Edge of this IP anomaly was confirmed to be mineralized by the assay results of CD011 and CD012 (Figure 10.12).

Figure 10.11: Columbaz porphyry target cross section showing simplified geology and AuEq drill assays

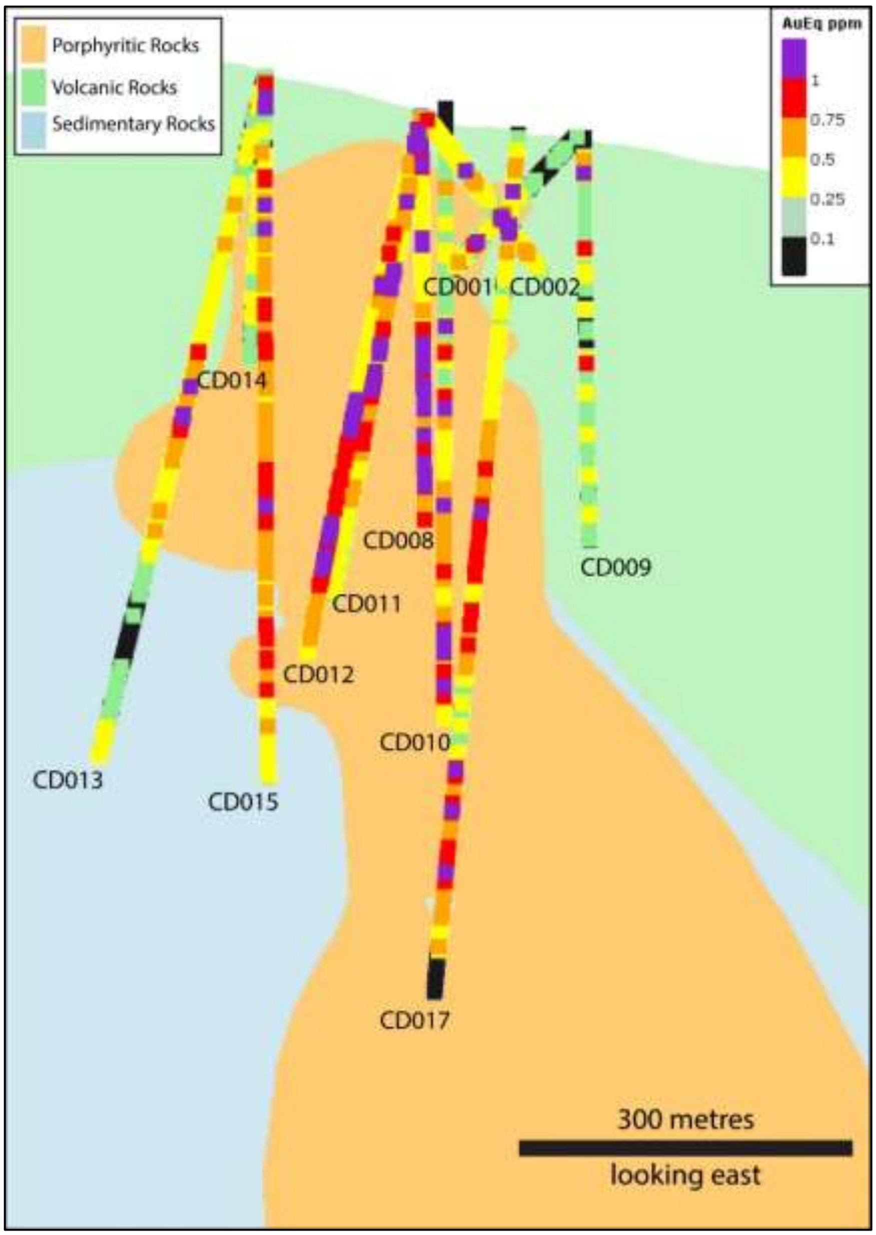
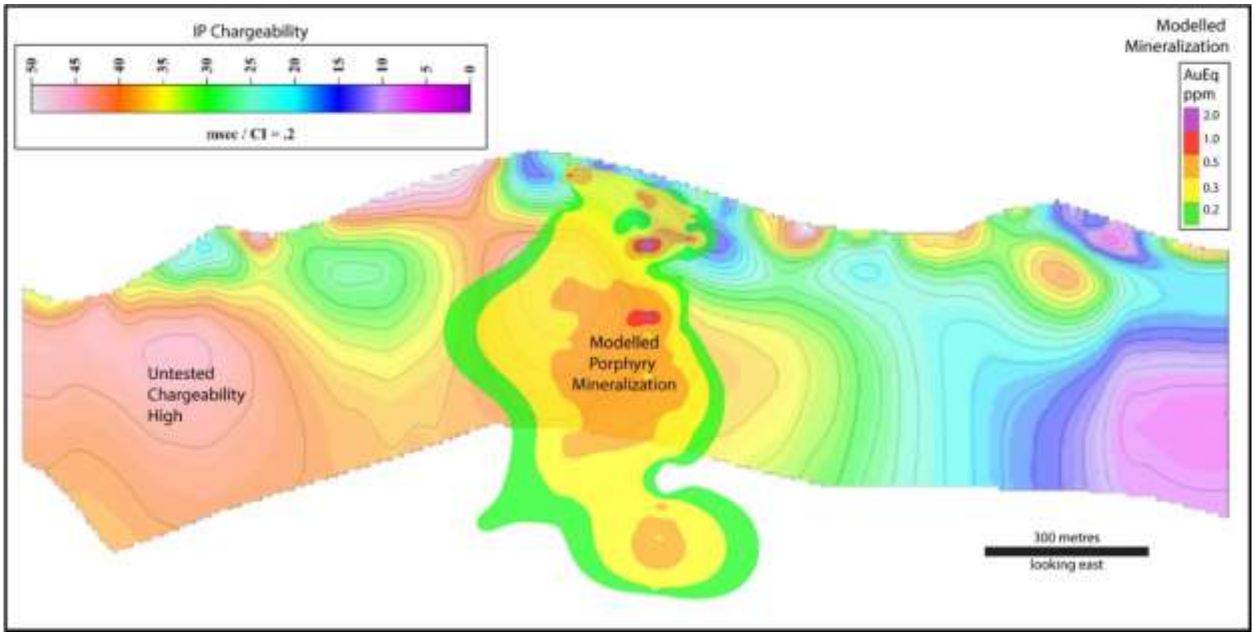


Figure 10.12: Columbaz porphyry target cross section



N-S cross section (looking east) represents the strong correlation between the IP anomalies and tested porphyry mineralization.

10.1.10 Groundwater Monitoring Wells

Two RC holes, totaling 282.0 m, were drilled in a lower elevation area south of the Küçükdağ zone in 2013 for the purpose of installing groundwater monitoring wells.

10.2 Liberty Gold Drilling 2020

The 2020 drilling program encompassed 5 holes, stepping out from and deepening porphyry mineralization incountered in 2014 at Columbaz. A total of 3020.7 m in 5 holes was completed (figures 10.10 – 10.12).

Follow-up drilling at the Columbaz porphyry target included drill holes CD013, CD014 and CD015, all drilled from a site to the north of the porphyry centre identified in holes CD008-CD012; CD016, drilled to the northwest; and CD017, drilled to the south and substantially deeper. Drill holes CD013, CD015 and CD017 intersected quartz and quartz magnetite veining in sericite altered porphyritic intrusive rocks along a N-S trend, while drill holes CD016, drilled to the west and CD014 drilled towards the east intersected predominantly sericite altered volcanic and hornfelsed sedimentary rocks without significant porphyry mineralization. Highlights include:

- CD013: 351.7 metres grading 0.21 g/t Au and 0.09% Cu (0.34 g/t AuEq), including 132.6 metres grading 0.32 g/t Au and 0.13% Cu (0.51 g/t AuEq)
- CD015: 27.5 metres grading 0.69 g/t Au and 0.02% Cu and 565.8 metres grading 0.27 g/t Au and 0.20% Cu (0.47 g/t AuEq) including 277.2 metres grading 0.31 g/t Au and 0.16% Cu (0.54 g/t AuEq)
- CD017: 133.8 metres grading 0.28 g/t Au and 0.04% Cu and 379.7 metres grading 0.25 g/t Au and 0.11% Cu (0.41 g/t AuEq) and 216.0 metres grading 0.25 g/t Au and 0.15% Cu (0.47 g/t AuEq).

The gold and copper-mineralized porphyritic intrusive stock is a drill-defined 750 metres in vertical elevation and approximately 400 metres wide in a north-south direction and up to 300 metres wide in an east-west direction. Further drilling is warranted as the gold and copper-mineralized intrusive stock is coincident with the strong IP chargeability anomaly in this area and appears to be trending towards another strong, untested IP chargeability anomaly at a similar elevation on the slopes and in the valley to the north (Figure 10.12).

11. SAMPLE PREPARATION, ANALYSIS AND SECURITY

11.1 Sample Preparation and Analyses

Sample preparation, analyses and security protocols for TMST and Liberty Gold programs are well-documented. Very little is known about the practices of Eurogold, Tüprag and Chesser at the Karaayı tenure.

Sample preparation, analyses and security procedures are described below for both TMST and Liberty Gold. Procedures are virtually identical for both operators, and are only differentiated below where they are not.

11.1.1 Core Drilling and Logging

Diamond core holes were drilled using HQ tools (63.5 mm core diametre). The holes were reduced to NQ (47.6 mm) when problems were encountered due to bad ground conditions such as clay-rich fault zones. Core was placed in plastic boxes with depth markers marking the end of every drill run (up to 3 m, the length of a drill rod).

Until 2014, boxes were covered and brought to the core facility at Orta Truva's Etili camp once a day by the drilling company. Starting in 2014, a new core facility in Kursunlu Village, near Çanakkale, was utilized. Reflex survey tests were taken at 50 to 100 m intervals down-hole to provide measurements of drill hole deviation.

All samples collected were subjected to a quality control procedure that ensured best practice in the handling, sampling, analysis and storage of the drill core. All drill holes were sampled and assayed continuously by staff of TMST (through 2011) or Liberty Gold on behalf of Orta Truva (original TV Tower property) or by Batı Anadolu (Karaayı license prior to acquisition by Liberty Gold), with the exception of obviously non-mineralized intervals in drill holes KCD-03, KCD-01 and KYD-07 and some abandoned holes which were subsequently redrilled. Sample intervals were selected on a geological basis and generally averaged between 1 and 1.5 m in length. Core was logged by TMST or Liberty Gold staff on behalf of Orta Truva and Batı Anadolu using the Anaconda method (TMST), or into a proprietary digital template (Liberty Gold) with data recorded with respect to lithologic type, alteration, structural elements and sulphide content. Samples were collected at regular intervals (approximately one per every one or two core boxes) for specific gravity determinations. All core was photographed for archival purposes.

Prior to 2014, core from TMST and Liberty Gold programs was stored in an unfenced field at the Etili facility with an on-site security guard during non-working hours. The core cutting area was kept locked during non-working hours, with core logging tents unlocked. In 2014, Liberty Gold transferred all archived core to a secure warehouse facility in Kursunlu Çanakkale, All logging and sampling activities are now based out of this facility.

11.1.2 Reverse Circulation Drilling and Logging

A total of 13 holes, totaling 1,881 m, were drilled by Liberty Gold using RC methods in 2013.

Dry samples were collected using a standard cyclone and sampled at 1.5 m intervals by filling a riffle splitter. At the end of the run, the contents of the splitter were released into two trays with a 50/50 split of the sample. One split was used to fill a pre-labelled bag and the other was discarded. A small amount of sample was washed and preserved in a chip tray. The sampling process was overseen by an on-site geologist, who also logged the chips in a preliminary fashion.

The chips were logged in a more detailed fashion in the office using a binocular microscope. The same template used for core logging was also used for logging RC chips.

11.2 Sample Preparation

After logging, the core was cut with a diamond core saw length-wise. Half the core was submitted for assaying, with the other half retained in the core box for archiving. The core samples were placed in individual sealed cloth bags and packed for shipment. Until the end of 2013, the retained half core was stored in the core boxes at the logging/camp facility in Etili. Subsequently, all core was transported to the new core logging facility in Kursunlu for storage.

Chesser and TMST used Acme Labs as the primary assay lab for drill samples. Liberty Gold used Acme Labs as the primary assay lab for drill samples until 2015. Acme is independent of all parties and accredited to ISO/IEC 17025 standards. Starting in 2015, ALS Labs became the primary assay lab for drill samples. ALS is independent of all parties and accredited to ISO/IEC 17025:2017 UKAS ref 4028.

Sample preparation took place, in whole or in part, at Acme's facility in Ankara, with some preparation work done in Vancouver starting in mid-2014. Prior to 2014, Acme sample preparation method R200-1000 or -400 was used (preparation of a 1000 gram or 400 gram pulp). Subsequently, the preparation code name was changed to PRP70-500, and a 500 gram pulp was prepared, although the method remained the same. The whole sample is coarse crushed and riffle split to approximately 1000 grams. This material is then pulverization in a LM-2 disk mill to 200 um particle size. Prior to mid-2014, A 100 gram pulp packet was forwarded to Acme-Vancouver for ICP-MS analysis and in some cases for gold assay, with the remaining 'master pulp' material for each sample remaining in Ankara and subsequently transferred to the Etili camp (now Kursunlu) for final storage. Starting in mid-2014, all activities beyond coarse crushing were transferred to Vancouver. Selected Liberty Gold samples were analyzed for gold by metallic screen methods. In this case, in addition to a 1000 gram pulp, the coarse fraction was also retained for analysis.

In mid-2014, eight drill holes were processed start to finish by ALS in order to compare turnaround time and other parameters with Acme. Samples were forwarded to ALS Labs' preparation facility in Izmir. Acme sample preparation method PREP-31 was used (preparation of a 250 gram pulp). The whole sample was coarse crushed and riffle split to approximately 1000 grams. This material was then pulverization in a LM-2 disk mill to 200 um particle size. A 100 gram pulp packet was forwarded to ALS-Vancouver for ICP-MS analysis and in some cases for gold assay, with the remaining 'master pulp' material for each sample remaining in Izmir and later transferred to the Kursunlu camp for final storage.

In 2015, twenty one drill holes were processed start to finish by ALS. Samples were forwarded to ALS Labs' preparation facility in Izmir. The whole sample was coarse crushed and riffle split to approximately 1000 grams. This material was then pulverization in a LM-2 disk mill to 200 um particle size. A 100 gram pulp packet was forwarded to ALS-Vancouver for ICP-MS analysis and in some cases for gold assay, with the remaining 'master pulp' material for each sample remaining in Izmir and later transferred to the Kursunlu camp for final storage.

In 2020, five drill holes were processed by ALS, using the methods detailed above.

11.3 Sample Analysis

Most of the sample analysis took place at the Acme Labs facility in Vancouver, B.C., Canada (ICP-MS geochemical suite, some gold assays and organic carbon by LECO), Ankara, Turkey (gold assays) and either Richmond, B.C. or Santiago, Chile (Au, Ag and Cu cyanide soluble assays). As detailed above and below, some analyses either were, or are now being carried out at ALS in Izmir or Vancouver.

All TMST and Liberty Gold samples were, and are subject to 41 element (or greater) geochemical analyses by ICP-MS and gold by fire assay with either AA or inductively-coupled plasma atomic emission spectroscopy ("ICP-AES") finish.

For Liberty Gold, samples with > 5000 ppb Au or > 100 ppm Ag were subject to fire assay with gravimetric finish, with these numbers used as the final ("best") numbers in the database. In addition,

- Samples reporting > 10,000 ppm Cu were subject to reassay with 4 acid digest and ICP-AES finish.
- Samples from KCD reporting > 0.2 ppm Au or > 10 ppm Ag were subject to cyanide soluble assay for metallurgical purposes.
- Samples from Kayalı reporting >0.1 ppm Au or 0.1% Cu were subject to cyanide soluble assay for metallurgical purposes.
- Samples from Karaayı reporting >0.1 ppm Au or 500 ppm Cu were subject to cyanide soluble assay for metallurgical purposes.
- Samples from Columbaz reporting >0.2 ppm Au or 0.1% Cu were subject to cyanide soluble assay for metallurgical purposes.

Very high-grade gold samples, or those with visible gold, were subject to metallic screen assay. Intervals with visible carbonaceous material (generally in subunits LATASH1, LASH and the upper portion of LATASH2) were also analyzed for organic carbon content by LECO for metallurgical purposes.

The analytical procedures are identified by Acme Labs' alphanumeric identifiers below. ACME analytical assay codes were changed in early 2014 to reflect a merger with Bureau Veritas. Both codes for the exact same methods are given below, with the current code following the original code.

- 1DX - AQ200 (ICP-MS, Aqua Regia dissolution and 41 element geochemical analysis; all samples)
- 3B - FA330 (Gold assay by fire assay with ICP-ES finish)
- G6 - FA430 (Gold assay by fire assay with AA finish; all samples)
- G6Gr - FA530 (Gold or silver assay with gravimetric finish for > 5 ppm Au or > 100 ppm Ag)
- 7TD - MA370 (Copper by 4-Acid dissolution and ICP-ES; for samples with > 10,000 ppm Cu)
- G602 (Screen metallic fire assay for gold with AA or gravimetric finish; selected high-grade samples)
- 2A Leco (Carbon analysis by Leco)

Codes for metallic assay and Leco are not updated above, as they were not used in 2014.

Chesser drill samples were subject to geochemical analysis by aqua regia dissolution and ICP-MS (1DX) and gold by fire assay with ICP-ES finish (3B01).

For samples assayed by ALS, the analytical procedures are identified by ALS Labs' alphanumeric identifiers below.

- ME-MS41 (ICP-MS, Aqua Regia dissolution and 51 element geochemical analysis; all samples)
- Au-AA23 (Gold assay by fire assay with AA finish; all samples)
- Au-GRA21 (Gold or silver assay with gravimetric finish for > 5 ppm Au or > 100 ppm Ag)
- Cu-OG62 (Copper by 4-Acid dissolution and ICP-ES; for samples with > 10,000 ppm Cu)
- Au-AA13 (Au cyanide soluble assay for > 0.1 ppm Au at Karaayı, >0.2 ppm Au at

Columbaz)

- Ag-AA13 (Ag cyanide soluble assay for > 10 ppm Ag at Columbaz)
- Cu-AA13 (Cu cyanide soluble assay for between 500-2000 ppm Cu at Karaayı and 1000-2000 ppm Cu at Columbaz)
- Cu-AA17 (Cu cyanide soluble assay for > 2000 ppm Cu)

11.4 Notes

Liberty Gold encountered a number of issues with Acme laboratory in 2014 and 2015, including an unacceptably high number of failed blanks, an unacceptably high number of failed standards, data quality issues, long turn-around times, and issues with data quality and turnaround time with respect to cyanide-soluble assaying.

In response to unacceptably slow turn-around times on CN work at the Santiago lab, Acme started using the Bureau Veritas Richmond metallurgical lab for CN work. Turn-around times did not improve, and data was suspect, with unrealistically high numbers for CN solubility. A comparison between the two labs and the ALS Vancouver lab showed that, while ALS Vancouver and Acme Santiago returned statistically similar results, the results from the Richmond Lab were clearly different. ALS turn-around time for CN work at the Vancouver laboratory is approximately 1 week compared to approximately 2 months for Acme at either Santiago or Richmond. An arrangement was made to forward all pulps from Acme to ALS after assaying at Acme in order for ALS to carry out CN soluble assays. This arrangement was made retroactive to the beginning of 2014.

As with 2013, Acme was plagued with a large number of standard failures in the early part of 2014, as well as slow turn-around time and suspect data quality. In order to remedy this situation, samples were transported to Ankara for crushing only, then shipped to Vancouver for pulping and assaying, with splits of the pulps forwarded to ALS for CN assays. This improved both the standard and blank failure rate and the turn-around time significantly, but was difficult to manage.

As a consequence, Liberty Gold switched the primary assay lab to ALS in 2015. As of the effective date of this report, 21 drill holes in 2015 and 5 drill holes in 2020 were forwarded to ALS Labs' preparation facility in Izmir and the pulps shipped to ALS Vancouver for assaying and ICP analysis.

12. DATA VERIFICATION

In order to verify the database supplied by the Liberty, DAMA undertook site visits and reviewed the following technical aspects of the program:

• Drill hole data collection and compilation into the electronic drill hole database;

• Property geology, copper and gold mineralization, alteration and controlling structures;

• Drill hole collar locations;

• Drill hole logging and sampling procedures;

• QAQC procedures and results;

• Chain of custody procedure for sample handling and transport to the lab;

• Representative drill core from primary geologic setting for gold in all rock types;

• Database management and data entry.

In addition, previous site visits by Mr. Gray and Mr. Simmons are summarized below. For more comprehensive descriptions of prior site visits, historical drilling, etc., the reader is refered to Hetman et al (2014).

12.1 Site Visits Related to the KCD Resource Estimate and Technical Report

A site visit was carried out by James Gray, P. Geo. between August 15 and 18, 2013. Moira Smith and Hakan Boran of Liberty Gold were the main contacts; however, access to all Liberty Gold site personnel was unrestricted and beneficial. The visit generally consisted of a day's field inspection of property geology and active drilling, a day reviewing logging / sampling procedures and drill core and a day looking at data handling and processing procedures and deposit interpretation.

Site personnel provided a detailed overview of property geology in the field. An RC drill rig was visited on the Liberty Gold Project. Sample collection was observed and found to be to industry best practice. The splitter was clean prior to collection and thoroughly cleaned after sample collection. A core rig was visited at the Kayalı area. A three-meter core run was witnessed being placed in the core box. The drill crew exhibited adequate care in handling and boxing the core. Capped and labelled hole collars were visited at previous drill sites.

Core illustrating each of the various mineralization styles was laid out and reviewed in the context of assay results. Five core samples were taken from a variety of mineralization styles for independent verification. Results showed a very close correlation to the originally sampled intervals.

A site visit was undertaken by Casey Hetman, P.Geo. of SRK, author of the previous technical report (Hetman et al, 2014) between October 27 and 30, 2013. He was accompanied by Liberty Gold's on-site technical team. The focus of the visit was to review the geology both in the field and drill core and to confirm that the mapping and coding of the geology was valid and that the geology as mapped was correctly captured within the Gems database. Approximately 2.5 days were spent reviewing rocks and drill sites in the field as well as key drill cores at the logging facility. An additional 1 day was spent reviewing database procedures, sampling and logging methodology and standard operating procedures.

12.2 Site Visit Related to Metallurgy

Gary L. Simmons visited the core storage and preparation facility in Etili and the TV Tower Property between April 23 and May 1, 2013. Mr. Simmons reviewed core processing and storage protocols, as well as drill core from TV Tower (Kayali, Yumrudag, Valley and Hilltop deposits) pursuant to selecting composite samples for metallurgical programs.

12.3 Site Visit by DAMA for 2021 Resource Estimates and Technical Report

DAMA Q.P.'s Mehmet Ali Akbaba and Mustafa Atalay visited the TVTower project site on August 20 and 21, 2020. Fatih Uysal and Mehmet Ali Akbaba visited Columbaz on January 13th, 2021. They were accompanied by Ender Özaydın (Country General Manager of Liberty Gold) and Gökhan Subaşı (Project Geologist). During the site visit, the DAMA team conducted general geologic field reconnaissance, including inspection of surficial geologic features and checking of 14 reported drill collar locations by hand-held GPS. They also visited the core storage facility in Isiklar Village (Figure 12.1), and visually inspected core samples with respect to rock type, wall-rock alteration types and small scale structures, and compared these observations with associated drill hole logs and original assay certificates.

Observations during the site visit generally confirm previous reports on the geology and mineralization within the Project area, and specifically within the primary resource area (Figure 12.2). DAMA also discussed the plans and sections on which the conceptual geologic model is based, and reviewed past and present drilling and sampling methods and protocols with the Liberty Gold Representatives.

Rock types, alteration types, and significant structural features appear consistent with descriptions provided in existing Project reports, and the authors did not see any evidence in the field or in drill core that might significantly alter or refute the current interpretation of the local geologic setting as described in Section 7 of this report (Figure 12.3). The authors did note some discrepancy between lithology and mineral assemblages observed in select core intervals and those described in the logs, with specific regard to sulphide mineralization, which was observed in a few the core intervals examined but was either not noted or was under-reported on the associated drill logs.

Figure 12.1: TV Tower Project core and sample storage facility in Isiklar Village

Figure 12.2: Examples of mineralized outcrop from Kayalı (a) and Hilltop (c), and channel sampling (b) on the TV Tower Project

Figure 12.3: Photos from inspection of core logging facility by DAMA and Liberty Gold (left), core logging facility (right)

The difference between drill collar coordinates measured in the field by DAMA and those contained in the Project database was quite variable, though generally within the expected, fairly wide margin of error of handheld GPS devices used by DAMA (Table 12.1 and Figure 12.4). A number of drill collars are not well marked in the field, and many have no marker at all. DAMA recommends that Liberty Gold clearly identify existing drill holes in the field, where possible and practical, by installing semi-permanent markers such as a survey cap or labelled and grouted-in lathe.

Table 12.1: Comparison of Database and field check measurements of Collar locations.

Drill Hole ID	Database		Field Control by GPS		Differences	
	East	North	East	North	East	North
KYD004	469431	4424261	469443	4424256	12.1	-4.8
KYD050	469447.6	4424203	469455	4424197	7.5	-6.5
KYD017	469584.5	4424093	469591	4424086	6.5	-6.5
KRD043	467438.1	4424337	467435	4424333	-3.1	-3.7
KRD008	467326.9	4424223	467333	4424217	6.1	-6.3
KC08	467114.2	4424108	467120	4424100	5.8	-7.9
KAD09	466940.9	4424054	466949	4424045	8.1	-9
KRD025; KRD026	466763.4	4423895	466770	4423886	6.6	-9.3
KRD053; KAD05; KAD05A; KRD001	466380.2	4423867	466381	4423869	0.8	1.5
KRD014; KRD016; KRD010; KRD015; KRD017; KRD011	465952.3	4423254	465959	4423251	6.7	-3.5
GRC 11	467351	4424296	467351	4424295	0	-1
CD-16	469869	4430540	469852	4430534	17	6
CD-17	469977	4430298	469959	4430297	18	1
CD-13, CD-14, CD-15	469975	4430539	469968	4430546	7	-7

Figure 12.4: Field check measurements of Collar locations by DAMA (photos from South TVT and Columbaz)

12.4 Independent Sampling by DAMA

During the site visits, DAMA collected 67 pulp samples from drill hole KRD008 and 51 pulp samples from CD015, located in the Hilltop and Columbaz deposits, respectively. The verification samples were collected from mineralized intervals previously sampled by Liberty Gold. The pulp samples were bagged and shipped by DAMA personnel to the ALS Lab in İzmir, Turkey.

All samples were analyzed for gold by fire assay with an AAS finish (ALS assay code: Au-AA23) and aqua regia digestion and analysis with ICP-AES techniques (ALS assay code: ME-ICP41 for KRD008 and ME-ICP61 for CD015) for copper. **Figures 12.5** through **12.8** present the comparison between original analyses and check analyses.

DAMA reviewed the precision of the results for the independent verification samples. Scatterplots and Q-Q plots were produced. Precision errors ($CV_{AVR(\%)}$) were calculated for check samples with mean values ≥10 times the analytical detection limit and compared to acceptable limits. Acceptable and best practice limits are utilized from Abzalov (2008).

In general, the correlation for Au and Cu in original and check samples is high. R^2 value is 0.96 for Au, 0.99 for Cu on KRD008, and 0.94 for Au, 0.98 Cu for CD015 (Tables 12.2 and 12.3). Au and Cu pairs have good precision (within best practice limits) and independent checks show no significant bias. DAMA believes that some differences are attributed to possible problems in pulp sample reduction and/or natural variability are likely due to the nuggety nature of gold. DAMA is of the opinion that the check samples are showing acceptable reproducibility for assay data in the deposits of interest.

Figure 12.5: Scatter diagram (left) and QQ plot (right) for gold assay results of the Independent check samples for drill hole KRD008

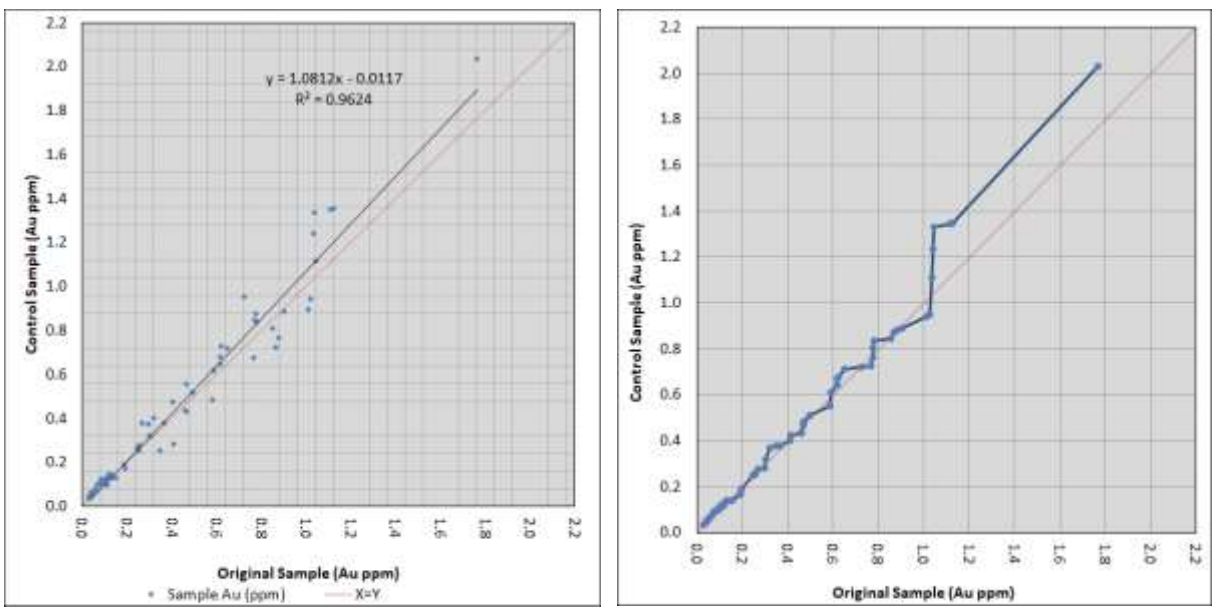


Figure 12.6: Scatter diagram (left) and QQ plot (right) for copper assay results of the Independent Check samples for drill hole KRD008

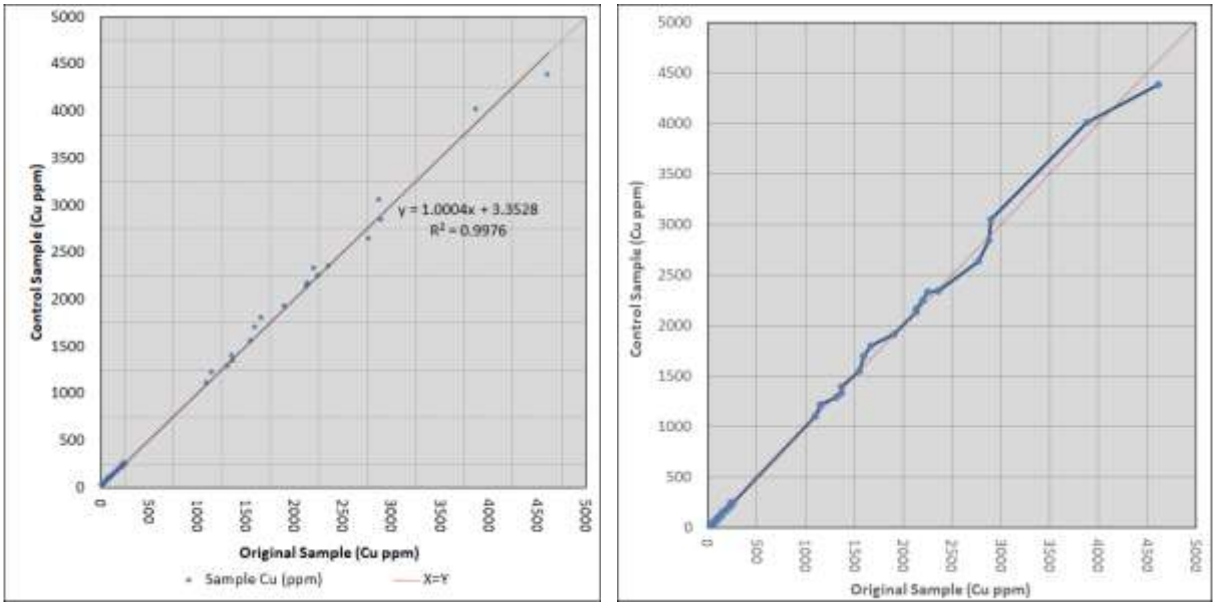


Table 12.2: Precision errors of the Independent Check Samples for drill hole KRD008

Sample Type	Precision			Bias		
	Pairs (total)	Count of Pair (>10 x DL)	CV (avr%)	Mean Original (ppm)	Mean Duplicate (ppm)	Bias (%)
KRD008 (Au)	67	63	11.4	0.4246	0.4474	5.4
KRD008 (Cu)	67	67	3.9	694.9	698.6	0.5

Figure 12.7: Scatter diagram (left) and QQ plot (right) for gold assay results of the Independent check Samples for drill hole CD015

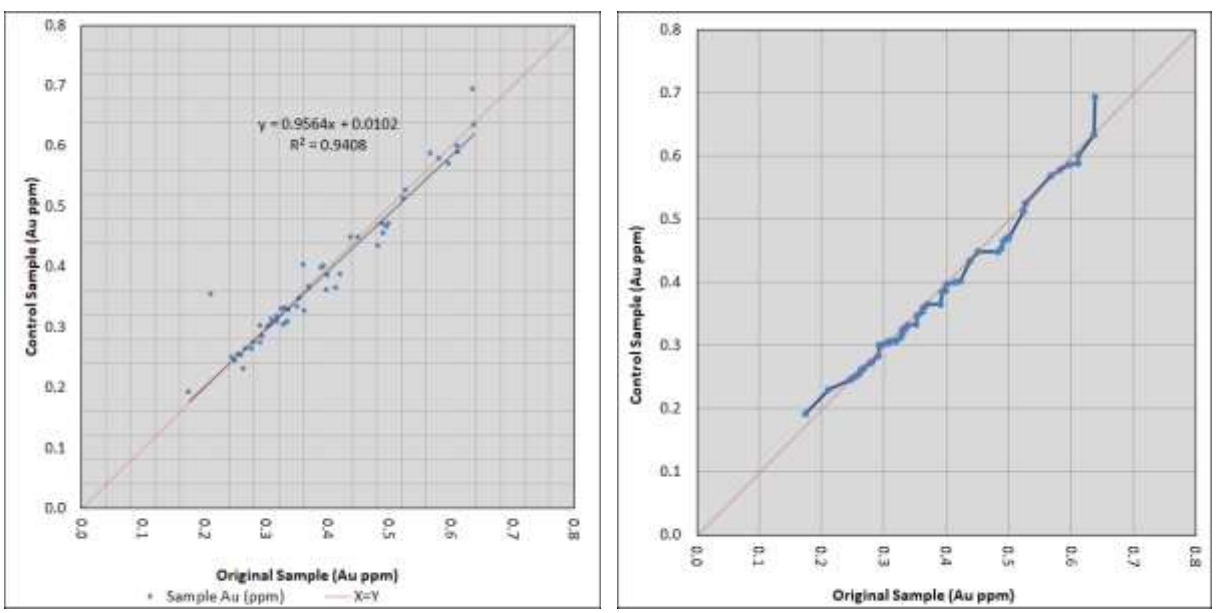
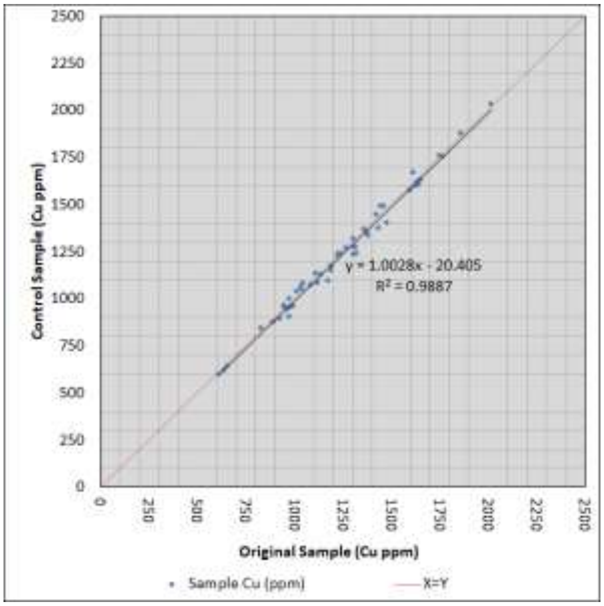


Figure 12.8: Scatter diagram (left) and QQ plot (right) for copper assay results of the Independent

check Samples for drill hole CD015



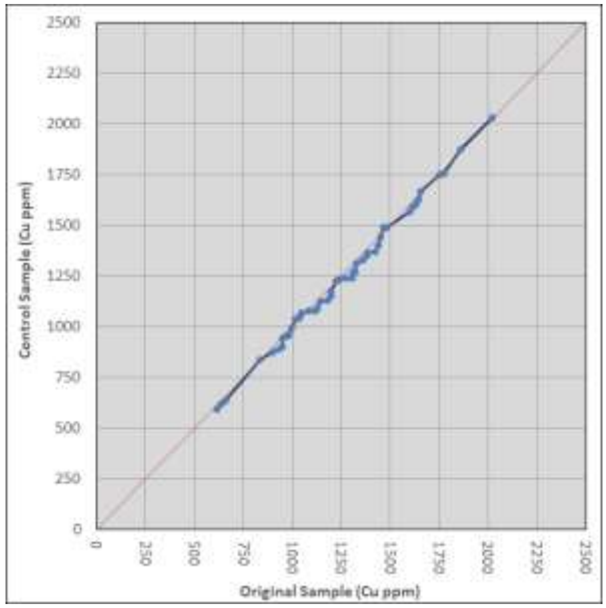


Table 12.3: Precision errors of the Independent Check Samples for KRD008 drill hole

Sample Type	Precision			Bias		
	Pairs (total)	Count of Pair (>10 x DL)	CV (avr%)	Mean Original (ppm)	Mean Duplicate (ppm)	Bias (%)
CD015 (Au)	51	51	6.4	0.3877	0.3810	-1.7
CD015 (Cu)	51	51	2.2	221.4	221.2	-0.1

12.5 Verification of Assay Database versus Lab Certificates By DAMA

DAMA checked the assay database by comparing PDF/csv copies of the original Assay Certificates with the database. DAMA also completed a review of selected drill core for selected holes, to confirm both geological and assay values stored in the database show a reasonable representation of the project. No significant inconsistencies were found.

DAMA also imported the database into Micromine software version 2021, then completed data validation for overlaps, gaps, duplicates, total drill hole length inconsistencies, non-numeric assay values, and negative numbers, using the automatic data validation software. DAMA is satisfied with the quality of the database for use in the construction of the geological block model and associated Mineral Resource Estimate.

12.6 Historical QA-QC Data

12.6.1 Chesser

Chesser are known to have inserted standards and blanks and duplicates into the sample stream at a frequency of one of each per 25 to 30 m. Liberty Gold provided QAQC results and lab assay certificates to Dama and these results were reviewed (see Section 12.5.4., Table 12.7. and Table 12.8). Standards were sourced from Ore Research and Exploration Pty Ltd of Victoria, Australia, and include reference materials OREAS65A, 110 and H3.

12.6.2 TMST

The data presented was prepared by in-house technical personnel for TMST in Ankara, Turkey.

Standards: Commercial standards were sourced from CDN Resource Laboratories Ltd., and were used to test the precision and accuracy of the assays and to monitor the consistency of the laboratory performance. These standards were inserted into the sample sequences approximately every 20 samples.

A total of 717 standards for Au were analyzed during the 2010 and 2011 drill programs. The standards and the failure rate are shown in Table 12.4. A failure was defined by receipt of a value greater than 3.0 standard deviations from the expected value.

Standard CDN-GS-1E had a very high failure rate. The high failure rate may be attributed to preparation of the standard from a bulk packaged (10 kg) sample on site. Gravity separation of the heavy sulphides in the standard was thought to be the cause. This can happen during transport or if the bulk standard material is subjected to nearby vibration in the storage area. TMST has recommended that only CDN pre-packaged 100 gram standards be used. The use of this standard was discontinued. After this standard was discontinued, the failure rate dropped dramatically.

In the case of failed standards, the database manager alerted the project geologist. The protocol for re-assay of standard and blank failures was that pulps within the range including the last passed standard to the next passed standard are re- analyzed.

Table 12.4: Standards and failure rates for 2010-2011 TMST drilling program (Hetman et al, 2014)

Standard	Au Standard Value ± 2 Standard Deviations	Inserted	Failure	
CDN - GS - P2	0.214 ± 0.020 g/t	87	6	7%
CDN - GS - P2A	0.229 ± 0.030 g/t	170	11	6%
CDN - GS - P3A	0.338 ± 0.022 g/t	73	15	21%
CDN - GS - P7E	0.766 ± 0.086 g/t	60	8	13%
CDN - GS - P8	0.78 ± 0.06 g/t	17	1	6%
CDN - GS - 1E	1.16 ± 0.06 g/t	78	38	49%
CDN - GS - 1P51	1.37 ± 0.12 g/t	95	16	17%
CDN - GS - 2B	2.03 ± 0.12 g/t	67	13	19%
CDN - GS - 5C	4.74 ± 0.28 g/t	55	5	9%
CDN – CGS -10	1.73 ± 0.15 g/t	14	0	0%
CDN – CGS -15	0.57 ± 0.06 g/t	1	0	0%
Total		717	113	16%
Blank (Limestone)		725	3	0%

Blanks: A commercially available limestone gravel and a blank purchased from CDN was inserted into the sample series every 20 samples. Three blanks failed and 725 passed. This failure rate is within acceptable limits. In the case of a failed blank, the database manager alerts the project geologist. The range including the last passed blank to the next passed blank is re-analyzed. The assay results for the 2011 blanks are shown in Figure 12.9.

Field Duplicates: Field duplicate samples are used to monitor sample batches for potential mix-ups, and monitor the data variability as a function of both laboratory error and sample homogeneity. The duplicate samples are 1/4 spilt cores taken on site. One field duplicate was inserted in every 20 samples. The results are shown in Figure 12.10. Only a small number of samples returned results greater than two standard deviations, i.e. as a failure and shown by the red lines in the chart. These failures are attributed to natural variation of the samples. In the case of failed field duplicates, quarter core samples were resubmitted for assay.

Figure 12.9: TMST blank performance, 2011 (Hetman et al, 2014)

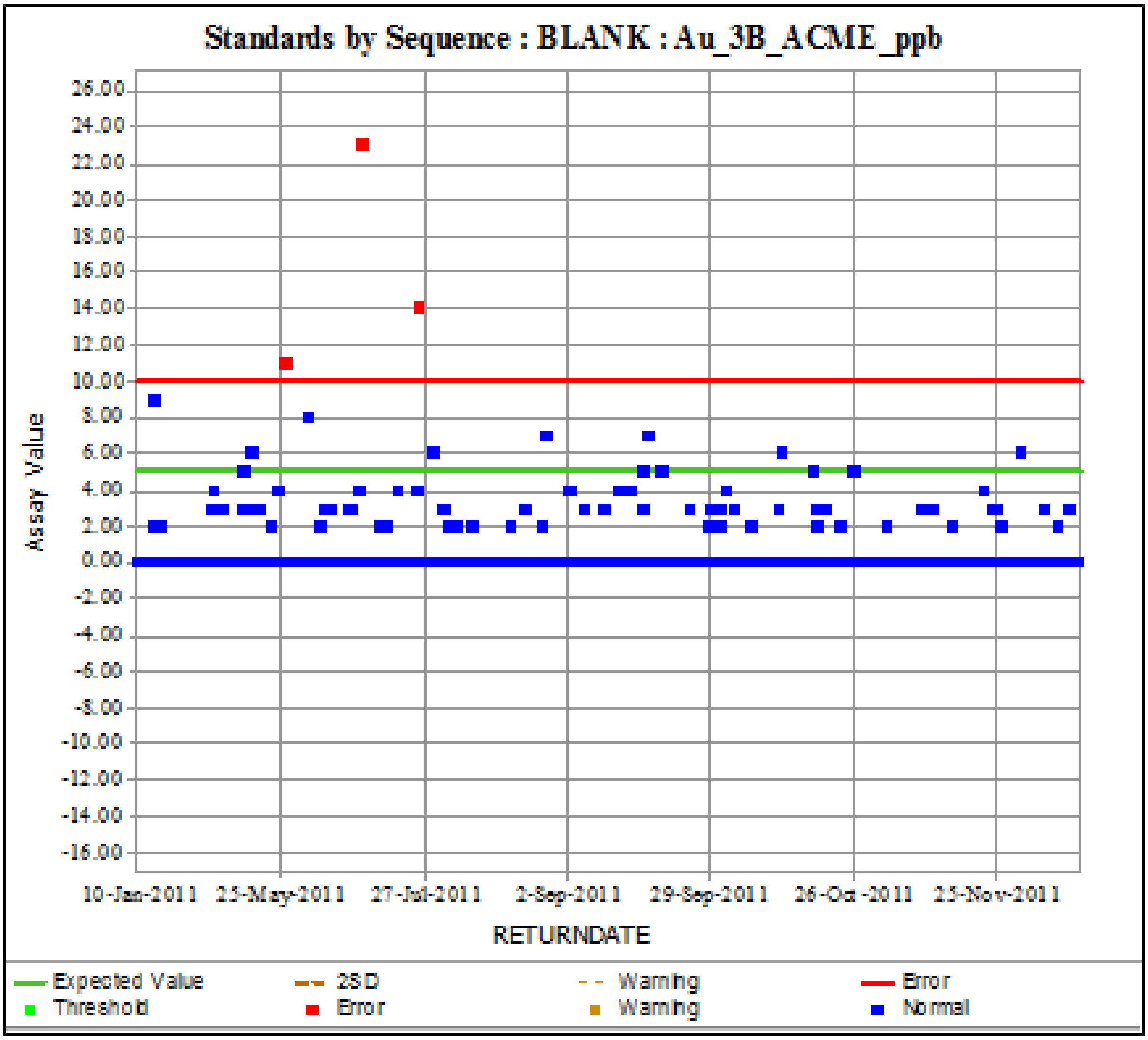
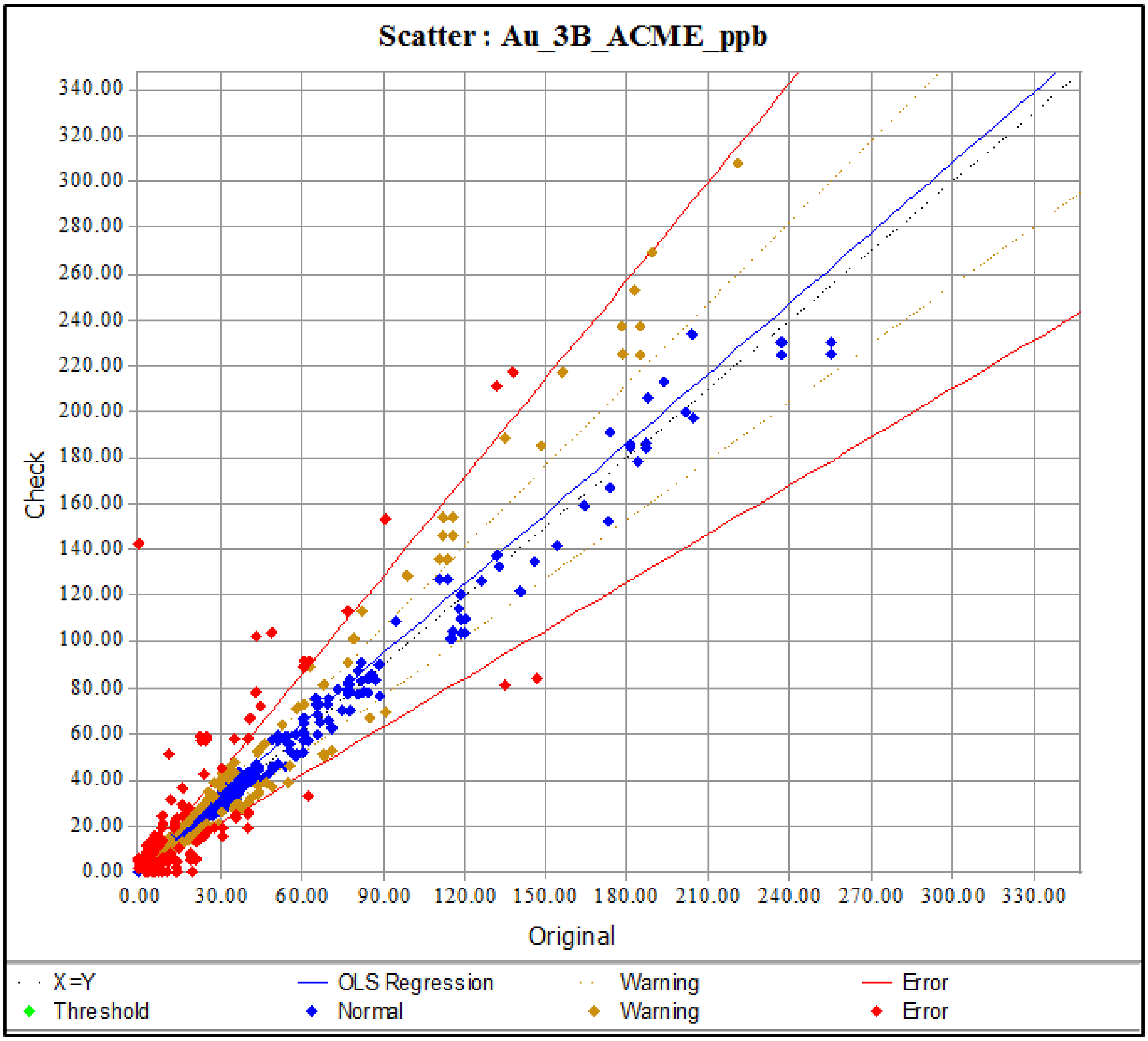


Figure 12.10: TMST duplicate sample performance, 2011 (Hetman et al, 2014)



General: *Given the early stage of exploration at TV Tower, TMST did not initiate a protocol to send a representative number of all assayed sample pulps to a second laboratory for check assaying. This protocol was applied by Liberty Gold in 2014.*

Most of the diamond drill holes were completed using HQ-size core and the average recovery was 86%. The majority of the core loss was due to fault gouge zones. This is frequently a problem in most drill programs and can be partially remedied by reducing water flow and down- hole pressure in these zones, or by more aggressive use of drilling muds.

The large number of standard failures appears to be largely due to the practice of using bulk standards to produce the smaller samples that were inserted in the sample stream. The use of bulk standards was discontinued Liberty Gold in favour of using pre-packaged sachets.

QA / QC protocols generally conform to industry standards and no concerns were raised.

12.7 Liberty Gold QA-QC Procedures

Quality assurance / quality control procedures employed by Liberty Gold from August, 2012 to present are described below. From 2012 through 2013, standards, blanks and duplicates were inserted into the sample stream at the Etili camp. Starting in 2014, all QA/QC protocols were implemented at the Kursunlu core logging facility. The results are continuously monitored, and any standard or blank failures are addressed immediately by re-assay of ten samples above and ten samples below the failed QA / QC sample.

Standards: Certified reference materials ("CRM"), blanks and field duplicate samples were used to monitor the precision, accuracy, and quality of the laboratory. The majority of the CRM materials (standards) were purchased from CDN Resource Laboratories Ltd. in Canada as individual packets weighing approximately 70 g, and were used to test the precision and accuracy of both gold, silver and copper assays and to monitor the consistency of the laboratory performance. These standards were randomly inserted into the sample sequences approximately every 30 samples.

All assay data were reported in .csv files which were imported directly into Excel spreadsheets. QC results were continuously monitored by the project geologists. A failure is defined by receipt of two standard values in a row that are greater than two standard deviations or one value that is greater than three standard deviations above or below the expected value. In the case of failed standards, the database manager alerts the chief geologist. The protocol for re-assaying the standard failures is to re-analyze the pulps within a range of ten samples above and ten samples below the failed standard. In cases where the standard failures occurred in "unmineralized" rock (generally in zones returning < 0.1 g/t Au or < 5 ppm Ag or 250 ppm Cu), no action is taken, but a note is made in the QA / QC sample tracking spreadsheet.

There were no significant issues with any of the pre-packaged CDN standards in 2012 or 2013. In 2012, there were four standard failures where re-assaying of pulps were ordered. All these failures occurred in three consecutive holes and involved two high grade gold standards. The pulps were re-assayed and no issues were identified with the standards after that time. The original cause of the failures was not identified. There were no failures caused by consecutive two standard deviation outliers in 2012.

Also in 2012, given a growing recognition of the importance of silver at KCD, a silver standard monitoring program was implemented starting with drill hole KCD-122. This program used a subset of the set of standards used for gold assaying, and was restricted only to those standards for which a certified silver value was provided (Table 12.4). For previously drilled holes, the silver values were applied retroactively using the same failure criteria for gold with no failures.

In 2014, six of the inserted standard samples returned either greater than or less than 3SD beyond the expected value for gold. In addition, eleven of the inserted standard samples returned values greater than or less than 3SD beyond the expected value for copper. There were also several cases of consecutive two standard deviation outliners. In 2014, a total of 13 cases were clear failures using the criteria above *and* occurring within mineralized intervals. A reanalysis of the affected pulps was requested in each case, and in all cases, the second set of analyses fell within 2SD of the expected value.

In 2015, only two of the inserted standard samples returned either greater than or less than 3SD beyond the expected value for gold. No standard samples returned values greater than or less than 3SD beyond the expected value for copper. However, several cases of consequtive two standard deviation outliers were noted especially in the first several holes of the drilling program. In 2015, a total of 6 cases were clear failures using the criteria above and occurring within mineralized intervals. A reanalysis of the affected pulps was requested in each case, and in all cases, the second set of analyses fell within acceptable value.

Standards – Discussion: In 2013, a more systematic attempt to insert and track silver-certificated standards was implemented, including almost exclusive use of these standards in sections that were suspected to contain silver. With an increasing amount of data, it was noted that Liberty Gold's silver assays were slightly higher, on average, than the certificated silver value, and that a number of standards were failing “high”. This bias was suspected to be due to the use of an aqua regia digest, whereas the standards were certificated using a 4-acid digest. This phenomenon was confirmed using a side-by-side comparison of a subset of samples using aqua regia and 4-acid digest. The failure criteria were adjusted slightly to account for this bias, and a standard certified for silver using an aqua regia digest was obtained. Additional details can be found in Hetman et al (2014).

On May 27, 2013, it was noted that the first seven uses of the new silver-certified standard CDN-CM-17 returned gold assays of approximately 0.9 g/t Au (compared to the expected value of 1.32 g/t Au), and very similar to the correct values for one of the discontinued standards (CDN- FCM-7, with an expected value of 0.896 g/t Au), which proceeded it in the sample stream. The data were compiled and immediately forwarded to the lab for comment. The resulting investigation was extremely thorough and uncovered a number of systemic issues affecting the reliability of data produced by the Acme Labs location in Ankara. These issues have been addressed to Liberty Gold’s satisfaction; all affected work orders were re-assayed and now fall within the standard reporting criteria.

In late 2013, a set of seven custom standards, assembled from drill core from Küçükdağ and Kayalı, were prepared by Shea Clark Smith of Minerals Exploration and Environmental Geochemistry (MEG) of Reno, Nevada. These samples represent the full spectrum of mineralization types encountered to date on the property, including high and low grade gold oxide and sulphide, moderate grade silver oxide and sulphide, moderate grade gold sulphide and high grade gold- silver-copper sulphide. All samples are certified for gold by fire assay with AA finish and silver using aqua regia and 4-acid digest and analysis by ICP-MS. These standards were employed in all subsequent programs.

Blanks: Approximately 2 kg of coarse blank material is inserted into the sample stream every 20-25 samples. Blanks were inserted both randomly and targeted to areas within or at the end of the mineralized zones to check for carry-over between samples

The failure threshold for the blanks was set at approximately ten times the detection limit for gold. Blank samples were composed of limestone or granite which were “known” to contain gold grades less than the detection limit of the analytical method in use (see discussion below). In fact, detection limits of Au analyzes performed by TMST and Chesser in Acme Laboratory in 2010-2011 are 0.002 ppm while the others (Acme and ALS Lab) are 0.005 ppm, but the difference between 50 ppb and 20 ppb is not material.

In the case of a failed blank, the database manager alerts the chief geologist. The protocol for blank failures is to re- analyze quartered core within the range of ten samples above and ten samples below the failed blank. In cases where the blank is within unmineralized rock, no action is taken. In cases where a blank failure occurred after a continuous long zone of high grade gold mineralization or immediately after one or two samples with high gold grades, the failure threshold was adjusted on a case by case basis; with any blank value in excess of 1% of the sample value two rows above it always constituting a failure. The reason for this is as follows. Unless specific measures are taken, such as a quartz wash between samples, some level of cross-contamination is expected. Commercial labs generally guarantee < 1% contamination. For example, for a 10 g/t assay, a blank immediately following it could have up to 100 ppb gold and still pass the lab’s internal QA / QC audit. In fact, most contamination is far less than 1%. Acme parses sequential samples into A and B sample streams and reassembles them for the final certificate. In this case, the sample two samples above the blank in the list are more likely to be immediately ahead of the blank in the sample stream than the one immediately above it in the spreadsheet. In the case of assay data with blanks following high grade samples, blanks returning 25-50 ppb are sometimes passed, with up to 100 ppb in extreme cases where blanks follow samples assaying >100 ppm

Au. This value, in comparison to the assay value, is not deemed material.

Blanks – Discussion: At the start of the 2012 drill program, coarse-crushed granitoid material was purchased from CDN labs for use as blank material. After a statistically meaningful amount of drilling had been completed (through KCD080), enough blank material had been processed to note that gold was assaying above the detection limit in a significant number of blank samples. Upon examining the blank material, it was noted that the rock contained evidence of propylitic alteration and disseminated pyrite; alteration suggesting the possibility of hydrothermal alteration and gold in the blank material. At this point, a coarse-crushed silica blank material was sourced from Acme Labs (Ankara). There have been very few blank failures since this point.

Despite the above, the blank failure rate for samples in the 2012 through 2015 programs was relatively low and is considered acceptable for a program of this nature.

Silver values were also tracked informally; most silver values in the blanks were below detection. A few above-detection samples were noted in zones with very high silver values, but all represented considerably less than 1% cross-contamination as discussed above.

Field duplicates: Field duplicate samples are used to monitor sample batches for potential sample mix- ups, and monitor the data variability as a function of both laboratory error and sample homogeneity. The duplicate samples were 1/4 spilt cores taken on site. One field duplicate was inserted in every 20-25 samples. Whenever a difference between the original and the duplicate assays were higher than 30%, and the original assay was higher than 0.5 g/t Au, a quarter core sample was resubmitted for a re-assay.

Check assaying: In 2014, Liberty Gold initiated a program of check assaying, starting with samples generated in 2014 (Hetman et al. 2014). For this program, 10% of mineralized samples (above 0.1 g/t gold *or* above 500 ppm copper *or* above 10 ppm Ag) samples were randomly selected approximately every 6 months. Total of 320 sample pulps were re-assayed by ALS for Au and Cu to compare the results with Acme Labs. Sample pulps were sent to ALS Izmir for fire assay and geochemical analysis. The exact methods used by Acme were requested from ALS, including:

- Au by FA with AA finish
- Au by FA with Gravimetric finish for all samples >5 ppm
- Multielement analysis by ICP-MS
- Ag overlimits – aqua regia digestion, fire assay with gravimetric finish for all samples >100 ppm Ag
- Cu overlimits – 4-acid digestion with ICP-ES finish for all samples >10,000 ppm Cu

The check assay results, compared to the original results, are very similar. For gold samples, over 95% of check assay samples returned results within 20% of the original value. For copper, approximately 99% of check assay samples returned values within 20% of the original value.

No significant bias was detected between the original and check assays. The average of all Acme gold assays used for this study is 0.43 ppm, compared to 0.42 for ALS. The average of all copper values for Acme was 1667.3 ppm, compared to 1669.9 ppm for ALS.

12.8 DAMA Analysis of Liberty Gold QA-QC data for South TV Tower and Columbaz

Certified reference materials ("standards" or "CRM"s), blanks, field duplicate and coarse duplicate samples were used to monitor the precision, accuracy, and quality of the laboratory. The majority of CRM samples are purchased from CDN Resource Laboratories Ltd. in Canada. Currently, Liberty Gold has protocols in place for describing the frequency and type of QC submission, the regularity of analysis of QC results, failure limits, procedures to be followed in case of failure, or for flagging failures in the QC database. Table 12.5 outlines the QC sampling included in the entire database, including holes drilled in the KCD deposit. Further details of QA-QC analysis for the KCD Deposit are given in Hetman et al (2014).

Table 12.5: Control samples submitted to the laboratories for analysis for TV Tower Project

Samples	# of samples	% of total
Blanks	2,241	3.69
Field Duplicates	2,026	3.33
Coarse Duplicates	745	1.23
CRM	2,338	3.85
TOTAL QAQC	**7,350**	**12.09**
Primary Drill Core Samples	53,444	87.91
TOTAL SAMPLE	**60,794**	**100.00**

All assay data were reported in .csv files which were imported directly into Excel spreadsheets and charted. Analytical batches were re-analysed in the event of a QA-QC failure.

The QA-QC results were provided to DAMA by Liberty Gold as part of the drill hole database information package. DAMA then undertook a review of the QC data for gold and copper, which are the major metals of interest at the TV Tower property. Performance of the QC samples is summarized below.

12.8.1 Standards

A summary of certified values for each standard provided by CDN is shown in **Table 12.6**. On the basis of this review, DAMA concludes that the CRMs used in the Project cover a reasonable range of low, medium, and high gold and copper grades from the TV Tower mineralized zones and precision and accuracy acceptable for gold and copper throughout the drilling campaigns.

Table 12.6: Summary of Gold and Copper Standards used in drill holes related to the new resource estimates

CRM	Source	Number of Samples	Recommended Value (g/t Au)	+/- Standard Deviation (g/t Au)	Recommended Value (ppm Cu)	+/- Standard Deviation (ppm Cu)
CDN-CGS-10	CDN	1	1.73	0.075	15500	350
CDN-CGS-16	CDN	14	0.14	0.023	1120	25
CDN-CM-2	CDN	12	1.42	0.065	10130	215
CDN-CM-17	CDN	32	1.37	0.065	7980	170
CDN-CM-18	CDN	1	5.28	0.175	23700	1100
CDN-CM-23	CDN	258	0.549	0.03	4710	130
CDN-CM-24	CDN	83	0.521	0.028	3710	90
CDN-FCM-7	CDN	11	0.896	0.042	5260	130
CDN-GS-1E	CDN	39	1.16	0.03		
CDN-GS-1P5A	CDN	65	1.37	0.06		
CDN-GS-2B	CDN	50	2.03	0.06		
CDN-GS-3K	CDN	4	3.19	0.13		
CDN-GS-5C	CDN	37	4.74	0.14		
CDN-GS-5J	CDN	1	4.96	0.21		

CRM	Source	Number of Samples	Recommended Value (g/t Au)	+/- Standard Deviation (g/t Au)	Recommended Value (ppm Cu)	+/- Standard Deviation (ppm Cu)
CDN-GS-P2	CDN	45	0.214	0.01		
CDN-GS-P2A	CDN	69	0.229	0.015		
CDN-GS-P3A	CDN	48	0.338	0.011		
CDN-GS-P7E	CDN	26	0.766	0.043		
CDN-GS-P8	CDN	7	0.78	0.03		
OREAS 65a	OREAS	21	0.52	0.017	93	6
OREAS110	OREAS	5			1600	50
OREASH3	OREAS	57	2	0.08	443	22
PG13005X	Pilot Gold	4	3.989	0.186	6475.3	188.4
PG13006X	Pilot Gold	32	0.735	0.074	164.1	8
PG13007X	Pilot Gold	200	0.617	0.02	1413	85.5
PG13008X	Pilot Gold	14	1.501	0.06	2850.4	127.8
PG13009X	Pilot Gold	9	1.899	0.126	17.6	1
TOTAL		**1145**				

For evaluating the performance of standard samples for the holes in the new resource estimates, DAMA constructed control charts in a time sequence for each standard. Example charts are shown in **Figures 12.11** and **12.12**, which show the performance of the gold and copper standards with time for exploration drilling at in the South TV Tower and Columbaz areas throughout the various drilling campaigns. **Tables 12.7** and **12.8** show the failure rates (as defined by any sample with a value greater than or less than 3 standard deviations (“3SD”) from the expected value.

Table 12.7: Failure Rates of the Gold Standards used for South TV Tower and Columbaz Drill Holes

CRM	Count	CERTIFIED		FAILURES				Company Using the CRM
		Expected (Au ppm)	Std	Below 3 SD	Above 3 SD	Total #	Total %	
CDN-CGS-10	1	1.730	0.075	-	-	0	0.0	TMST
CDN-CGS-16	14	0.140	0.023	-	-	0	0.0	Liberty
CDN-CM-2	12	1.420	0.065	-	1	1	8.3	Liberty
CDN-CM-17	32	1.370	0.065	-	-	0	0.0	Liberty
CDN-CM-18	1	5.280	0.175	-	-	0	0.0	Liberty
CDN-CM-23	258	0.549	0.030	-	-	0	0.0	Liberty
CDN-CM-24	83	0.521	0.028	-	2	2	2.4	Liberty
CDN-FCM-7	11	0.896	0.042	-	-	0	0.0	Liberty
CDN-GS-1E	39	1.160	0.030	-	6	6	15.4	TMST
CDN-GS-1P5A	65	1.370	0.060	1	2	3	4.6	TMST
CDN-GS-2B	50	2.030	0.060	1	1	2	4.0	TMST
CDN-GS-3K	4	3.190	0.130	-	-	0	0.0	Liberty
CDN-GS-5C	37	4.740	0.140	-	2	2	5.4	TMST
CDN-GS-5J	1	4.960	0.210	-	-	0	0.0	Liberty
CDN-GS-P2	45	0.214	0.010	-	2	2	4.4	TMST
CDN-GS-P2A	69	0.229	0.015	-	-	0	0.0	TMST
CDN-GS-P3A	48	0.338	0.011	-	1	1	2.1	TMST
CDN-GS-P7E	26	0.766	0.043	1	-	1	3.8	TMST
CDN-GS-P8	7	0.780	0.030	-	-	0	0.0	TMST
OREAS 65a	21	0.520	0.017	-	1	1	4.8	Chesser
OREASH3	57	2.000	0.080	-	-	0	0.0	Chesser
PG13005X	4	3.989	0.186	-	-	0	0.0	Liberty
PG13006X	32	0.735	0.074	-	-	0	0.0	Liberty
PG13007X	200	0.617	0.020	2	-	2	1.0	Liberty
PG13008X	14	1.501	0.060	-	-	0	0.0	Liberty
PG13009X	9	1.899	0.126	-	-	0	0.0	Liberty
TOTAL	**1140**			**5**	**17**	**23**	**2.0**	

Figure 12.11: Example plots of gold standard performance, South TVT and Columbaz drill holes

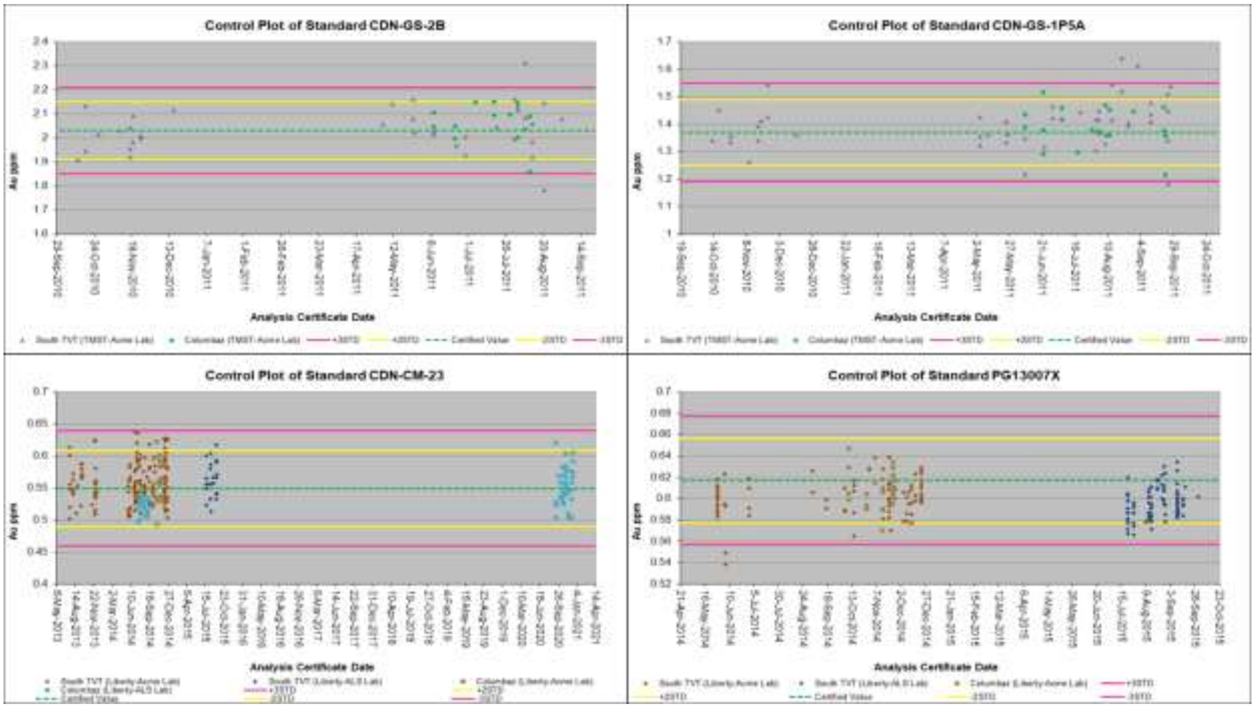
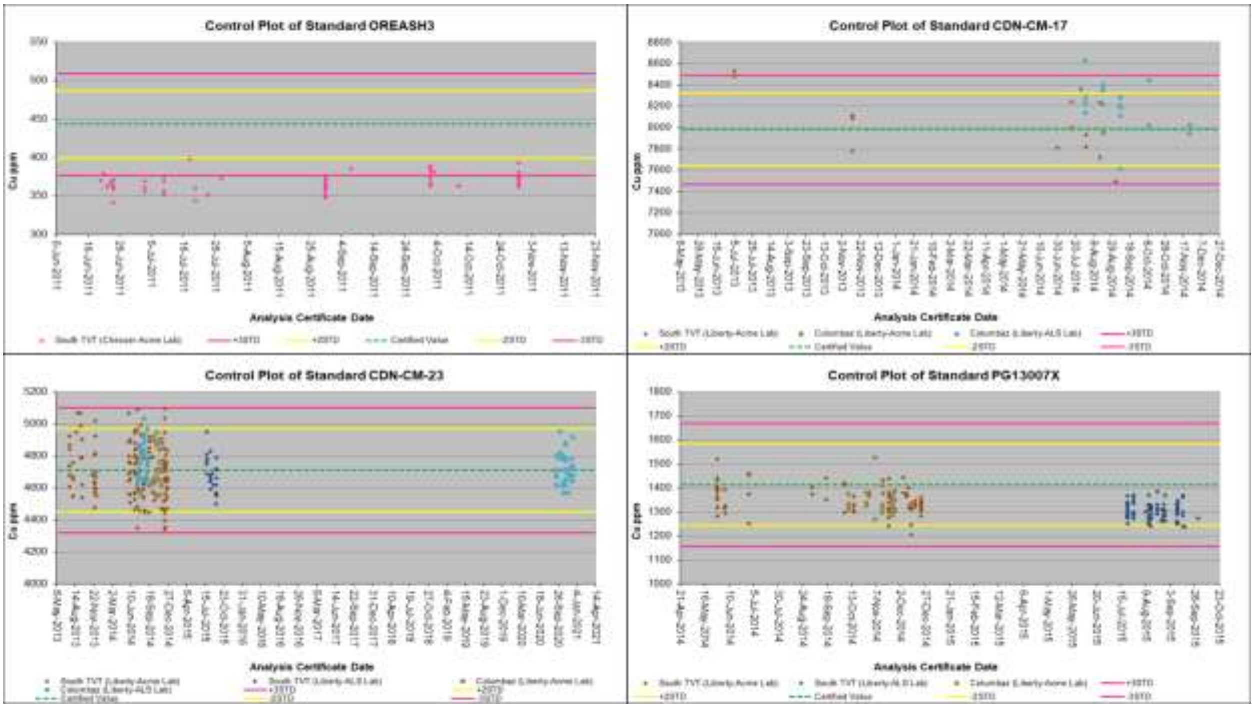


Table 12.8: Failure Rates of Copper Standards, South TV Tower and Columbaz Drill Holes

CRM	Count	CERTIFIED		ACCEPTED		FAILURES				Company
		Cu ppm	Std Dev	Count	%	Count	Below 3 SD	Above 3SD	%	
CDN-CGS-10	1	15500	350	1	100.0	0	-	-	0.0	TMST
CDN-CGS-16	14	1120	25	13	92.9	1	-	1	7.1	Liberty
CDN-CM-2	12	10130	215	11	91.7	1	1	-	8.3	Liberty
CDN-CM-17	32	7980	170	30	93.8	2	-	2	6.3	Liberty
CDN-CM-18	1	23700	1100	1	100.0	0	-	-	0.0	Liberty
CDN-CM-23	258	4710	130	258	100.0	0	-	-	0.0	Liberty
CDN-CM-24	83	3710	90	75	90.4	8	-	8	9.6	Liberty
CDN-FCM-7	11	5260	130	11	100.0	0	-	-	0.0	Liberty
OREAS 65a	21	93	6	21	100.0	0	-	-	0.0	Chesser
OREAS110	5	1600	50	4	80.0	1	1	-	20.0	Chesser
OREASH3	57	443	22	9	15.8	48	48	-	84.2	Chesser
PG13005X	4	6475.3	188.4	4	100.0	0	-	-	0.0	Liberty
PG13006X	32	164.1	8	32	100.0	0	-	-	0.0	Liberty
PG13007X	200	1413	85.5	200	100.0	0	-	-	0.0	Liberty
PG13008X	14	2850.4	127.8	14	100.0	0	-	-	0.0	Liberty
PG13009X	9	17.6	1	9	100.0	0	-	-	0.0	Liberty
TOTAL	**754**			**693**	**91.9**	**61**	**50**	**11**	**8.1**	

Figure 12.12: Example plots of copper standard performance, South TVT and Columbaz drill holes.



Note: OREASH3 standard shown for reference. Nearly all of the analyses failed at 2 or 3 SDs below expected value, and the use of this standard was discontinued.

12.8.2 Blanks

A total of 1121 blank samples were submitted with the primary samples to the laboratories for South TV Tower and Columbaz drilling. **Figures 12.13 and 12.14** illustrate the assay results of the blanks inserted into the sample stream for the South TV Tower and Columbaz samples. These charts reflect the final data after any obvious failures (as defined above) were remedied.

There were two blank samples (0.18% of total) which returned results greater than the 10x detection limit of the assay method used (**Table 12.7**). DAMA is of the opinion that the blank sample analyses demonstrate very little evidence of contamination in the sample preparation, and that the data is suitable for use in resource estimation.

.

Table 12.9: Failure rates of blank samples used at TV Tower.

Criteria	Failures Diff. >x10 dec.lim.		TOTAL BLANK SAMPLE
	#	%	
Au (DL> 0.002 ppm)	2	0.53	**469**
Au (DL> 0.005 ppm)	0	0	**652**
TOTAL	**2**	**0.18**	**1121**

Figure 12.13: Assay Results of the Inserted Blank Samples (DL0.002 ppm Au) in South TV Tower and Columbaz Sectors

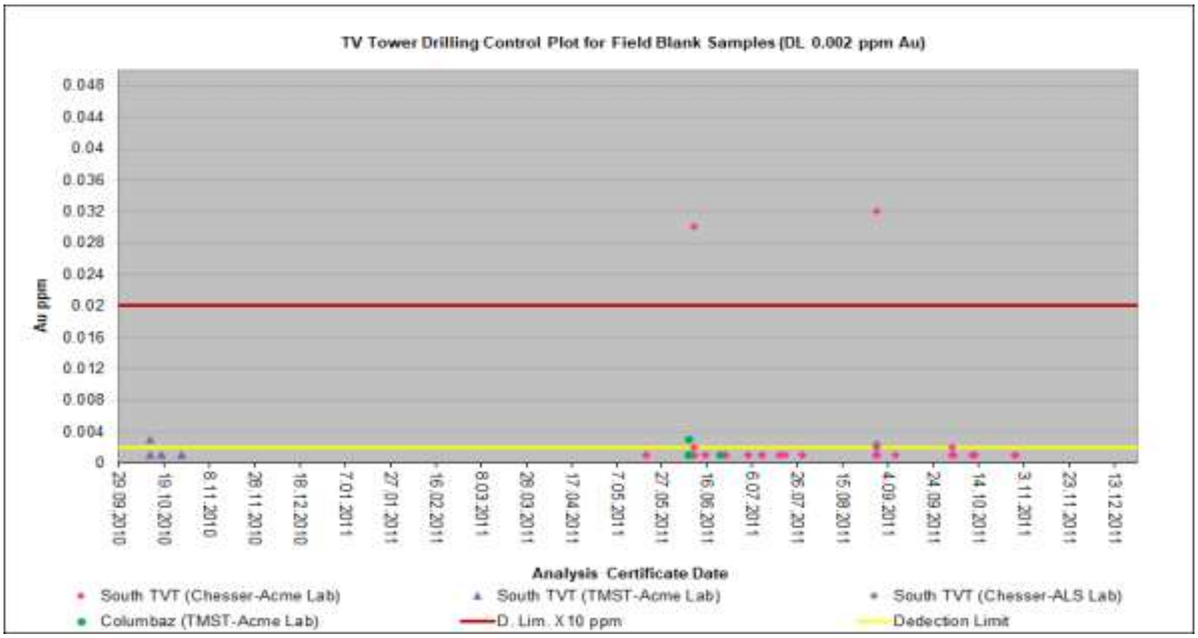
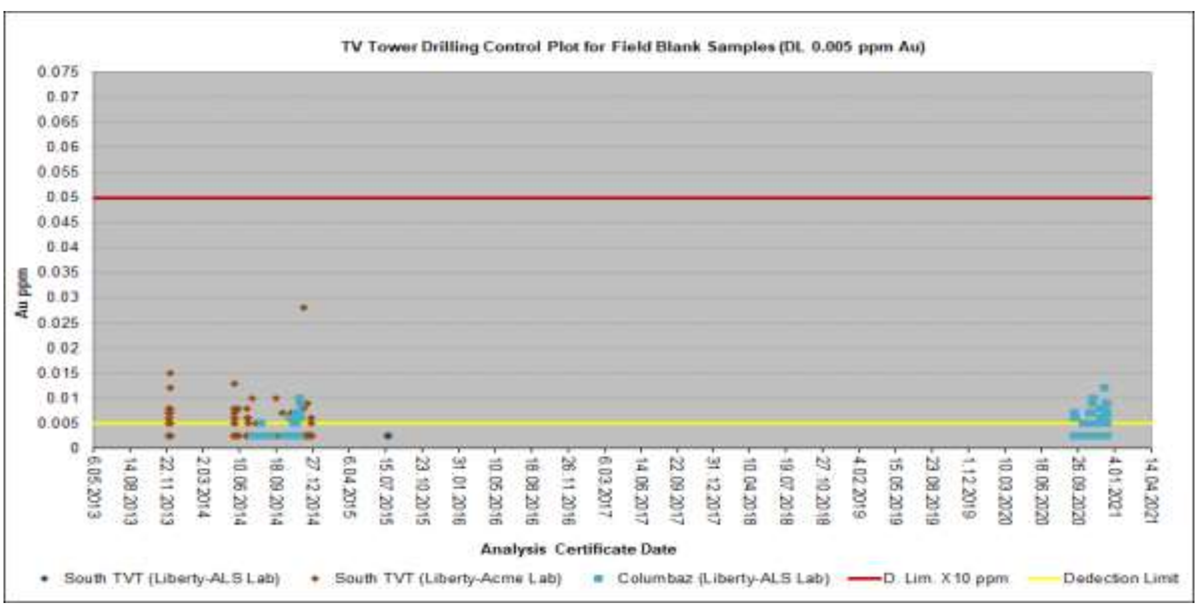


Figure 12.14: Assay results of the inserted blank samples (DL0.005 ppm Au) in South TVT and Columbaz



12.8.3 Duplicates

Precision error can be estimated by measuring at each stage of the sampling and assay process. Field duplicates contain all sources of error (sampling error, sample reduction error and analytical error), Coarse duplicates contain sample reduction error and analytical error. Field and preparation duplicates were produced as part of the QA/QC program.

The data were assessed using coefficients of variation (CV = std dev/average – also known as relative standard deviation) calculated from individual duplicate pairs. This approach is recommended by Stanley and Lawie (2007) and Abzalov (2008) as a way of defining a fundamental measure of data precision using duplicate paired data. Precision errors (CVAVR(%)) were calculated for duplicates with mean values ≥10 times the analytical detection limit and compared to acceptable limits. Acceptable and best practice limits are obtained from Absalov (2008). Scatterplots and Q-Q plots were produced by DAMA and reviewed the precision results for Au and Cu for the South TV Tower and Columbaz area drill holes (**Tables 12.10 and 12.11**).

Table 12.10: Gold duplicate precision errors

Duplicate Type	Precision			Bias		
	Pairs (total)	Count of Pair (>10 x DL)	CV (avr%)	Mean Au Original (ppm)	Mean Au Duplicate (ppm)	Bias (%)
Field Dup	999	465	19.1	0.1078	0.1076	-0.2
Coarse Dup	387	169	12.5	0.0663	0.0682	2.9

Table 12.11: Copper duplicate precision errors

Duplicate Type	Precision			Bias		
	Pairs (total)	Count of Pair (>10 x DL)	CV(avr %)	Mean Cu Original (ppm)	Mean Cu Duplicate (ppm)	Bias (%)
Field Dup	999	999	13.6	565.5	559.2	-1.1
Coarse Dup	387	387	6.8	182.7	182.9	0.1

Field Duplicates: A total of 999 drill hole field duplicate samples were inserted into the sample stream during the South TV Tower and Columbaz drilling programs. The duplicate samples are 1/4 spilt cores taken on site. One field duplicate was inserted approximately 20-30 samples by TMST and Liberty. The scatter plots and QQ Plot of all duplicate samples are shown in **figures 12.15** and **12.16**.

In general, the correlation for Au and Cu in field duplicate samples is seen to be acceptable. R2 value (regression curve is black line at the charts) is 0.96 for Au, 0.97 for Cu in the samples (**Figure 12.15** and **Figure 12.16**). Au and Cu duplicate pairs have acceptable precision (within best practice limits) and duplicate samples show no significant bias. DAMA considers that the failures are likely due to natural variability of the mineralization which is expected to contribute some component of ‘nugget effect’ to the overall variance, rather than sample preparation and analytical error.

Figure 12.15: Scatter diagram (left) and QQ plot (right) for gold assay results of the field duplicate samples from South TV Tower and Columbaz drill holes.

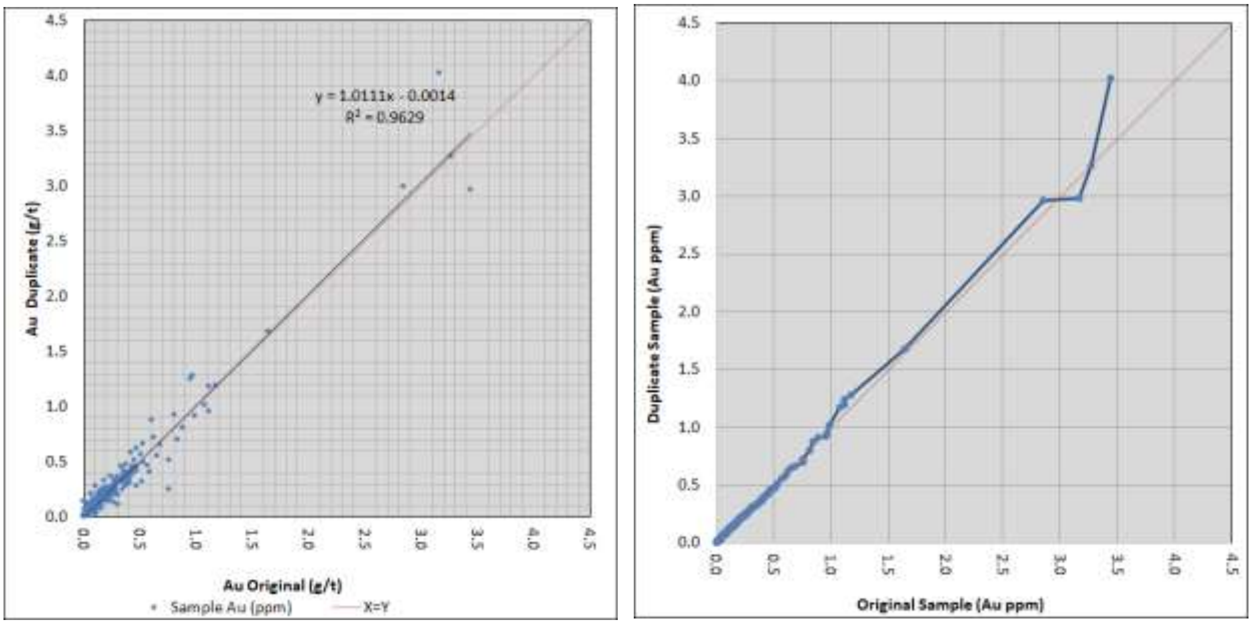
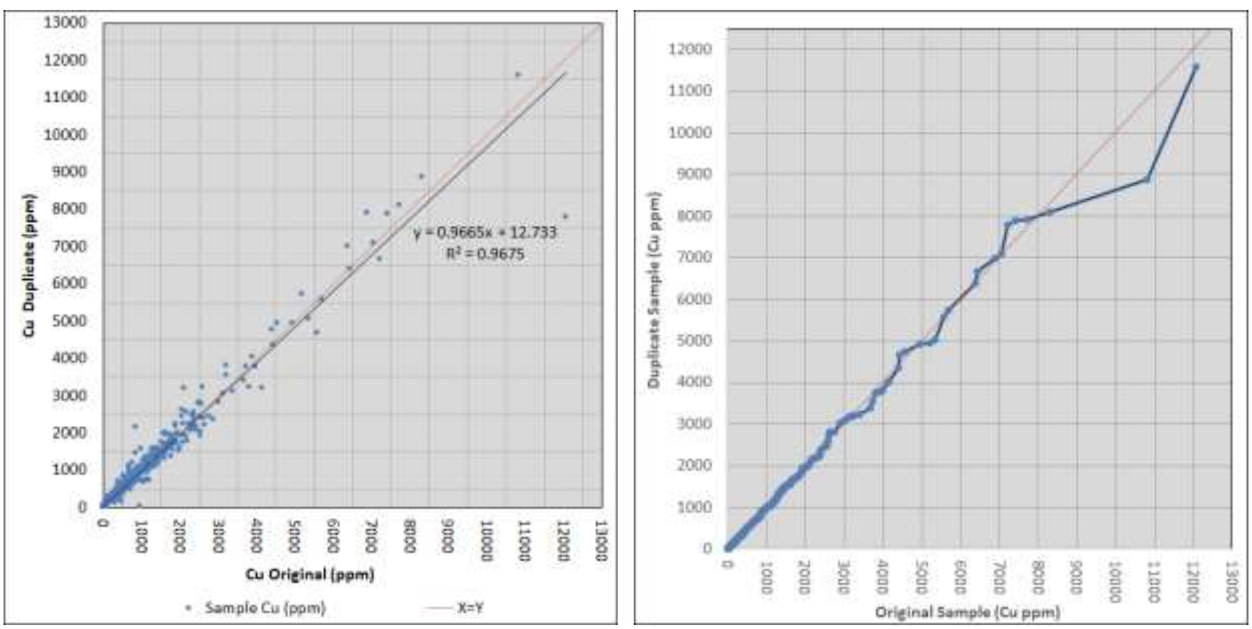


Figure 12.16: Scatter diagram (left) and QQ plot (right) for copper assay results of the field duplicate samples from South TV Tower and Columbaz drill holes.



Coarse Crush (Laboratory) Duplicates: TMST submitted 387 coarse duplicates for samples at Kayalı (from holes KYD001 to KYD035) and Columbaz (from holes SD001 to SD010) sectors. Coarse duplicate samples are derived from the coarse rejects after the primary crush at the laboratory.

The scatter plots of the coarse duplicates are shown in the Figures **12.17** and **12.18**. R2 value is 0.99 for Au, 0.99 for Cu in the samples. Au and Cu coarse duplicate pairs have good precision (within best practice limits) and the duplicate samples show no significant bias (**Table 12.10** and **Table 12.11**). DAMA considers that the differences within sample pairs are likely due to natural variability of the mineralization which is expected to contribute some component of ‘nugget effect’ to the overall variance, rather than sample preparation and analytical error.

Figure 12.17: Scatter diagram (left) and QQ plot (right) for gold assay results of the coarse duplicate samples

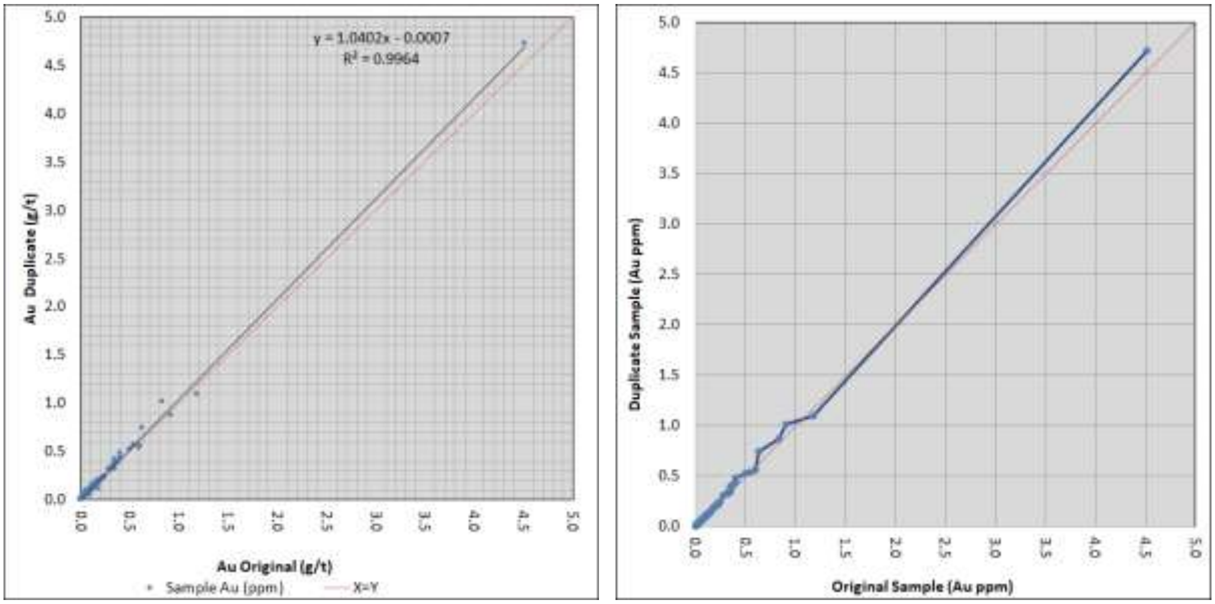
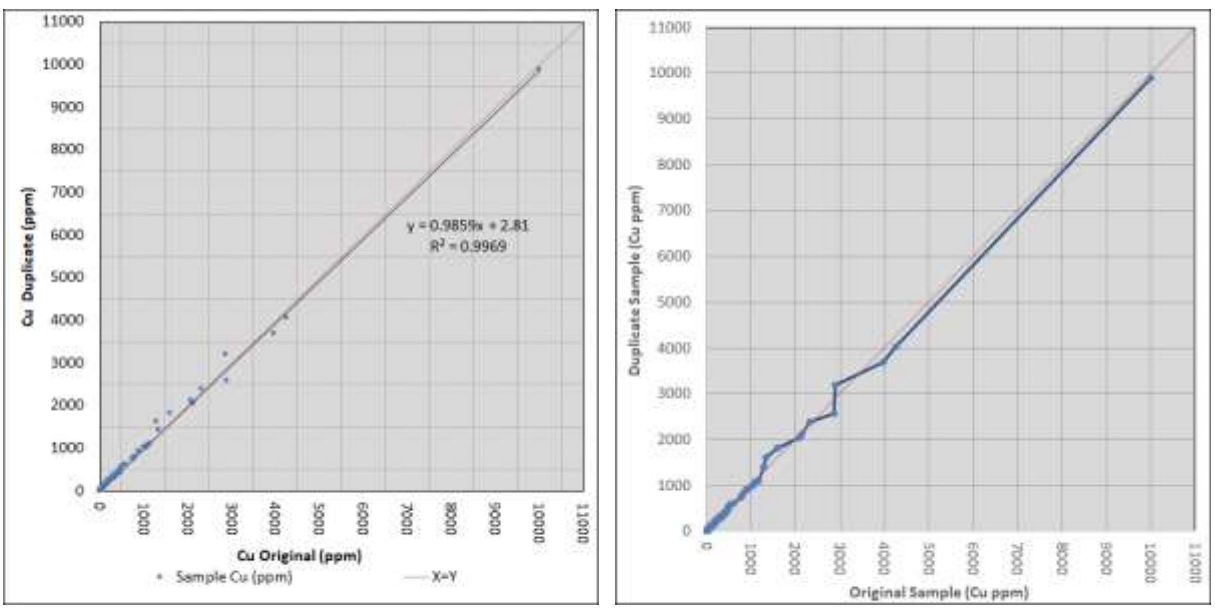


Figure 12.18: Scatter diagram (left) and QQ plot (right) for copper assay results of the coarse duplicate samples



12.8.4 Laboratory internal QA-QC

One preparation duplicate and one pulp replicate were typically inserted by the Acme Labs as part of their internal quality control procedures within each assayed batch or roughly 36 samples during the 2013-2014 drill programs. Their performance was verified by Liberty Gold and reviewed by DAMA, further confirming adequate assay quality.

12.9 General Comments

In order to verify the database supplied by the Liberty, DAMA undertaken site visits and reviewed the following technical aspects for the property:

• Drill hole data collection and compilation into the electronic drill hole database;

• Property geology, copper and gold mineralization, alteration and controlling structures;

• Drill hole collar locations;

• Drill hole logging and sampling procedures;

• QAQC program for assay programs;

• Chain of custody procedure for sample handling and transport to the lab;

• Representative drill core from primary geologic setting for gold in all rock types;

• Database management and data entry.

Based on the data review and verifications, DAMA is of the opinion that the sampling preparation, security, analysis, QAQC, data entry and management procedures used for the project are consistent with generally accepted industry best practices and are therefore adequate for resource estimation.

13. MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Introduction

Metallurgical testing at TV Tower involves separate studies on the: Hilltop porphyry deposit (Chesser; flotation testing); Valley porphyry deposit (Liberty Gold; flotation testing); Kayalı and Yumrudağ oxide gold deposits (Liberty Gold; column leach testing); and KCD deposit (Liberty Gold; concentrate and other testing).

13.2 Chesser Preliminary Flotation Testing – Hilltop (Karaayı)

13.2.1 Introduction

At the Hilltop porphyry target (previously named Karaayı by Chesser), Chesser commissioned Ausenco to carry out rougher and cleaner flotation testing on three samples from a single diamond drill hole at the Hilltop porphyry target, including copper and gold mineralization in KAD-02 (ALS, 2012; Ausenco, 2012). No previous test work had been carried out on drill core samples from Hilltop. Based on the geology and mineralisation, it is assumed that the treatment route would be a conventional crush-grind-flotation process to produce a saleable copper-gold concentrate. A basic rougher float and cleaning of a bulk rougher concentrate was assumed and test work was planned accordingly. The test work was carried out by ALS-Ammtec Metallurgy of Balcatta, Western Australia.

The samples had a range of Cu grades from 0.3 to 0.4% and gold grades from 0.1 to 0.4 g/t Au. Rougher flotation tests showed that nearly all the sulphides could report to a bulk concentrate with high recoveries of copper and gold. Cleaner flotation tests returned poor grades due to incomplete mineral liberation in the rougher concentrate. Further optimization is needed to confirm that fine regrinding of rougher concentrates can produce an acceptable grade of final concentrate. Flotation performance based on the rougher and cleaner flotation tests, and incorporating an appropriate plant recovery discount, gave estimated recovery performance to final concentrate of 80% Cu and 58% Au.

In 2015, five master composites in four Liberty Gold holes at Hilltop were selected for further metallurgical testing, under the advisement GL Simmons Consulting, LLC (Simmons). The selected composites were prepared and are currently being stored in a freezer on-site.

13.2.2 Sampling

Geology and Mineralization: Geology and mineralization information was limited to the geological coding on the interval log sheet data base and the following description: “The Karaayı prospect is a porphyry-related gold-copper target hosted in altered Lower Miocene volcanics that are underlain by medium to high-level Mesozoic granodiorite intrusions. Mineralisation in the area is characterised by disseminated or fracture-controlled pyrite, variable amounts of silicification, and hematite/pyrite matrix breccias produced by intense fracturing of siliceous rocks. There is also moderate to weak saccharoidal to crystalline quartz stringer stockwork veining in small breccia pipes.”

Samples Selected: During a site visit in November 2011, Ausenco inspected drill core for the Kestanelik Gold Project and reviewed the geological log sheet for diamond drill hole KAD-002 from Karaayı and identify suitable intervals of core which would be used in a preliminary metallurgical programme to assess its response to flotation.

The intervals were selected such that samples for each composite had common lithology, alteration and oxidation classification. The criteria used for the three composites selected (A, B and C) are shown in Table 13.1. The bagged intervals, weights and estimated grades for the samples sent to ALS-Ammtec are shown in Table 13.2.

Table 13.1: Karaayı composite selection criteria

Composite	grade % Cu	Cu:S	Fe:S	Depth (m)
A	> 0.25	majority 0.9-1.2	approximately 1	20 – 80
B	> 0.25	dominant 0.9-1.2	approximately 1	100 – 125
C	> 0.25	majority 1.4-1.7	majority > 2	125 – 150

Table 13.2: Sample details for the three Karaayı composites

Sample	Interval, KAD-002		Assay (estimated, from drill core)				To ALS
	From (m)	To (m)	Cu, %	S, %	Fe, %	Mo, ppm	Wt, kg
A1	19.5	26.5	0.33	2.3	2.1	4	8.7
A2	33.1	37.6	0.25	2.8	2.6	4	6.5
A3	74.8	76.3	0.37	3.8	3.5	32	2.5
B1	99.5	122.7	0.33	3.5	3.1	44	32.9
C1	125.7	130.2	0.27	1.9	2.1	22	6.3
C2	136.9	146.0	0.28	1.9	4.4	8	13.9
TOTAL							**70.9**

The total weight of core received for testing in the laboratory was 71 kg. The composites were prepared by blending all received sample weights per composite: 18 kg for A; 33 kg for B; 20 kg for C.

13.2.3 Test Program

Objectives: In 2012 Ausenko (Ausenko, 2012) outlined a program to perform preliminary flotation testing on three composites from their Karaayı deposit. Ausenko sub-contracted the metallurgical testing to ALS-Ammtec (Report No. A14269), with two main objectives:

1. To assess grade-recovery characteristics of copper and gold into a rougher flotation concentrate and identify if rougher float tails are suitable for disposal to tailings, and
2. To assess cleaner grade-recovery performance for copper and gold on a bulk rougher concentrate, without regrinding.

Flotation testing scope-of-work and details are reported int the ALS-Ammtec report Report No. A14269). Key variables outlined for testing include:

- head assay: Cu, Au, Ag, Mo, S-sulphide, S-total
- grind establishment: determine time for grind to 80% passing (P80) 125 microns (µm)
- trial three reagent schemes for bulk rougher flotation:

    - A3894 for rougher, potassium amyl xanthate (PAX) for scavenger duty
    - A3302 for primary, and potassium amyl xanthate (PAX) for scavenger duty
    - sodium ethyl xanthate (SEX) for primary and scavenger duties
- open circuit, sequential cleaner flotation on bulk rougher concentrate using selected reagent scheme (from above) at two cleaner conditions:
    - rougher pH 10.0, cleaner pH 10.5
    - rougher pH 8.0 and cleaner pH 11.5
- track metallurgical performance by assaying for Cu, Au, Ag, Mo, S-sulphide

Rougher float performance versus grind size was not examined at this stage. Regrinding of flotation concentrates was not examined due to the preliminary nature of the work and because insufficient sample weight was available.

13.2.4 Head Analysis

The head assays for each of the samples are shown in Table 13.3.

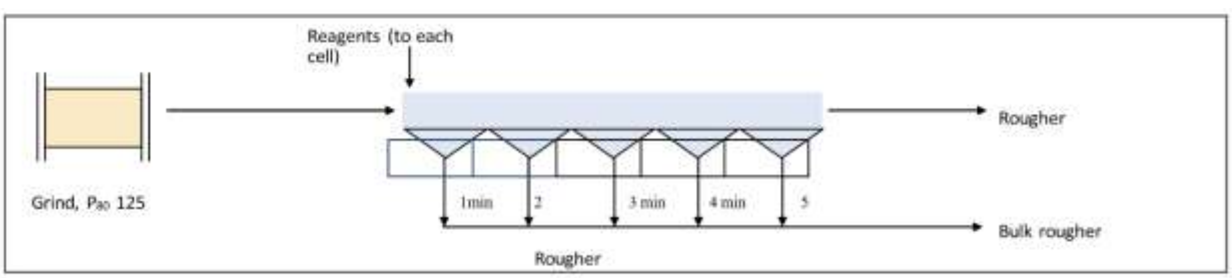
Table 13.3: Head Assays for each sample, Karaayı project

Analyte	Unit	A	B	C
Copper, Cu	%	0.31	0.37	0.27
Gold, Au	ppm	0.10	0.43	0.32
Silver, Ag	ppm	0.4	< 0.3	< 0.3
Molybdenum, Mo	ppm	< 20	40	< 20
S-TOTAL	%	2.68	3.62	2.36
S-SULPHIDE	%	2.66	3.62	1.78

13.2.5 Rougher Flotation

Rougher test procedure: A 1 kg sample from each material type was ground to the target grind size and treated in a laboratory flotation cell from which five sequential rougher concentrates are taken.Total rougher float time was 15 minutes.

Figure 13.1 Laboratory Batch Rougher Flotation Testing Flowsheet

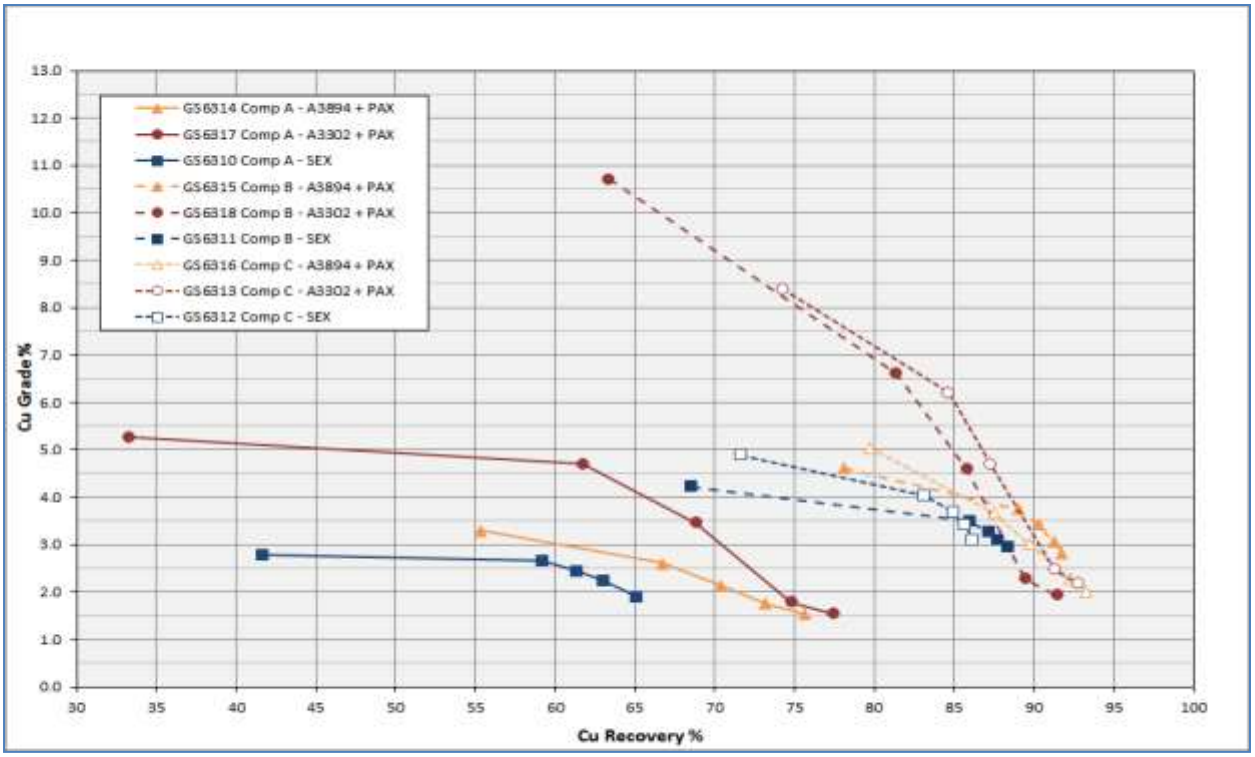


Recoveries for these tests are to "end-of-float" conditions for maximum sulphide sulphur recovery. Optimised recovery and grade conditions have not been carried out.

Grade-recovery rougher: The copper grade-recovery characteristics for each of the reagent schemes for the three samples tested are shown in the chart in Figure 13.2.

Rougher recovery in the low 90s percent at 2-3% copper grade occured with A3894 and A3302 collector tests for samples B and C. Sample A has lower grade-recovery co-ordinates, with a copper recovery about 75 percent at less than 2% copper grade.

Figure 13.2: Rougher Float, Copper Grade-Recovery (ALS-Ammtec A14269)



Results from the reagent tests on each sample are summarised in Table 13.4.

Highest recovery and lowest tail grade occurred with A3894 and A3302 collector reagents and PAX scavenger additions in the last two float stages. The performance with SEX collector was lower in all tests, particularly for copper recovery, as these tests were carried out at natural pH, which was 4.5-5.0 for all ore types. The stability of SEX is reduced at these pH levels and consequently its effectiveness may be impaired. Any future test work with SEX collector would include lime additions to raise pH to about 8.

Table 13.4 – Rougher float tests summary results copper, gold and sulphide sulphur to bulk concentrate

	Reagents	Feed grade			Conc.	Concentrate grade			Tail grade			Concentrate recovery		
		% Cu	g/t Au	% S	Wt %	% Cu	g/t Au	% S	% Cu	Au, g/t	% S	Cu %	Au %	S %
A	A3894 + PAX	0.28	0.10	2.6	13.7	1.5	0.63	18.4	0.08	0.02	0.06	76	83	98
	A3302 + PAX	0.29	0.12	2.3	14.8	1.5	0.62	15.4	0.08	0.03	0.06	78	78	98
	SEX	0.27	0.10	2.2	9.4	1.9	0.80	22.1	0.11	0.03	0.16	65	73	93
B	A3894 + PAX	0.25	0.34	1.8	11.6	2.0	2.36	14.9	0.03	0.12	0.08	93	79	96
	A3302 + PAX	0.31	0.45	3.7	14.8	1.9	2.28	24.2	0.03	0.13	0.10	91	75	98
	SEX	0.34	0.41	3.4	10.1	2.9	3.09	32.3	0.04	0.11	0.14	88	76	96
C	A3894 + PAX	0.25	0.34	1.8	11.6	2.0	2.36	14.9	0.02	0.08	0.08	93	79	96
	A3302 + PAX	0.27	0.35	1.9	11.5	2.2	2.40	15.4	0.02	0.08	0.08	93	80	96
	SEX	0.26	0.34	1.6	7.2	3.1	3.47	20.0	0.04	0.10	0.16	86	73	90

Copper recovery to rougher concentrate for the A3894 and A3302 collector tests was 91-93% for samples B and C and 76-78% for sample A. Gold recovery to the rougher concentrate in these tests was in the range 75-83%. Almost all of the sulphide sulphur (greater than 96%) was recovered to the float concentrate; this was consistent with the very low copper grades in final tail. (SEX collector results have underperformed as pH conditions were not ideal.)

Molybdenum and silver were also tracked in rougher concentrates (Appendix 2). Molybdenum grade in the feed was low, 20-80 g/t and silver was less than 2 g/t. Molybdenum recovery to rougher concentrates was 50-80% and silver was 25-30%.

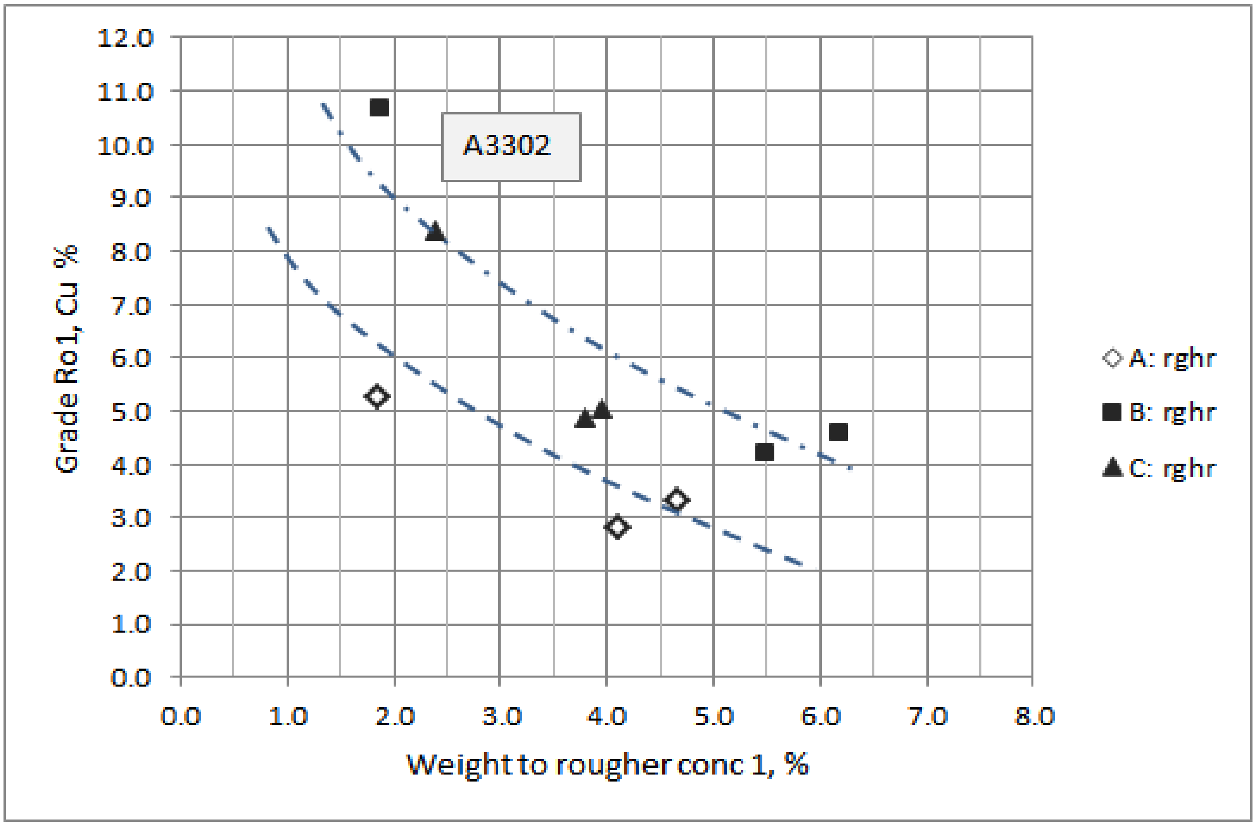
13.2.6 Rougher concentrate upgrade

Copper grade versus weight in the first rougher concentrate (in 1 minute of 15 minutes total) for all rougher tests on the samples are shown in Figure 13.3.

A finer primary grind may improve the initial grade-weight response and maintain the same (or better)

overall rougher recovery of copper and gold.

Figure 13.3: Copper grade in first rougher concentrate



13.2.7 Rougher plant recovery

The time-weight-grade-recovery relationship with grind size for roughing duty was not investigated or optimised in this series of tests and scope. Ammtec estimated that commercial scale flotation recoveries would need to be discounted a further one to two percent less for copper by two to four percent for gold. Thus for preliminary evaluation, plant rougher recoveries are 85-87% for copper and 65-70% for gold.

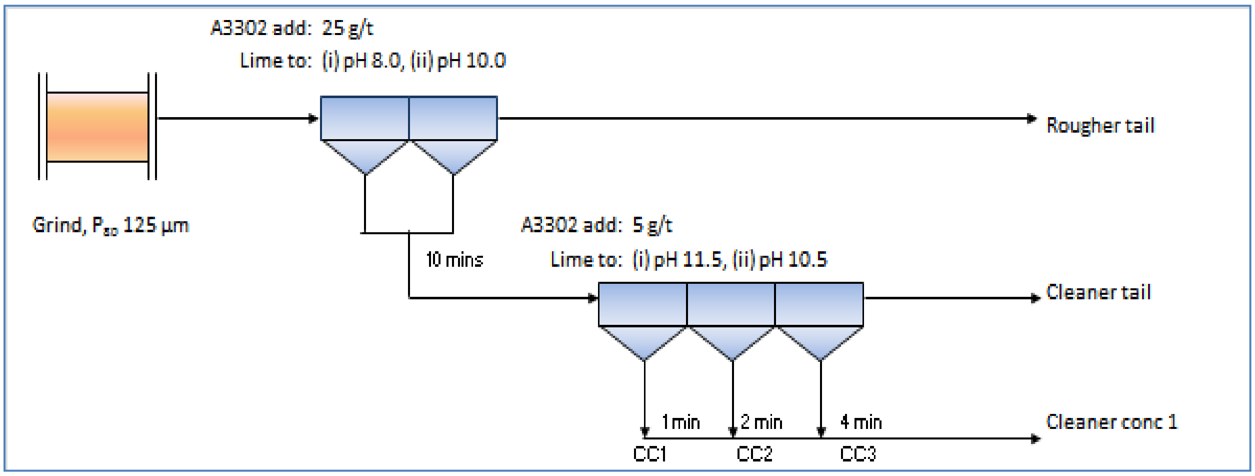
Future test work should investigate the effect of primary grind size to assess: 1) the potential to achieve a higher upgrade ratio in the initial rougher stages; and 2) the extent to which the moderate rougher recoveries achieved from the sample A may be improved. This work would be in conjunction with mineralogy and diagnostic analysis of the concentrate streams and final tailings, as required.

13.2.8 Cleaner Flotation

Cleaner test procedure: Cleaner testing was conducted on each ore type, as per previous rougher tests, and floated for 10 minutes in a laboratory flotation cell. The bulk concentrate was then floated and three sequential cleaner concentrate fractions were taken, weighed and assayed. The cleaner stage was in open circuit and the tail was weighed and assayed. The schematic flowsheet for the cleaner test is shown in Figure 13.4. Collector A3302 was selected based on its better sulphide selectivity compared to A3894. Two series of float tests were carried out to assess recovery and selectivity characteristics for the copper and gold minerals at two alkalinity levels (adjusted with lime, CaO) in the float stages:

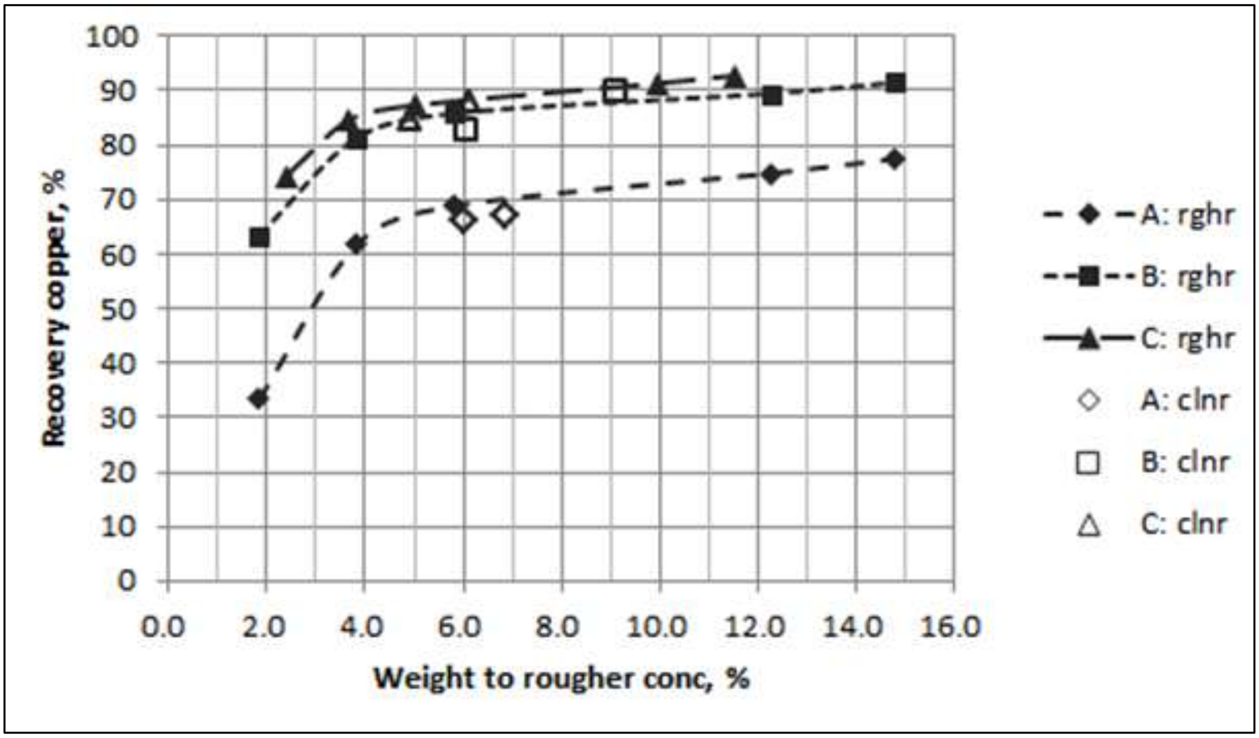
- rougher pH 8.0 and cleaner pH 11.5
- rougher pH 10.0 and cleaner pH 10.5.

Figure 13.4: Laboratory Batch Rougher and Cleaner Flotation Testing



Although the float time for rougher concentrate in this series of cleaner tests was 10 minutes compared to 15 minutes for the initial rougher float tests, the weight-copper recovery performance lies on the same curves as for the initial rougher work (Figure 13.5). The weight- grade-recovery parameters can be investigated and optimised in further test programmes.

Figure 13.5: Rougher Float, Copper Recovery vs. Weight to Concentrate



Rougher/cleaner copper and gold: The results from the rougher/cleaner tests on each sample are summarised for copper in Table 13.5 and for gold in Table 13.6.

Table 13.5: Cleaner Float Tests Summary Results at Two pH Conditions – Copper to Cleaner Concentrate

	Float pH	Feed	Rougher flotation				Cleaner flotatior				O'all
	rougher/clean	% Cu	Wt %	% Cu conc.	% Cu tail	Rec'y Cu %	Wt %	% Cu conc.	% Cu tail	Rec'y Cu %	Rec'y Cu %
A	pH 8.0/11.5	0.29	6.9	2.9	0.10	67	3.1	6.0	0.26	95	64
	pH 10.0/10.5	0.29	6.0	3.2	0.10	66	2.4	7.4	0.36	93	61
B	pH 8.0/11.5	0.35	9.1	3.4	0.04	90	5.4	5.6	0.20	98	87
	pH 10.0/10.5	0.35	6.1	5.1	0.05	87	4.8	6.3	0.69	97	85
C	pH 8.0/11.5	0.28	6.1	4.1	0.04	88	3.5	6.7	0.42	96	84
	pH 10.0/10.5	0.26	4.9	4.5	0.04	85	3.3	6.5	0.45	97	82

Table 13.6 – Cleaner Float Tests Summary Results at Two pH Conditions – Gold to Cleaner Concentrate

Float pH		Feed	Rougher Flotation				Cleaner				O'all
	rough/clean	g/t Au	Wt %	g/t Au conc.	% Au tail	Rec'y Au %	Wt %	g/t Au conc.	g/t Au tail	Rec'y Au %	Rec'y Au %
A	pH 8.0/11.5	0.12	6.9	1.2	0.04	69	3.1	2.4	0.22	90	62
	pH 10.0/10.5	0.12	6.0	1.3	0.04	68	2.4	3.1	0.14	94	63
	pH 8.0/11.5	0.45	9.1	3.6	0.14	72	5.4	5.4	0.93	89	64

	pH 10.0/10.5	0.44	6.1	4.7	0.17	64	4.8	5.6	1.34	94	60
	pH 8.0/11.5	0.37	6.1	4.3	0.12	70	3.5	6.5	1.24	88	61
C	pH 10.0/10.5	0.37	4.9	5.0	0.13	67	3.3	7.0	1.05	93	62

Copper recovery in the cleaner flotation stage was high for all samples and test conditions, and typically was over 95. Gold recovery in the cleaner flotation stage was good for all samples and test conditions, and was typically 88-94%.

The respective upgrade ratios were poor for the first cleaner concentrate stream. The low grades in this fraction indicate poor mineral liberation characteristics and restricts the ability to obtain desired cleaner concentrate grades. The rougher concentrate stream (cleaner feed) would therefore benefit from a regrind stage and it is expected that the grade-recovery cleaner performance would improve significantly. A further benefit from regrinding the rougher concentrates is that a lower grade cleaner tail, which is currently around 0.3-0.7% Cu and up to 1.4 g/t Au, would be produced and could be discarded if no further economically recoverable values were possible.

13.2.9 Plant cleaner recoveries

Again, Ammtec discounted laboratory flotation tests to better reflect commercial scale-up, recommending about two percent less for copper and two to four percent for gold. Thus for preliminary evaluation, plant cleaner recoveries are about 94% for copper and 86-88%% for gold.

Overall commercial plant recoveries, based on these preliminary results and assuming grade-recovery benefits result from optimisation of primary grind and regrinding of targeted streams, are estimated to be 80% for copper and 58% for gold to a final saleable concentrate.

It is assumed that a final grade concentrate of acceptable grade will be produced following further test work and diagnostic investigations to assist process development. The presence and impact of any deleterious elements on payable terms, charges and commercial conditions should also be addressed in future test work.

13.2.10 Future test work

Future test work should investigate the effect of pH on rougher flotation, regrinding the rougher concentrates to improve the grade-recovery characteristics for the cleaner stage and locked-cycle testing to improve assessment of final copper and gold recoveries at commercial scale operations. Any beneficial effect on downstream cleaner performance from reducing the primary grind size should also be monitored.

13.3 Valley Porphyry Preliminary Flotation Testing (2015)

13.3.1 Introduction

When Liberty Gold commissioned the intitial flotation testwork on the Valley Porphyry deposit they owned the Halilağa Copper Project which has since been sold to another mining company. Liberty's focus of this first phase of testwork was to determine if the Valley Porphyry material types were compatible with the flowsheet developed for the Halilağa Project which is located approximately 20 kilometers southeast. The goal was to investigate flotation for recovery of the copper-gold values into marketable copper concentrate products. A minor amount of testing investigated whether additional gold could be recovered via cyanide leaching of cleaner flotation tails.

Core analyses provided by Liberty Gold were used to select drill core intervals from which five master composites were prepared for testing. These composites were identified as VPMC-1 to

VPMC-5 and head analyses show that they ranged in value from 0.23% Cu to 0.49% Cu and from 0.42 gpt Au to 1.44 gpt Au.

This test program was conducted in cooperation with G.L. Simmons Consulting, LLC (Simmons). The laboratory testing was conducted by John Gathje Consulting, LLC (Gathje) using the facilities and support provided by Hazen Research, Inc. (Hazen). Hazen's support included preparation of the core, technician labor in the laboratory, and all of the analytical services.

13.3.2 Test Composites and Head Assays

Twenty-six composites were selected for metallurgical testing. These are designated as "Variability Composites" and are identified as VP-1 through VP-26. The composites consisted of split core and each one assigned an identification number (HRI No.). No testing was carried out for nine of the composites. Two composites were selected for both comminution testing and metallurgical testing. The remaining 15 composites were stage crushed to minus 3/8 inch and split for inclusion into Master Composites, which sample a broader range of ore types.

Five Master Composites (identified as VPMC-1 to VPMC-5) were prepared using designated splits from each of 17 VP variability composites. Each Master Composite was stage crushed to minus 10 mesh and split into 1 kilogram test charges along with corresponding head samples for assaying.

The sample preparation flowsheet is given in Figure 13.6. The composite head assays are summarized in Table 13.7 and multi-element ICP scan data are given in Table 13.8.

Figure 13.6: Valley Porphyry Met Composite Preparation

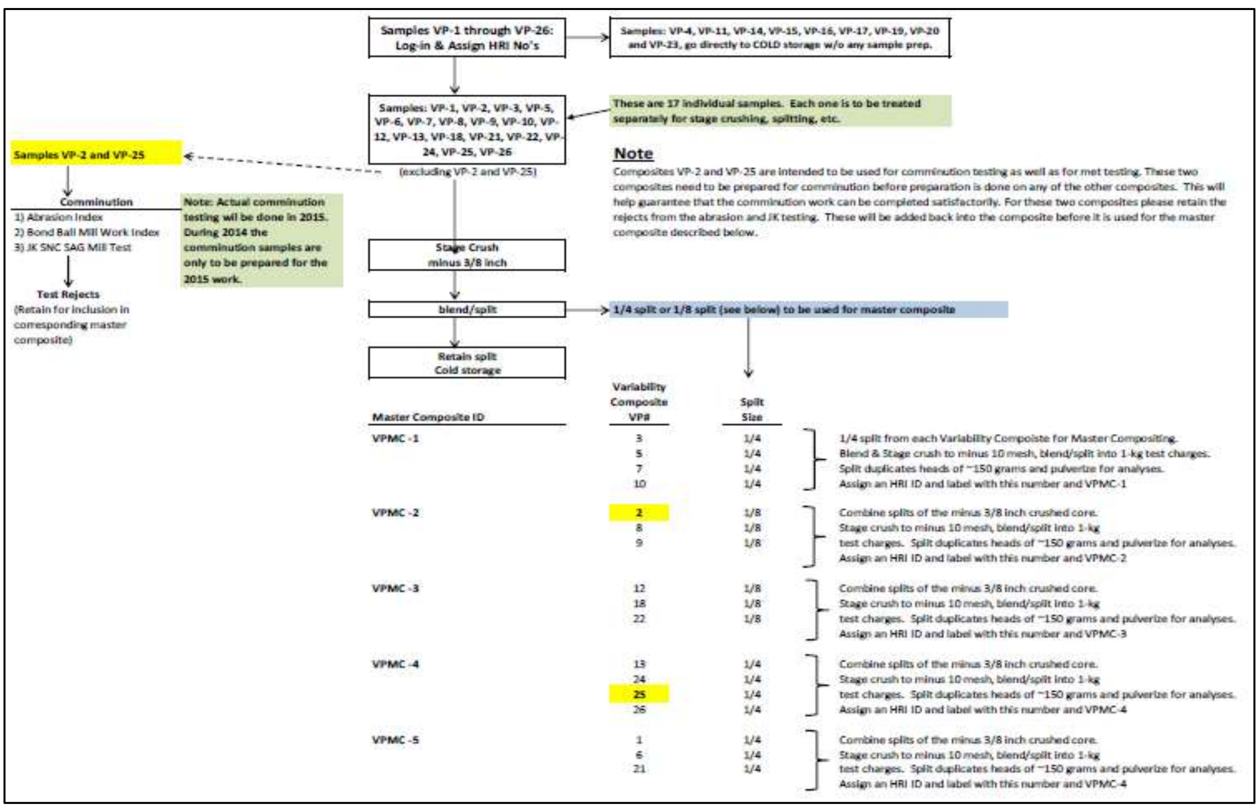


Table 13.7: Summary of Master Composite Head Analyses

Comp ID	Au gpt	Cu %	Fe %	Ag gpt	AuCN gpt	AuCN %	CuCN ppm	CuCN %
VPMC-1	0.600	0.229	4.66	na	na	na	na	na
VPMC-2	1.440	0.490	6.05	5	0.3	21	2550	52
VPMC-3	0.549	0.261	5.24	na	na	na	na	na
VPMC-4	0.420	0.247	4.42	4	0.2	48	600	24
VPMC-5	0.429	0.259	4.76	na	na	na	na	na

Table 13.8: ICP Analyses of Valley Porphyry Master Composites (wt%)

Composite	Al	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu	Fe	K
VPMC-1	6.71	0.070	<0.0005	<0.005	1.66	<0.0005	0.0042	<0.005	0.008	0.226	4.70	2.99
VPMC-2	5.31	0.053	<0.0005	<0.005	0.642	<0.0005	0.0023	<0.005	<0.005	0.477	6.09	3.05
VPMC-3	6.79	0.064	<0.0005	<0.005	1.29	<0.0005	0.0036	<0.005	0.008	0.256	5.24	3.10
VPMC-4	6.48	0.068	<0.0005	<0.005	1.09	<0.0005	0.0036	<0.005	<0.005	0.236	4.63	2.46
VPMC-5	7.22	0.066	<0.0005	<0.005	1.34	<0.0005	0.0040	<0.005	0.007	0.254	4.76	3.03

Composite	La	Mg	Mn	Mo	Na	Ni	P	Pb	Re	S	Sb	Sr
VPMC-1	0.0020	0.876	0.144	<0.001	1.75	<0.0025	0.036	0.009	<0.0005	0.55	<0.005	0.029
VPMC-2	0.0011	0.692	0.114	0.051	1.35	<0.0025	0.023	0.008	<0.0005	0.82	<0.005	0.016
VPMC-3	0.0015	0.864	0.157	<0.001	1.96	<0.0025	0.042	0.01	<0.0005	0.30	<0.005	0.027
VPMC-4	0.0019	0.893	0.113	0.011	1.05	<0.0025	0.043	0.005	<0.0005	1.32	<0.005	0.014
VPMC-5	0.0016	0.831	0.124	<0.001	2.15	<0.0025	0.031	0.011	<0.0005	0.28	<0.005	0.029

Composite	Te	Th	Ti	V	Y	Zn	Zr
VPMC-1	<0.005	0.0015	0.197	0.0089	0.0012	0.013	0.0013
VPMC-2	<0.005	0.0018	0.156	0.0080	0.0008	0.012	0.0011
VPMC-3	<0.005	0.0014	0.209	0.0093	0.0011	0.013	0.0013
VPMC-4	<0.005	0.0027	0.162	0.0077	0.0010	0.012	0.0015
VPMC-5	<0.005	0.0015	0.226	0.0098	0.0012	0.013	0.0016

13.3.3 Flotation Results

The testing was conducted using the flowsheet shown in Figure 13.7. Primary grinding prior to rougher flotation was done using a hardened steel rod mill and regrinding prior to cleaner flotation was done using a stainless steel rod mill. Flotation was conducted in a Denver D2 laboratory flotation machine.

The reagents for rougher flotation consisted of lime ($Ca(OH)_2$) in the primary grind to achieve ~pH 9 along with potassium amyl xanthate (PAX) added to the slurry prior to flotation. Frother was used as required. The target was a primary grind P80 size of ~140µm based on the Halilağa flowsheet. Some minor testing was conducted at coarser and finer grind sizes.

Test products were assayed for copper, gold (fire assay) and sulfide sulfur (Leco sulfur after hydrochloric acid digestion).

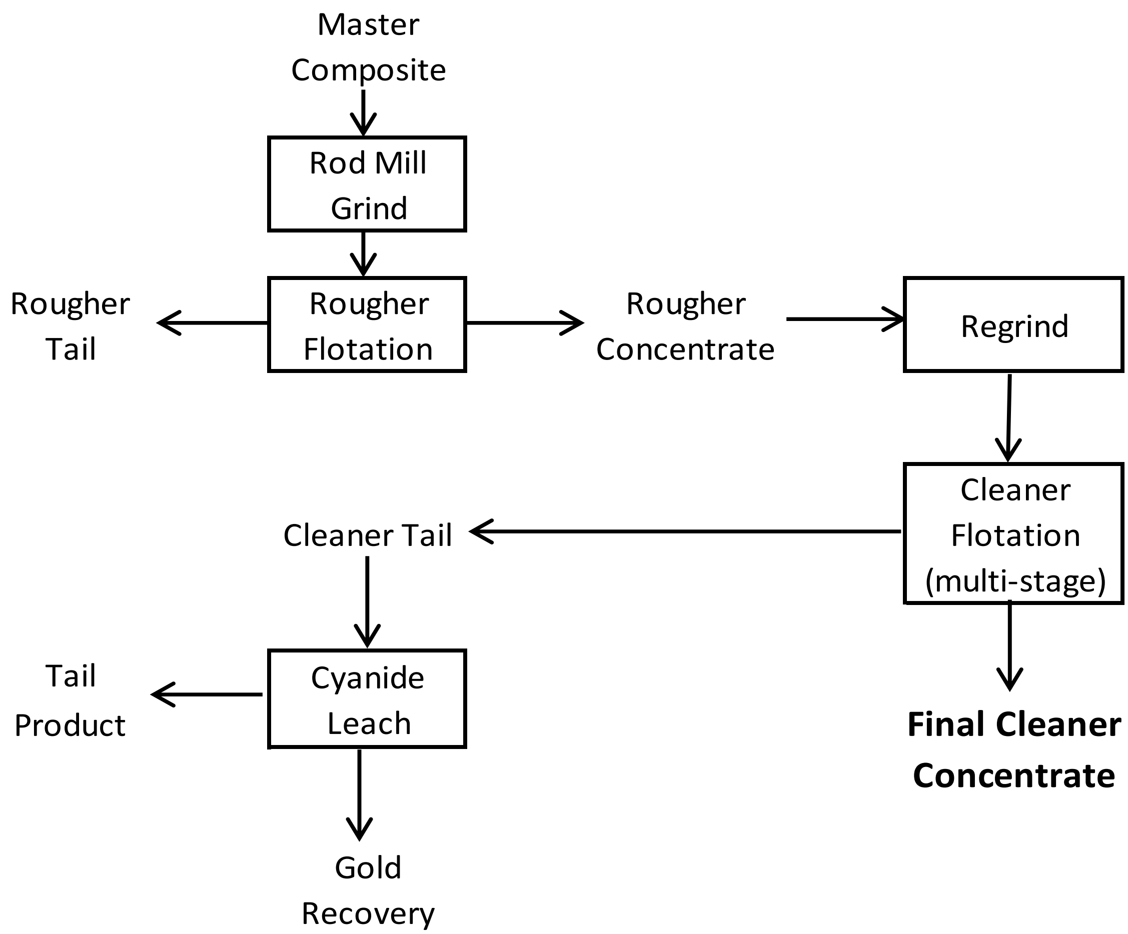
Exploratory Tests: VPMC-2 and VPMC-4

The first tests conducted (Tests 3024-46-1 for VPMC-2 and Test 3024-46-2 for VPMC-4) were exploratory and the test conditions (primarily reagent additions) were not satisfactory.

Process Flowsheet Characterization Testing for VPMC-2 and VPMC-4

Three tests on VPMC-2 and four on VPMC-4 were conducted in accordance with the Halilağa flowsheet. These tests investigated minor changes in reagent addition rates, and changes in both the primary and regrind sizes. The results are given in Table 13.9.

Figure 13.7: Grinding Process Flowsheet



Tests 3 and 4 for VPMC-2 achieved cleaner concentrate grades generally >30% Cu although expectations were for higher copper recoveries. For VPMC-4 the results for Tests 5, 6, and 7 were disappointing due to low copper grades of <20% Cu. In the case of this composite it was suspected that the regrind was insufficient. (Later receipt of mineralogical data on test feed materials strongly confirmed the need for finer regrinding to achieve copper liberation.)

Final Tests on all Composites: A final test on VPMC-2 and VPMC-4 was conducted primarily to determine if very fine regrinding would have a positive impact on the results. The results are again shown in Table 13.9 (Tests 8 and 9 respectively).

In Test 8 (VPMC-2) a regrind of 16µm and a single stage of cleaning achieved a copper grade of 32.0% Cu with a recovery of 89.0%. The corresponding gold values were a grade of 67.5 gpt Au and 64.6% recovery. Both the copper and gold values are improvements to the previous results for this composite.

In Test 9 the use of a finer regrind of 13µm achieved a copper grade of 23.2% Cu in the first cleaner stage and 32.0% Cu in the second. The respective copper recoveries were 88.4% and 84.7%. The gold values for Test 9 show grades of 33.4 gpt Au and 44.7 gpt Au for the first and second cleaner stages, respectively. The gold recoveries were 71.1% and 66.1%. It is clear that the finer regrind had a significant positive impact on both the copper and gold grade/recovery responses for this composite.

Table 13.9: Summary of Additional Tests for VPMC-2 and VPMC-4

Test	Grind, P80µm		Concentrate						Rougher Tail				Calculated		Cleaner	
3024-46-	Primary	Regrind 1/	Stage 2/	Wt, %	Grade Au, gpt	Grade Cu, %	Distribution Au, %	Distribution Cu, %	Grade Au, gpt	Grade Cu, %	Distribution Au, %	Distribution Cu, %	Feed Au, gpt	Feed Cu, %	Efficiency, % Au	Efficiency, % Cu
VPMC-2																
3	104	26	3	1.15	74.2	35.4	63.4	84.5	0.411	0.032	28.7	6.1	1.34	0.480	88.9	90.0
			2	**1.27**	**68.5**	**32.7**	**65.0**	**86.8**							91.2	92.4
			1	1.85	47.4	23.8	65.5	91.9							91.9	97.9
			Rough	7.26	13.2	6.2	71.3	93.9							100.0	100.0
4	155	25	3	1.12	74.3	36.5	58.7	84.6	0.48	0.051	31.8	9.9	1.42	0.484	86.1	93.9
			2	**1.21**	**70.7**	**34.8**	**60.1**	**86.7**							88.1	96.2
			1	**1.43**	**61.6**	**29.7**	**62.2**	**88.0**							91.2	97.7
			Rough	6.18	15.7	7.1	68.2	90.1							100.0	100.0
8	133	16	2	1.00	84.5	40.8	61.6	86.4	0.446	0.044	30.6	8.8	1.37	0.471	88.8	94.7
(Very fine regrind)			**1**	**1.31**	**67.5**	**32.0**	**64.6**	**89.0**							93.1	97.6
			Rough	5.88	16.2	7.31	69.4	91.2							100.0	100.0
												Average	**1.38**	**0.482**		
												Assayed	**1.44**	**0.490**		
VPMC-4																
5	183	24	2	1.24	22.0	17.9	60.4	86.7	0.137	0.024	27.3	8.3	0.450	0.255	83.1	94.5
			1	1.87	15.5	12.1	64.5	89.0							88.7	97.1
			Rough	10.81	3.02	2.16	72.7	91.7							100.0	100.0
6	142	23	2	1.14	23.3	19.2	61.9	89.9	0.120	0.018	24.1	6.5	0.430	0.244	81.6	96.1
			1	1.76	16.4	12.6	67.2	91.4							88.5	97.8
			Rough	10.91	2.99	2.09	75.9	93.5							100.0	100.0
7	135	18	2	1.08	23.5	19.1	65.0	89.6	0.103	0.019	23.4	7.6	0.390	0.230	84.9	97.0
			1	1.21	21.5	17.1	66.7	89.7							87.1	97.1
			Rough	9.47	3.15	2.24	76.6	92.4							100.0	100.0
9	144	13	**2**	**0.64**	**44.7**	**32.0**	**66.1**	**84.7**	0.102	0.021	21.4	8.1	0.430	0.240	84.1	92.2
(Very fine regrind)			**1**	**0.91**	**33.4**	**23.2**	**71.1**	**88.4**							90.5	96.2
			Rough	7.60	4.45	2.90	78.6	91.9							100.0	100.0
												Average	**0.426**	**0.243**		
												Assayed	**0.420**	**0.247**		

1/ Regrind size determined by laser sizing (Malvern Mastersizer) of first cleaner tail.
2/ Rougher or cleaner stage

These same test conditions were used for single tests conducted on VPMC-1, -3 and -5. The results for these tests have been summarized previously in Table 13.10. They responded with good copper grades for the final concentrates but with somewhat lower copper recoveries than anticipated. Note: VPMC-5 is a transition composite.

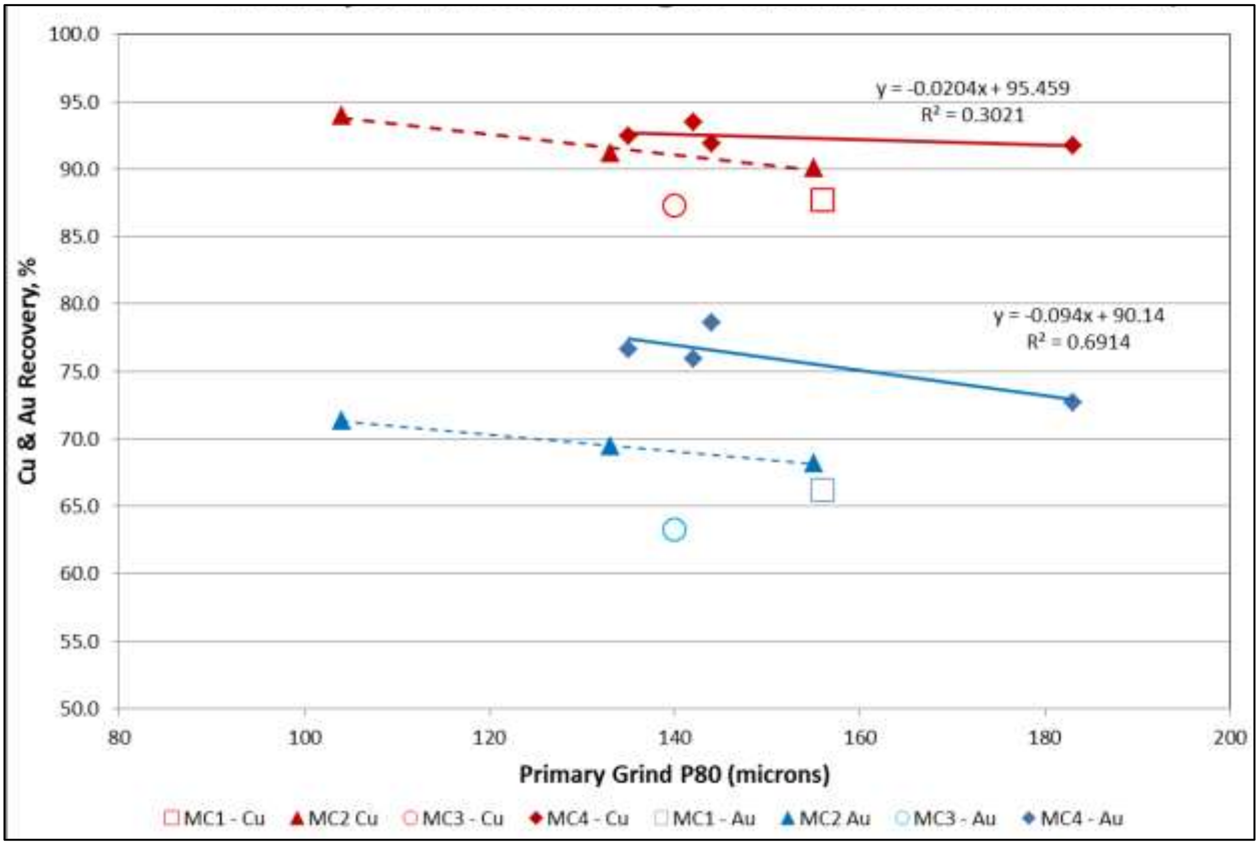
Table 13.10: Summary of Results for Rougher/Cleaner Flotation Recovery of Values into Copper concentrate for Composites: VPMC-1 thru -5

Comp	Test 3024-46-	Grind, P80µm Primary	Regrind 1/	Stage 2/	Concentrate Wt, %	Concentrate Grade Au, gpt	Concentrate Grade Cu, %	Concentrate Distribution Au, %	Concentrate Distribution Cu, %	Rougher Tail Grade Au, gpt	Rougher Tail Grade Cu, %	Rougher Tail Distribution Au, %	Rougher Tail Distribution Cu, %	Calculated Feed Au, gpt	Calculated Feed Cu, %
VPMC-1	10	156	14	2	0.45	57.8	36.9	58.9	84.0						
				1	0.59	45.8	28.7	60.9	85.4						
				Rougher	4.86	6.00	3.55	66.2	87.7	0.156	0.026	33.8	12.3	0.440	0.197
VPMC-2	8	133	16	2	1.00	84.5	40.8	61.6	86.4						
				1	1.31	67.5	32.0	64.6	89.0						
				Rougher	5.88	16.2	7.31	69.4	91.2	0.446	0.044	30.6	8.8	1.37	0.471
VPMC-3	11	140	13	2	0.50	57.7	44.2	58.5	84.1						
				1	0.60	48.8	37.1	59.9	85.3						
				Rougher	3.80	8.16	6.00	63.3	87.3	0.189	0.034	36.7	12.7	0.490	0.261
VPMC-4	9	144	13	2	0.64	44.7	32.0	66.1	84.7						
				1	0.91	33.4	23.2	71.1	88.4						
				Rough	7.60	4.45	2.90	78.6	91.9	0.102	0.021	21.4	8.1	0.430	0.240
VPMC-5	12	135	14	2	0.33	51.6	41.5	45.9	53.8						
				1	0.47	37.4	29.6	47.5	54.8						
				Rough	4.08	4.63	3.61	51.1	58.1	0.165	0.097	42.7	36.4	0.370	0.254
VPMC-1 to 4				**2**	**0.64**	**61.2**	**38.5**	**61.3**	**84.8**						
VPMC-1 to 4				**1**	**0.85**	**48.9**	**30.2**	**64.1**	**87.0**			**30.6**	**10.5**		

Additional Notes on Rougher Flotation: The copper and gold recoveries during rougher flotation for VPMC-1 to VPMC-4 are shown in Figure 13.8 along with the primary grind size. The responses for both VPMC-2 and VPMC-4 were somewhat alike but their copper recoveries were higher than either VPMC-1or VPMC-3. The recovery differences are about 5 percentage points. The same is true for gold although the response of VPMC-1 is very similar to VPMC-2. However, these data very clearly show the significant differences in gold recoveries between VPMC-2 and VPMC-4. The reason for this is unknown but it is noteworthy that the gold grade of VPMV-2 is about three times that for VPMC-4.

Table 13.9 shows that the copper losses into the rougher tail for composites VPMC-2 and VPMC-4 were in the range of 8% and a range of ~21% to ~31% for gold. This table also shows that the copper recovery efficiency during the first cleaner stage (efficiency is the percentage of value recovered within the stage) was in the range of 97% for both composites. For gold the efficiencies were 92% for VPMC-2 and 88% for VPMC-4. So, there is the potential for improved final copper and gold recoveries for both composites if the rougher flotation responses could be improved.

Figure 13.8: Primary Grind P80 vs. Rougher Flotation Cu & Au Recovery



This was not an area of primary focus for the current work but in two tests a split of the rougher tail was reground followed by scavenger flotation. The regrind target was a P80 of ~200 mesh (75µm). A summary of the results is given in Table 13.11. In the case of VPMC-2 the data show that the values reporting into a concentrate that would become feed to the first cleaner stage would increase for gold from 69.4% to 73.2%, and for copper from 91.2% to 93.4%. The changes for VPMC-4 are 78.6% to 85.3% for gold, and from 91.9% to 95.5% for copper. These are noteworthy improvements and should be investigated in future flotation test programs.

Table 13.11: Summary of Results after Scavenger Flotation of Rougher Tails

Comp ID	Test 3024-46-	Regrind P80 µm 1/	Conc	Concentrate Product Wt %	Assay Au gpt	Assay Cu %	Distribution Au %	Distribution Cu %	Tail	Tail Product Au gpt	Tail Product Cu %
VPMC-2	8	72	Rough Conc	5.88	16.2	7.31	69.4	91.2	Rough Tail	0.446	0.044
			Scav Conc	0.56	9.01	1.94	3.8	2.2	Scav Tail	0.377	0.034
			Comb Conc	**6.44**	**15.5**	**6.84**	**73.2**	**93.4**	**delta**	**0.069**	**0.010**
VPMC-4	9	65	Rough Conc	7.60	4.45	2.90	78.6	91.9	Rough Tail	0.102	0.021
			Scav Conc	1.33	2.14	0.645	6.7	3.6	Scav Tail	0.069	0.012
			Comb Conc	**8.93**	**4.10**	**2.57**	**85.3**	**95.5**	**delta**	**0.033**	**0.009**

1/ P80 of scavenger tail produced from rougher tail.

Two tests (3024-46-03 and 3024-46-06) also looked briefly at the possibility of recovering the magnetic fraction from the rougher tails to determine the impact on gold and copper recoveries. The data show ~3% gold and ~1% copper reported into the magnetics (whole ore basis). It is unlikely that such a process scheme would ultimately be of any value.

13.3.4 Cleaner Tail Cyanidation

A split of the first cleaner tail from the final test on each of the five master composites was bottle roll leached to determine the gold and copper extractions. The tests were 18 hours duration at a maintained target of 1 gpL NaCN, ~15% solids and with oxygen sparging into the bottle head space. The final leach products were assayed for gold and copper. The results are given in Table 13.12 and include the first cleaner flotation results. The incremental extractions (whole ore basis) for Composites VPMC-1 to VPMC-4 averaged 3.4% for gold and 1.3% for copper. For VPMC-5 the extractions were 3.0% and 1.3% for gold and copper respectively.

Table 13.12: Summary of Leach Results for First Cleaner Tails

Comp ID	Test 3024-46-	Wt, %	Leach Feed (1CT) 1/ Assayed 4/ Au, gpt	Leach Feed (1CT) 1/ Assayed 4/ Cu, %	Leach Feed (1CT) 1/ Calculated 5/ Au, gpt	Leach Feed (1CT) 1/ Calculated 5/ Cu, %	Flotation Distribution, % 2/ Au	Flotation Distribution, % 2/ Cu	Cyanide Extraction, % Au	Cyanide Extraction, % Cu	Incremental Extraction, % 3/ Au	Incremental Extraction, % 3/ Cu
VPMC-1	10	4.28	0.55	0.11	1.24	0.10	5.3	2.3	42.9	52.8	2.3	1.2
VPMC-2	8	4.57	1.44	0.22	1.39	0.21	4.8	2.2	84.6	62.9	4.1	1.4
VPMC-3	11	3.20	0.53	0.16	0.67	0.16	3.4	2.0	82.1	62.3	2.8	1.2
VPMC-4	9	6.68	0.48	0.13	0.52	0.10	7.5	3.5	58.8	42.8	4.4	1.5
VPMC-5	12	3.61	0.36	0.23	0.48	0.23	3.6	3.3	82.1	33.6	3.0	1.1
Average for VPMC-2 to VPMC-4											**3.4**	**1.3**

1/ Leach feed was first cleaner tail (1CT)
2/ Distribution of value into the first cleaner tail (whole ore basis).
3/ Percentage of value extracted via cyanidation (whole ore basis)
4/ Assay of leach feed from flotation mass balances.
5/ Calculated assay of leach feed from cyanidation mass balances.

13.3.5 Concentrate Analyses

The final second cleaner copper concentrate products were submitted for detailed analyses which are an important aspect for consideration of potential marketing. The results are summarized in

Table 13.13. In a few cases there was an insufficient amount of concentrate to complete all the assays and these are denoted as “na”.

Table 13.13: Copper concentrate analyses

Composite		VPMC-1	VPMC_2	VPMC-3	VPMC-4	VPMC-5
Test 3024-46-		**10**	**8**	**11**	**9**	**12**
Conc Wt	**Wt %**	0.45	1.00	0.50	0.64	0.33
Quantative Analysis						
Au	**gpt**	57.8	84.5	57.7	44.7	51.6
Ag	**gpt**	126	125	129	105	133
As	**ppm**	465	143	92	324	153
Cu	**%**	36.9	40.8	44.2	32	41.5
Fe	**%**	22.9	22.1	19.3	27.3	19.2
Cl	**%**	0.0085	0.0037	0.010	0.0054	0.031
Hg	**ppm**	0.18	<0.01	0.09	0.17	na
F	**%**	0.02	0.04	<0.02	<0.02	0.03
Se	**ppm**	339	360	379	348	na
$S^{=}$ 1/	**%**	19.7	16.2	15.8	21.9	17.2
ICP Analysis						
Al	**%**	0.348	0.230	0.361	0.343	0.465
Ba	**%**	0.006	0.018	0.016	0.015	0.006
Be	**%**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Bi	**%**	<0.005	<0.005	0.006	<0.005	<0.005
Ca	**%**	0.257	0.105	0.276	0.178	0.278
Cd	**%**	0.0051	0.0013	0.0043	0.0065	0.0095
Ce	**%**	0.0009	<0.0005	0.0007	0.001	0.0008
Co	**%**	<0.005	<0.005	<0.005	<0.005	<0.005
Cr	**%**	0.034	0.033	0.029	0.017	0.049
Cu	**%**	35.3	39.6	42.2	30.6	39.7
Fe	**%**	23.3	22.0	19.5	29.1	19.9
K	**%**	0.143	0.114	0.153	0.117	0.174
La	**%**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Mg	**%**	0.465	0.076	0.088	0.071	0.111
Mn	**%**	0.0354	0.0148	0.0308	0.0149	0.0267
Mo	**%**	0.032	0.014	0.030	0.018	0.028
Na	**%**	0.071	0.052	0.090	0.028	0.107
Ni	**%**	0.060	0.033	0.081	0.027	0.072
P	**%**	na	na	na	na	na
Pb	**%**	0.270	0.174	0.256	0.285	0.247
Re	**%**	0.0006	0.0008	0.0005	0.0006	0.0011
S	**%**	23.5	21.9	21.7	26.0	21.7
Sb	**%**	0.023	0.019	0.020	0.017	0.026
Sr	**%**	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Te	**%**	<0.005	<0.005	<0.005	<0.005	<0.005
Th	**%**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ti	**%**	0.0409	0.0245	0.0322	0.0353	0.0422
V	**%**	0.0007	<0.0005	<0.0005	0.0007	0.0008
Y	**%**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zn	**%**	0.291	0.085	0.224	0.376	0.157
Zr	**%**	0.0006	0.0006	<0.0005	<0.0005	0.0005

1/ Sulfide sulfur determined as the difference between total sulfur and sulfur in the form of sulfate.

13.3.6 Mineralogy for Composites VPMC-2 and VPMC-4

Minus 10 mesh samples of VPMC-2 and VPMC-4 were used to prepare polished sections and these were examined by optical microscopy. The goal was to primarily provide some mineralogical information regarding the sulfide mineralogy. This information was intended to identify the sulfide minerals and their physical characteristics such as size and locking.

The following are excerpts from Hazen's unpublished report (Hazen, 2013c).

VPMC-2 (HRI 54190-28): "The sample consists of abundant gangue minerals mainly quartz, carbonates, iron oxides (magnetite and hematite), with minor amounts of sulfides. The sulfides consist primarily of pyrite with lesser amounts of chalcopyrite, bornite, chalcocite and traces of covellite. The sulfides occur both liberated and locked with the gangue and with each other. The size of the copper sulfides varies between a few microns up to about 800 µm, averaging 50-150 µm. The average size of the locked copper sulfides is about 40-80 µm. A micron-sized inclusion of gold was observed in bornite."

VPMC-4 (HRI 54190-30): "The majority of the sample consists of gangue minerals mainly quartz, carbonates, iron oxides (magnetite, hematite) and minor amounts of sulfides. The sulfide content appears to be lower compared to sample VPMC-2 consisting mainly of pyrite with subordinate chalcopyrite, bornite and traces of chalcocite, galena and sphalerite. The sulfides occur both liberated and locked with the gangue and with each other. The size of the copper sulfides varies between a few microns up to about 300 µm, averaging 50-150 µm and the average size of the locked copper sulfides is about 30-80 µm."

They also reported that, "Slightly more than half of the copper sulfides in both samples are locked mainly with gangue and in lesser amounts with the pyrite."

13.3.7 Recommendations

Consideration should be given to proceed with a more detailed development program which would help to define optimal metallurgical performance. The following are recommendations for further testwork.

1. The parameters for rougher flotation need more testing with regard to primary grind size, flotation kinetics and reagent types/additions.
2. The current losses of copper and gold values into the rougher tails need to be characterized and whether it is possible to reduce these losses.
3. Very fine regrinding prior to cleaner flotation has been shown to be beneficial but more work is required to give a better understanding of the regrind size and its effect on downstream cleaner flotation. This should be a very important aspect of any future testing.
4. Future investigation of both rougher and cleaner flotation will require mineralogical support to help guide the work and aid with interpretation of results.
5. Additional work is required to better define the cleaner tails cyanide leaching process and provide information regarding time, cyanide concentration, etc., especially on mixed oxide/sulfide samples.

13.4 Kayalı Preliminary Heap Leach Amenability Study (2016)

13.4.1 Introduction

In 2015 Pilot Gold commissioned McClelland Labs in Reno, Nevada (McClelland) to perform metallurgical testing on three drill core composites from the Kayalı deposit and one composite from the Yumradag deposit. Testwork was completed in early 2016 (McClelland, 2016).

A total of 20 core intercepts were shipped to McClelland for the testing program. Core intercepts were composited as instructed by Simmons to produce four core composites (Kayalı-1, Kayalı-2, Kayalı-3 and Yum-1). The scope of work is summarized below.

1. Composite preparation and feed analysis
2. Detailed comminution testwork (Kayalı-1 and Yum-1 only)
3. Bottle roll tests (BRT) on P_{80} = 1.7mm and P_{80} = 75µm feed sizes
4. Head screen analysis
5. Column percolation leach tests (CT) on P_{80} = 12.5mm feeds
6. Tail screen analyses on CT leached/rinsed residues

13.4.2 Core Composite Preparation Procedures and Feed Analyses

Kayalı-1 and Yum-1 core composites were selected for comminution tests by Hazen (Hazen, 2015). Tests conducted were the Modified SMC Test, Bond Work Index (BWi) and Abrasion Index (Ai). Initial sample prep procedures were required to obtain appropriate samples for comminution testing and are summarized below.

1. Combine the content of each respective core intercept to produce the two composites.
2. Spread each composite flat on a cleaned floor and randomly select core pieces from each composite to obtain 12 kg from each for shipment to Hazen for the SMC test series.
3. Stage crush rejects (107 kg - Kayalı-1 and 84 kg - Yum-1) to P_{80}19mm (3/4") and blend and split to obtain 16 kg of each composite for shipment to Hazen for BWi and Ai tests.
4. Save P_{80}19mm rejects (91 kg - Kayalı-1 and 68 kg - Yum-1) for preparation for metallurgical tests and feed analyses.

After initial sample prep, all four composites were prepared using the following procedure.

1. Combine the contents of core intercept bags to prepare the Kayalı-1, 2, 3 and Yum-1 composites.
2. Stage crush each composite in entirety to P_{80} 12.5mm and blend and split to obtain 5 kg for head screen analysis and 40 kg for a CT.
3. Stage crush rejects (K-1, 46 kg; K-2, 16 kg; K-3, 40 kg; Yum-1, 23 kg) to P_{80} 1.7mm and blend and split to obtain 2 kg for BRT at P_{80} 1.7mm, and take the following split weights from each for the following test and feed analyses.
    a. 1 kg for BRT on stage ground P_{80} 75µm feeds.
    b. 200g for MLI assay for triplicate Au and Ag head assays and cyanide shake test on all assay pulp and a sulfur speciation analytical procedure (Leco).
    c. 200g for ALS Minerals for ICP metals analysis (4 acid digestion) and “Classical Whole Rock” analysis (CWR-XRF).

Head assay and cyanide (CN) solubility test results are provided in Table 13.14.

Table 13.14: Head Assay and CN Solubility Test Results, Kayalı Project Core Composites

Composite	Assay Split	Head Grade		CN Sol Au	CN Col Au	Avg Au Rec %
		Au (g/mt)	Ag (g/mt)	G/mt	%	
Kayali-1	A	0.963	1.2	0.91	94.5	89.7
Kayali-1	B	1.01	1.2	0.91	90.1	
Kayali-1	C	1.04	1.3	0.88	84.6	
Kayali-2	A	0.564	1.0	0.53	94	96.7
Kayali-2	B	0.577	1.0	0.58	100.5	
Kayali-2	C	0.555	1.0	0.53	95.5	
Kayali-3	A	0.567	1.8	0.57	100.5	94.9
Kayali-3	B	0.595	1.7	0.58	97.5	
Kayali-3	C	0.668	1.8	0.58	86.8	
Yum-1	A	1.48	0.5	1.43	96.6	93.0
Yum-1	B	1.28	0.5	1.22	95.3	
Yum-1	C	1.15	0.5	1.00	87.0	

Cyanide solubility test gold extractions tended to vary for the triplicate head assay pulps, but are considered within normal limits for the CN shake method used. Data demonstrate that gold values were readily extracted from the pulverized, minus 150 mesh assay pulps.

Sulfur speciation analyses was conducted principally to determine sulfide sulfur content. The Kayalı-3 core composite contained 0.01 wt., pct. sulfide sulfur. The other three core composites contained various percentages of sulfide sulfur (K-1, 0.39%; K-2, 2.16%; Yum-1, 1.41%).

ICP metals analyses were conducted, by ALS Minerals, on each composite feed to determine elemental content. A four acid digestion procedure followed by ICP-AES and ICP-MS analyses was used.

"Classical Whole Rock" (CWR-XRF) results are provided in Table 13.15.

Results show that each composite was high in SiO_2 content. Al_2O_3 and Fe_2O_3 contents were lower, but significant. High loss on ignition for three of the composites was likely caused by oxidation of contained sulfide and carbonate minerals.

Gold and silver head assay results are provided in Table 13.16.

Results show that Kayalı composites were low grade with respect to silver. Consequently, silver data is not discussed in detail in this report. Gold head grades agreed within expected precision limits of greater than 90 percent. The Yum-1 composite was below the precision limit.

Table 13.15: "Classical Whole Rock" Analysis Results, Kayalı Project Core Composites

Metal Oxide	Unit	Composite			
		Kayali-1	Kayali-2	Kayali-3	Yum-1
Al2O3	%	1.65	6.03	0.36	12.85
BaO	%	0.05	0.05	0.01	0.09
CaO	%	0.08	0.09	0.02	0.09
Cr2O3	%	<0.01	<0.01	<0.01	0.02
Fe2O3	%	3.59	6.16	1.45	7.68
K2O	%	0.25	1.06	0.03	0.84
MgO	%	0.06	0.03	0.02	0.06
MnO	%	0.01	<0.01	0.01	<0.01
Na2O	%	0.06	0.33	<0.01	0.17
P2O5	%	0.026	0.133	0.009	0.175
SiO2	%	91.68	76	95.94	69.49
SrO	%	0.01	0.07	<0.01	0.04
TiO2	%	0.63	0.62	0.89	0.69
LOI(1)	%	1.97	8.28	0.28	6.89
Total	%	100.05	98.86	98.99	99.09

1) - Loss on Ignition

Table 13.16: Head assay results and head grade comparison, Kayalı project core composites

Head Grade Determination Method	Kayali Core Composite ID							
	Kayali-1		Kayali-2		Kayali-3		Yum-1	
	Au g/t	Ag g/t	Au g/t	Ag g/t	Au g/t	Ag g/t	Au g/t	Ag g/t
Direct Assay, 1	0.963 1)	1.20	0.564	1.00	0.567 1)	1.80	1.480	0.50
Direct Assay, 2	1.010	1.20	0.577	1.00	0.595	1.70	1.280	0.50
Direct Assay, 3	1.040	1.30	0.555 1)	1.00	0.668	1.80	1.150	0.50
Calc'd., BT, P801.7mm	1.103	1.27	0.578	0.79	0.626	1.59	1.494	0.32
Calc'd., BT, P8075µm	1.100	1.20	0.590	0.85	0.646	1.67	1.224	0.20 1)
Head Screen	0.965	1.09	0.592	0.95	0.601	1.97 1)	1.108	0.21
Calc'd., CT, P80112.5µm	1.091	1.36 1)	0.570	0.69 1)	0.682	1.37	1.293	0.45
Average	1.039	1.23	0.575	0.90	0.626	1.70	1.290	0.38
Max. Deviation from Avg.	0.076	0.13	0.020	0.21	0.059	0.27	0.204	0.18
Simple Precision, pct	92.7	90.4	96.5	76.6	90.6	86.7	86.3	52.6

1) - Maximum deviation from average with this head grade

13.4.3 Direct Agitated Cyanidation (BRT) Procedures and Results

Agitated cyanidation BRT were conducted on each core composite at target $P_{80} = 1.7$mm and $P_{80} = 75$µm feed sizes to determine gold recovery, recovery rate, reagent requirements..

The cyanide leach BRT procedure is summarized below:

1. Slurry the feeds with water to achieve 40 percent solids pulp densities. Measure natural pulp pH's.
2. Slowly add high calcium hydrated lime (HCHL) to adjust the pH of the pulps to between pH 10.6 to 10.8.
3. Add NaCN (0.5 g/L of solution) to the alkaline pulps. Maintain NaCN concentration and pH during the leach cycles.
4. Roll pulps in bottles on the laboratory rolls for 96 hours. Sample pregs at 2, 6, 24, 48, 72 and 96 hours and analyze for Au, Ag, pH, NaCN and dissolved oxygen (DO).
5. Add make-up water, equivalent to that withdrawn, and make-up reagent (if necessary) at the end of each sampling period.
6. After leaching, filter, wash (to non-detected Au and NaCN), dry, weigh and assay leached residues in triplicate for Au and Ag.

After receiving initial BRT results, Simmons requested that the P_{80} = 1.7mm leached/washed residues be re-leached for an additional 96 hours, extending timed kinetic samples at 120, 144, 168 and 192 hours.

Metallurgical test results for the 1.7mm BRT are provided in Table 13.17 and gold leach rate profiles are shown in Figure 13.9. Gold recovery rates were rapid the first 24 hours of leaching, but were slower and fairly constant after 24 hours (through 192 hours). Gold values were still being extracted at an extremely slow rate when leaching was terminated. Rate data indicate that CT leach cycles may be relatively long.

NaCN consumptions were low (<0.02 to 0.16 kg/mt). Lime requirements (lime added) were moderate (<3.4 kg/mt). Metallurgical test results for the 75µm BRT are provided in Table 13.18 and gold leach rate profiles are shown in Figure 13.10.

The 75 micron BRT results show that Kayalı core composites are readily amenable to milling/cyanidation treatment. Gold recovery rates were rapid and extraction was substantially complete in 24 hours. NaCN consumptions and lime requirements were low, <0.20 and <1.6 respectively.

Figure 13.9: BRT Gold Leach Rate Profiles and Re-leach, Kayalı Project Core Composites, P80 1.7mm feeds

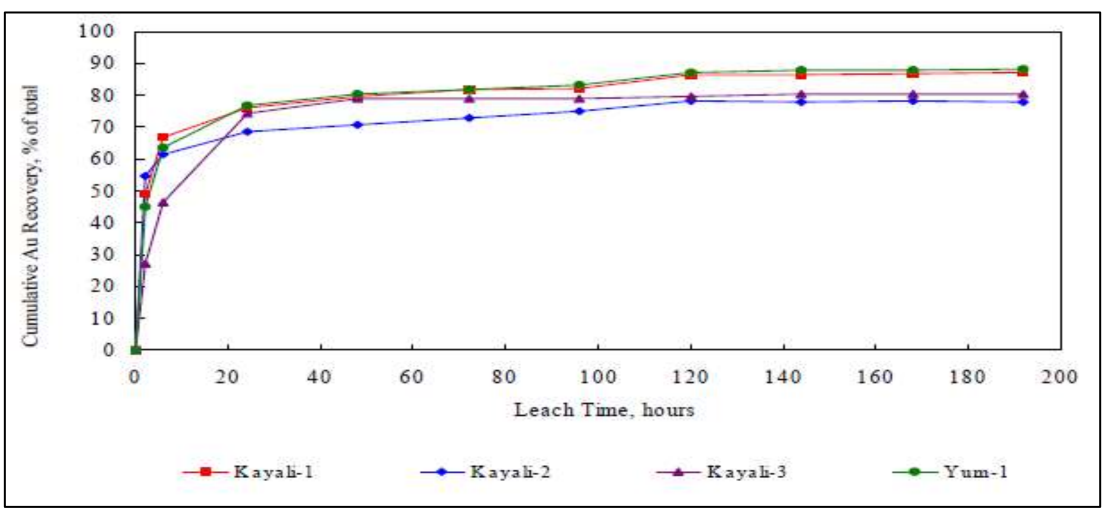


Table 13.17: Overall Metallurgical Results, Bottle Roll Ttests (BRT) and Re-leach, Kayalı Project Core Composites, P80 1.7mm feeds

Metallurgical Results	Kayali Core Composite			
	Kayali-1	Kayali-2	Kayali-3	Yum-1
Extraction, pct of total Au				
in 2 Hours	49.0	54.5	27.0	45.1
in 6 hours	66.9	61.4	46.3	63.7
in 24 hours	75.9	68.7	74.3	76.8
in 48 hours	79.7	70.8	79.1	80.2
in72 hours	81.8	73.0	79.1	81.7
in 96[1)] hours	82.0	75.1	79.1	83.1
in 120 hours	86.5	78.2	79.7	87.1
in 144 hours	86.5	78.0	80.2	87.7
in 168 hours	86.8	78.2	80.5	88.0
in 192 hours	87.1	78.0	80.5	88.3
Extracted, gAu/mt	0.961	0.451	0.504	1.319
Final Tail Assay, gAu/mt[2)]	0.142	0.127	0.122	0.175
Calculated Head, gAu/mt	1.103	0.578	0.626	1.494
Average Head, gAu/mt[3)]	1.039	0.575	0.626	1.29
Final NaCN Consumed, kg/mt	<0.02	0.15	0.09	0.16
Final Lime Added, kg/mt	2	3.4	1.4	3
Final Leach pH	10.8	10.3	10.8	10.7
Natural pH (40% solids)	7.2	6.7	7	6.6
Final DO, ppm	5.2	4.8	3.6	5.3
Ag Extracted, gAg/mt	0.37	0.09	0.59	0.05

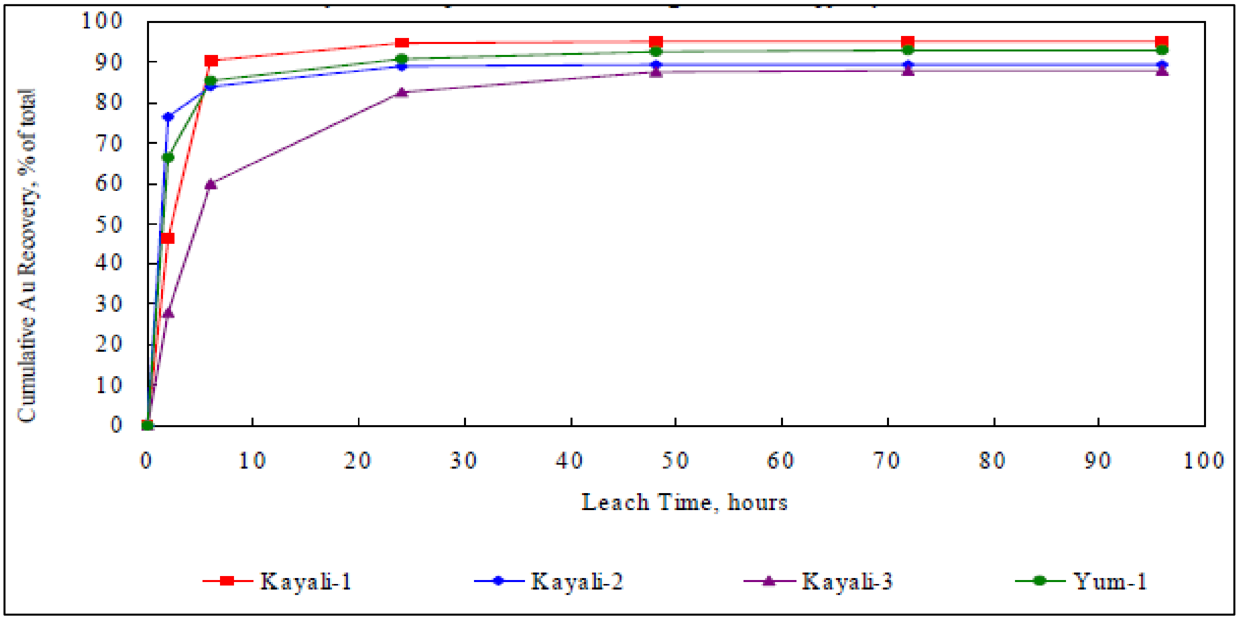
1) - Initaite re-leach after initial test wash, dry, weigh and assay cycle.
2) - Average triplicate final tail assays.
3) - Average of all head grade dererminations.

Table 13.18: BRT Overall Metallurgical Results, Kayalı Project Core Composites, P80 75µm Feeds

Metallurgical Results	Kayali Core Composite			
	Kayali-1	Kayali-2	Kayali-3	Yum-1
Extraction, pct of total Au				
in 2 Hours	46.4	76.3	27.9	66.2
in 6 hours	90.4	83.9	59.9	85.4
in 24 hours	94.8	89.0	82.4	90.8
in 48 hours	94.9	89.2	87.3	92.6
in72 hours	94.9	89.2	87.8	93.0
in 96 hours	94.9	89.2	87.9	93.0
Extracted, gAu/mt	1.044	0.526	0.568	1.138
Final Tail Assay, gAu/mt[1)]	0.056	0.064	0.078	0.086
Calculated Head, gAu/mt	1.100	0.590	0.646	1.224
Average Head, gAu/mt[2)]	1.040	0.576	0.623	1.339
Final NaCN Consumed, kg/mt	0.07	0.09	0.20	0.04
Final Lime Added, kg/mt	1.6	1.6	1.2	1.5
Final Leach pH	10.7	10.7	10.8	10.7
Natural pH (40% solids)	7.8	7.0	7.8	7.1
Final DO, ppm	5.8	5.8	6.2	5.0
Ag Extracted, gAg/mt	0.40	0.18	0.87	0.10

1) - Average triplicate final tail assays.
2) - Average of all head grade dererminations.

Figure 13.10: BRT Gold Leach Rate Profiles, Kayalı Project Core Composites, P80 75µm Feeds



13.4.4 Head and Tail Screen Analysis Procedures

Head screen analyses were conducted on each CT composite at a target P_{80} = 12.5mm feed size to determine gold grade and distribution. Material charges were wet screened to obtain +12.5mm, -12.5+6.3mm, -6.3+1.7mm, -1.7+850µm, -850+425µm, -425+212µm, -212+150µm and -150µm size fractions (8 fractions). Each size fraction was dried, weighed, crushed to -1.7mm if coarser, and assayed for Au and Ag.

Tail screen analyses were conducted on each CT leached/rinsed residue using the same procedure and size fractions as for head screens. Head and tail screen results were used to calculate recovery by size fraction data and can be found in Appendix 4.

13.4.5 Column Percolation Leach Test (CT) Procedures and Results

Column percolation leach tests were conducted on each composite at a P_{80} = 12.5mm crush size to determine gold extraction, extraction rate, reagent requirements, and amenability to heap leach cyanidation processing. CT procedures are summarized below.

1. Add lime (HCHL) to the dry ore charges. Quantity was determined from P_{80} 1.7mm BT's.
2. Agglomerate with water to ensure adequate mixing of lime during column leaching. No additional lime was added as binder.
3. Load ore charges into 10 cm x 3M PVC columns in a manner to minimize particle segregation and compaction. Cure charges in columns for 72 hours before applying leach solution.
4. Apply NaCN solution (0.5 g/L) over the ore charges at a rate of 0.2 Lpm/m^2 (0.005 gpm/ft^2) of column cross sectional area.
5. Measure daily preg volumes by weighing and sample (30 mL) for Au, Ag, pH and NaCN analyses.
6. Pump daily pregs through three stage carbon circuits for adsorption of dissolved values.
7. Daily, measure barren volumes by weighing and sample (30 mL) for Au, Ag, pH and NaCN analyses. Advance carbon columns when value breakthrough to barrens occurs.
8. Assay all loaded carbons for Au & Ag after leaching and rinsing.

9. Add make-up water and NaCN to barrens and recycle to ore charges daily.
10. Initiate intermittent leach cycles (1 week rest/1 week leach) when preg values approach analytical detection limits.
11. After leaching rinse with water until Au, Ag and NaCN are not detected in rinse effluents.
12. After rinsing, re-establish steady state influent and effluent flow and initiate drain down rate
 and volume tests.
13. After drain down, remove leached/rinsed residues from leach columns and obtain residual moisture samples (top, middle and bottom of column charges). Air dry residues and blend/split to obtain appropriate weight for tail screen analyses.

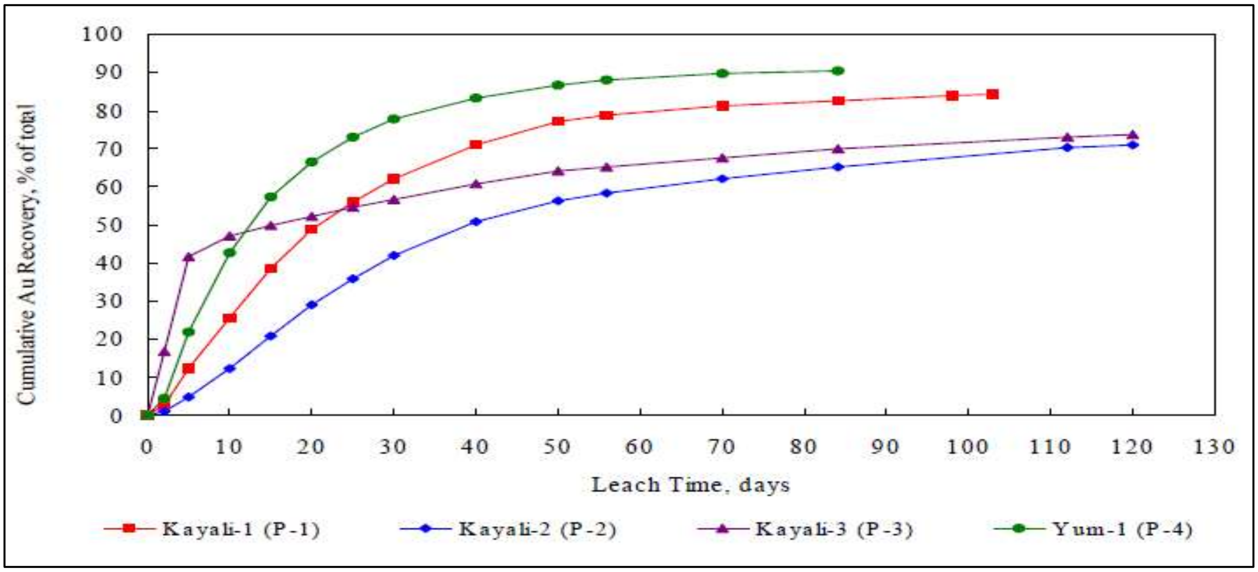
Overall metallurgical results from CT's are provided in Table 13.19. Gold leach rate profiles are shown in Figure 13.11.

Table 13.19: CT Overall Metallurgical Results, Kayalı Project Core Composites, P80 12.5mm Feeds

Metallurgical Results	Kayali Core Composite			
	Kayali-1 (P-1)	Kayali-2 (P-2)	Kayali-3 (P-3)	Yum-1 (P-4)
Extraction: pct of total Au				
1st Preg (day 2)	2.7	1.0	16.8	4.5
in 5 days	12.2	4.9	41.8	21.8
in 10 days	25.5	12.3	47.1	42.7
in 15 days	38.4	20.9	49.7	57.4
in 20 days	48.7	29.1	52.1	66.6
in 25 days	56.1	36.0	54.5	73.1
in 30 days	62.1	41.9	56.8	77.8
in 40 days	71.0	50.9	60.8	83.4
in 50 days	77.0	56.3	64.2	86.8
in 56[1)] days	78.8	58.4	65.2	88.0
in 70 days	81.1	62.0	67.5	
in 84 days	82.5	65.1	69.9	
Ene of Leach	83.9 (day 98)	70.2 (day 112)	73.2 (day 112)	89.8 (day 70)
End of Rinse	84.2 (day 103)	71.1 (day 120)	73.6 (day 120)	90.6 (day 80)
Extracted, gAu/mt	0.919	0.405	0.502	1.174
Tail Screen, gAu/mt	0.172	0.165	0.180	0.122
Calculated Head, gAu/mt	1.091	0.570	0.682	1.296
Avg Head, gAu/mt[2)]	1.039	0.575	0.626	1.290
NaCN Consumed, kg/mt	1.57	1.43	1.39	1.03
Lime Added, kg/mt	1.4	2.5	1.0	2.2
Final Leach pH	10.2	10.4	10.1	10.7
pH After Rinse	10.2	10.3	10.1	10.6
Ag Extracted, gAg/mt	0.16	0.02	0.38	0.02
Tons/Ton[3)]	5.07	5.48	5.52	4.30

1) - Initaite intermittant leach cycle1 (1 week rest, 1 week leach).
2) - Average of all head grade determinations.
3) - Tone of leach solution applied/tons of material leached at termination of leaching.

Figure 13.11: CT Gold leach rate profiles, Kayalı Project Core Composites, P80 12.5mm Feeds



Overall metallurgical results show that Kayalı project core composites Kayalı-1, Kayalı-2 and Kayalı-3 and Yum-1 are amenable to heap leach processing at the target P_{80} = 12.5mm crush size. Respective gold recoveries were 84.2, 71.1, 73.6 and 90.6 percent in 80 to 120 days of leaching and rinsing.

Gold recovery rates were variable for the four composites. Minor levels of gold were still being leached at the end of leaching for Kayalı-3 and Yum-1.

NaCN consumptions were moderate (<1.6 kg/mt), but should be much lower during commercial heap leaching (typically 25-35% of laboratory consumption rates). Lime requirements were moderate (<2.5 kg/mt) and were sufficient to maintain protective alkalinity above pH 10 during the leach cycles.

Head and tail screen analysis results and recovery by size fraction data are provided in Appendix 4. Review of the gold recovery by size fraction data indicates that the Kayalı-3 composite might benefit from finer crushing.

13.4.6 Column Test Physical Charactics and Drain Down Rate Data

Column saturation and retained moisture data is summarized in Table 13.20.

Table 13.20: CT Physical Ore Characteristics, Kayalı Project Core Composites, P80 = 12.5mm Feed Size

			Moisture, wt. %				
Composite	Test Number	Comp charge Wt, Kg	To Saturate	For Agglomeration	Retained	Bulk Density, mt/m^3	
						Initial	Final
Kayali-1	P-1	37.75	19.4	3.9	6.0	1.409	1.409
Kayali-2	P-2	37.99	19.5	4.9	6.5	1.429	1.429
Kayali-3	P-3	37.70	17.8	2.5	3.2	1.598	1.598
Yum-1	P-4	37.72	20.8	5.8	6.8	1.556	1.556

Agglomeration and retained moistures were low. Saturation moistures were fairly typical for fine crushed heap leach materials and indicate the quantity of leach solution required to “wet” new heap material to the point of steady state influent and effluent flow. CT charges did not "slump" during leaching and rinsing.

Drain down rate and volume test data for each CT are provided in Table 13.21. The eight hour drain sample for P-1 was inadvertently not obtained.

Drain down rates were fairly rapid for the four CT leach/rinse residues and drain down was essentially complete in about 48 hours. These data indicate the residue feeds are of little solution holding capacity should a major storm evet or power interruption occur.

Table 13.21: Drain Down Rate and Volume Test Results, Column Leached Residues, Kayalı Project Core Composites, P80 = 12.5mm Feeds

	Composite											
Drain Time, hours	Kayali-1 (P-1)			Kayali-2 (P-2)			Kayali-3 (P-3)			Yum-1 (P-4)		
	Liters	Cum L/mt	Rate L/hr/mt	Liters	Cum L/mt	Rate L/hr/mt	Liters	Cum L/mt	Rate L/hr/mt	Liters	Cum L/mt	Rate L/hr/mt
0.08	0.01	0.28	3.44	0.007	0.19	2.34	0.007	0.19	2.39	0.008	0.21	2.62
0.25	0.014	0.64	1.46	0.017	0.64	2.69	0.017	0.65	2.68	0.015	0.61	2.35
0.5	0.022	1.23	1.18	0.024	1.27	2.50	0.025	1.31	2.66	0.022	1.19	2.31
1	0.047	2.47	1.23	0.041	2.35	2.16	0.041	2.39	2.16	0.047	2.43	2.49
2	0.097	5.03	1.28	0.107	5.15	2.80	0.102	5.08	2.69	0.102	5.14	2.71
4	0.223	10.95	1.48	0.163	9.45	2.15	0.141	8.82	1.87	0.119	8.30	1.58
8				0.139	13.09	0.91	0.123	12.09	0.82	0.103	11.03	0.68
24	0.343	20.03	0.38	0.135	16.65	0.22	0.111	15.05	0.18	0.124	14.31	0.21
48	0.062	21.66	0.03	0.043	17.78	0.05	0.026	15.73	0.03	0.038	15.31	0.04
72	0.002	21.72	0.00	0.007	17.96	0.01	0.001	15.77	0.00	0.006	15.47	0.01
96										0.002	15.51	0.00
120												

13.4.7 Conclusions/Observations

- Kayalı project material types represented by the four core composites are amenable to heap leach processing at a P_{80} = 12.5mm crush size.
- Gold extraction rates were moderate.
- Reagent requirements were generally low to moderate. NaCN consumptions from CT's should be substantially lower (25-35% of laboratory NaCN consumptions) in commercial practice.
- Good gold extractions were achieved during BRT at P_{80} = 75µm milled feeds, although the resource gold grade may be too low to justify milling.
- Based on the gold extraction response in column leach head and tails screen analysis data, Kayalı materials may be amenable to heap leaching at a crush size coarser than P_{80} = 12.5mm, although at reduced gold recovery.

Based on initial encouraging results it is recommend that additional column leach testwork be conducted on variability composites representative of material types at Kayalı to optimize crush size and to obtain necessary head grade vs. gold extraction variability, geo-metallurgical, geotechnical, environmental and other data necessary to aid in future stage studies.

13.5 KCD Metallurgical Testing (2013-2014)

At KCD, the mineral process and metallurgical testing summary comprises two primary phases of work conducted at Hazen Research, Inc. in Golden, Colorado, USA in 2013 and 2014

(Simmons 2014a, 2014b). Phase 1 (2013) focused upon cyanide leaching of oxide and mixed materials and on flotation of predominant sulfide gold and copper resources containing minor silver. Phase 2 (2014) focused upon a large silver zone of mineralization overlying the higher-grade gold/copper zone and comprised flotation of this material followed by oxidative treatment of the concentrate to recover the refractory gold and silver from this zone of mineralization. Simmons and Gathje were contracted to oversee and direct the physical work conducted at Hazen.

13.5.1 KCD Phase 1 (2013)

Composite sampling: The metallurgical scope-of work and investigation was derived from core drilling conducted by Liberty Gold in 2012. Starting from an initial selection of 132 mineralized core intervals, a total of sixteen master composites were selected for diagnostic metallurgical testing including: direct cyanide leaching, carbon-in- leach (CIL), flotation, and flotation followed by leaching of concentrate and tail products. Twelve additional variability composites (discreet core intervals) were selected for comminution test work (Hazen 2013e).

Table 13.22 identifies the source of each Master Composite and Table 13.23 presents head assay characterization for each.

Table 13.22: Master Composites

Comp #	X-section	Geology/Lithology	Type
MC-1	450/500	CZ & HWA	Oxide
MC-3	450/500	LASH	Oxide
MC-8	250	CZ & HWA	Oxide
MC-9	250	LASH	Oxide
MC-14	150	LATASH1	Oxide
MC-15	150	BLIT	Oxide
MC-2	450/500	CZ & HWA	Mixed
MC-4	450/500	LASH & LATASH1	Mixed
MC-10	250	LASH	Mixed
MC-16	150	BLIT	Mixed
MC-5	450/500	LASH	Sulphide
MC-6	450/500	LATASH1	Sulphide
MC-7	450/500	BLIT	Sulphide
MC-11	250	LASH	Sulphide
MC-12	250	LATASH1	Sulphide
MC-13	250	BLIT2	Sulphide

Table 13.23: Master Composite Head Assay Characterization

		ACME Lab Head Assays							Hazen Research Inc.									XRD Results			
Master Comp	Lith	Au g/t	AuCN g/t	AuCN %	Ag g/t	AgCN g/t	AgCN %	S= %	Au gpt	Ag, gpt AA	Ctot %	CO3 %	Corg %	Fe %	As ppm	Cu %	S= %	Major	Subordinate	Minor	Trace
								OXIDE MATERIALS													
1	CZ/HWA	0.033	0.02	60.6%	82.2	61.88	75.3%	0.57	0.05	82.5	0.02	0.14	0.01	2.46	201	0.006	0.23	Qtz	Al, Ka	Ba, Ja	An
3	LASH	0.033	0.05	N/A	32.8	21.2	64.6%	0.54	0.04	36.5	0.48	0.15	0.46	1.39	360	0.008	0.39	Qtz		Al, Ka	An, Ja
8	CZ/HWA	0.011	0.01	90.9%	13.8	10.5	76.1%	0.35	0.15	19.0	0.03	0.26	0.00	3.31	107	0.007	0.59	Qtz	Al, Ka		An, Ja He
9	LASH	1.335	0.47	35.2%	6.6	4.49	68.0%	0.52	1.08	11.0	0.29	0.18	0.27	1.11	77	0.017	0.28	Qtz		Ka	Al, Py, Mi, Ja
14	LATSH1	0.828	0.48	58.0%	37.3	33.82	90.7%	1.37	0.74	39.5	0.04	0.07	0.03	3.69	227	0.083	1.29	Qtz	Ka	Al, Py	An
15	BLIT	1.281	1.21	94.5%	15.5	13.02	84.0%	1.36	1.10	17.0	0.03	0.07	0.02	3.44	211	0.037	1.48	Qtz	Ka	Al, Py	Mi
								MIXED MATERIALS													
2	CZ/HWA	<0.005	0.02	N/A	50.7	22.93	45.2%	5.15	0.09	52.0	0.02	0.19	0.00	6.48	222	0.018	5.40	Qtz	Al, Ka	Py, Ja	An
4	LASH/LATASH1	0.046	<0.01	0.0%	26.3	17.42	66.2%	1.33	0.04	30.0	0.38	0.31	0.34	2.78	356	0.018	1.99	Qtz	Al, Ka	Ja	Py
10	LASH	0.207	<0.01	0.0%	28.0	18.91	67.5%	1.94	0.22	34.0	0.30	0.34	0.27	3.09	113	0.026	2.00	Qtz		Al, Ka, Py	Mi, Ja, An
16	BLIT	1.525	1.36	89.2%	32.7	33.78	103.3%	1.04	1.33	36.5	0.04	0.05	0.04	4.57	616	0.041	1.34	Qtz	Ka	Al, Py	An
								SULFIDE MATERIALS													
5		0.045	0.01	22.2%	41.0	17.68	43.1%	0.43	0.04	43.0	0.93	0.27	0.90	3.66	898	0.574	4.36				
11	LASH	1.732	0.13	7.5%	21.4	9.42	44.0%	6.63	1.45	20.0	0.98	0.15	0.97	5.99	825	0.386		Qtz	Py	Ka, Al	Mi, Ca
6	LATSH1	0.089	0.00	0.0%	45.0	11.86	26.4%	8.05	0.09	45.0	0.10	0.26	0.07	7.32	512	0.256	8.47	Qtz	Py	Al, Ka	An
12	LATSH1	0.918	0.39	42.5%	13.8	5.57	40.4%	5.21	0.82	12.0	0.11	0.09	0.10	4.54	690	0.353	5.61	Qtz	Py	Ka, Al	Mi, Ca
7	BLIT	0.48	0.13	27.1%	37.2	7.77	20.9%	8.11	0.48	39.5	0.02	0.26	-0.01	7.10	578	0.224	8.59	Qtz	Py, Ka	Al	An, Ja
13	BLIT2	2.975	2.24	75.3%	9.5	4.52	47.6%	5.20	2.91	9.0	0.02	0.08	0.01	4.16	1075	0.473	5.31	Qtz	Py, Ka	Al	Mi, Ca

Qtz = quartz; Al = alunite; Ja = jarosite; Py = pyrite; Ka = kaolinite; Ba = barite; An = anatase; Ca = calcite; Mi = microcline

Quartz: SiO_2, Alunite:$KAl_3(SO_4)2(OH)6$, Kaolinite; $Al_2Si_2O_5(OH)4$, Barite: $BaSO_4$, Jarosite: $KFe_3(SO_4)2(OH)6$, Pyrite: FeS_2, Calcite: $CaCO_3$, Anatase: TiO_2; Microcline: $KAlSi_3O_8$

Comminution Testing: Twelve variability composites (discrete core intervals) were selected from the set of 132 for Modified SMC Testing, Bond Ball Mill Work Index (BMWi) and Abrasion Index (Ai) testing (Hazen 2013e). See Table 13.24 for a summary of comminution testing results.

Table 13.24: Summary of Comminution Testing Results

Composite ID	Material Zone	Type	SMC Parameters				Bond Parameters	
			sg	A x b	DW_i kWh/m^3	t_a	BW_i kWh/t	A_i gms
Comp #56	BLIT1	sulfide	2.55	99.7	2.56	1.01	16.2	0.5159
Comp #48	BLIT2	sulfide	2.47	100.9	2.45	1.06	10.8	0.2751
Comp #107	CZ	oxide	2.34	68.8	3.40	0.76	20.7	0.8026
Comp #108	CZ	oxide	2.18	101.7	2.14	1.21	14.0	0.3648
Comp #90	CZ/BLIT3	oxide	2.50	100.3	2.49	1.04	11.5	0.2315
Comp #74	HWA/CZ/BLIT3	oxide	2.41	62.3	3.88	0.67	15.9	0.3859
Comp #30	LATASH1	sulfide	2.83	51.4	5.52	0.47	20.8	1.1742
Comp #77	LATASH1	sulfide	2.63	35.5	7.36	0.35	24.5	1.2933
Comp #44	LASH	mixed w/C	2.59	33.6	7.67	0.34	23.9	1.1498
Comp #51	LASH	ox w/C	2.54	30.5	8.37	0.31	24.6	1.2839
Comp #52	LASH	mixed w/C	2.59	37.6	6.87	0.38	23.9	1.2251
Comp #76	LASH/LATASH1	sulfide	2.68	33.7	7.94	0.33	23.6	1.3456

The comminution results in Table 13.24 indicate a broad range of Sag Mill (SAG) material hardness, ball mill work index, and abrasion characteristics. In general, BLIT and CZ materials are soft and moderately abrasive; LASH materials are hard and very abrasive and LATASH1 is in the middle for hardness and also very abrasive.

Cyanide Leaching on Oxide & Mixed Composites: he metallurgical performance of the five master composites was evaluated under direct cyanide leaching at grind P_{80}=75 µm (one test at $37\mu m$) and P_{80}=1,700 µm (Table 13.25) to determine the suitability of these materials to Au and Ag extraction methods, using conventional cyanide leaching practice.

Table 13.25: P80 particle size vs. Au and Ag Extraction (%)

Comp #	CN Leach Test #	ID	C(org) %	Grind P80 µm	Calc Hd Au g/t	Au Ext %	Calc Hd Ag g/t	Ag Ext %	NaCN kg/t	CaO kg/t
MC-1	CN-1	oxide	0.0	75	0.051	ABDL	82.1	62.5	0.23	1.6
MC-1	CN-13	oxide	0.0	1700	0.030	ABDL	81.6	30.4	2.12	2.8
MC-1	CN-11	oxide	0.0	37	0.083	ABDL	82.2	60.5	<0.05	5.0
MC-9	CN-4	oxide	0.25	75	1.140	52.6	6.9	51.2	0.77	0.8
MC-9	CN-14	oxide	0.25	1700	1.103	41.2	6.1	25.6	0.05	2.3
MC-14	CN-5	oxide	0.03	75	0.823	74.9	36.7	72.5	1.48	0.6
MC-14	CN-15	oxide	0.03	1700	0.837	71.4	39.2	37.2	0.67	1.7
MC-15	CN-6	oxide	0.0	75	1.182	91.6	15.2	60.6	0.59	1.0
MC-15	CN-16	oxide	0.0	1700	1.352	91.9	16.0	34.4	0.61	1.9
MC-16	CN-10	mixed	0.0	75	1.443	88.8	35.5	66.0	0.55	1.3
MC-16	CN-17	mixed	0.0	1700	1.574	86.0	34.7	33.0	0.32	2.1

ABDL	- Au grade at or below detection limit - not enough Au in heads to be of economic significance

The Au extraction (%) vs. P_{80} particle size response, shown in Figure 13.12, is fairly flat for the five KCD Master Composites that were tested. The flat response of feed P_{80} particle size vs. Au extraction is a good indication of commercial suitability for both crushed and run-of-mine (ROM) conventional heap leaching practice for low grade resources.

The Ag extraction (%) vs. P_{80} particle size response, shown in Figure 13.13, exhibits a steep (negative) response to increasing particle size, indicating low Ag extractions will be expected when subjectged to conventional crushed or ROM heap leaching practice.

Figure 13.12: P80 Particle Size vs. Au Extraction (%)

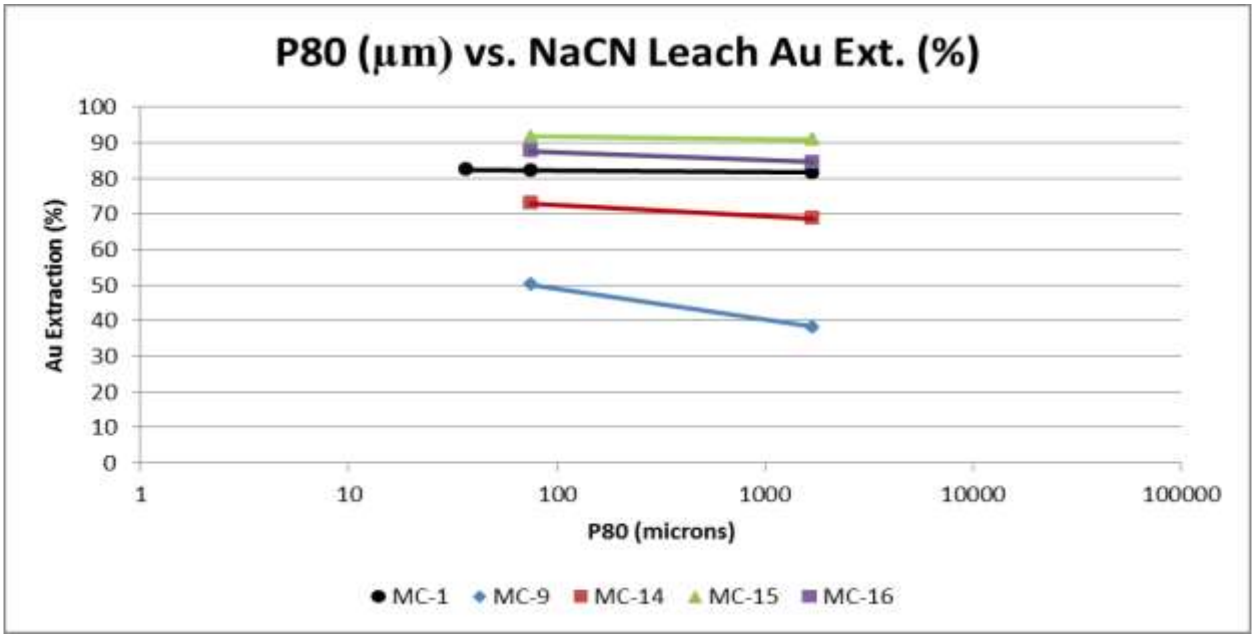
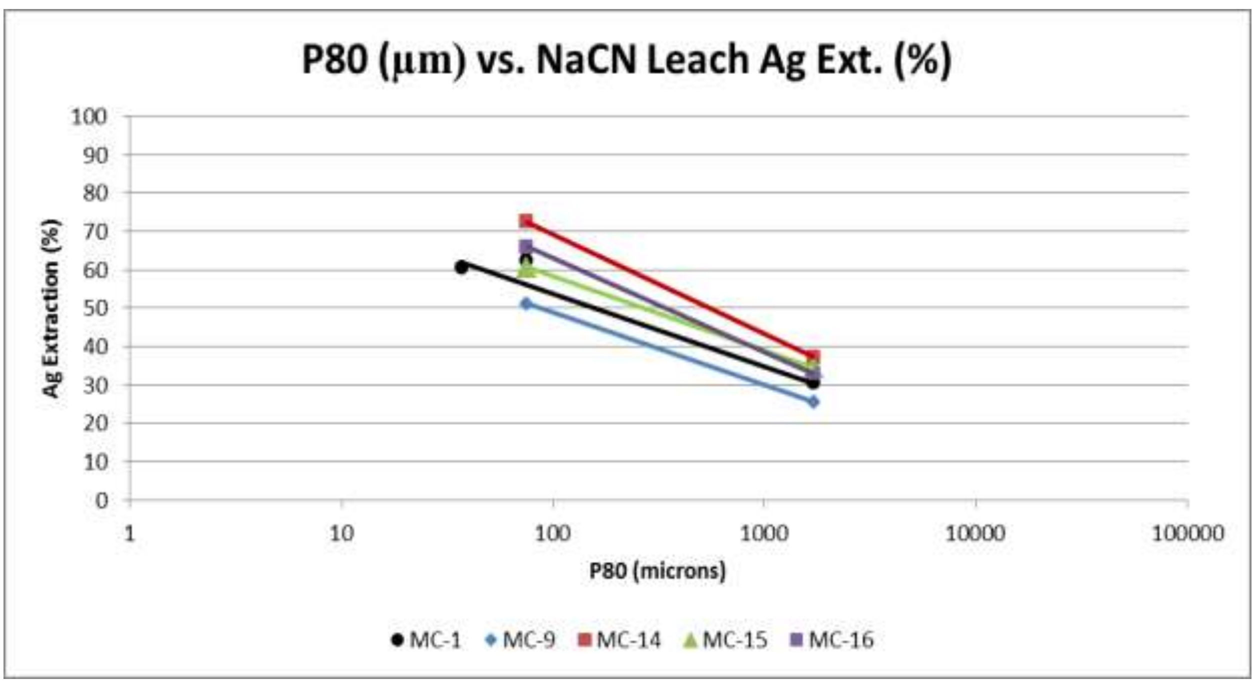


Figure 13.13: P80 Particle Size vs. Ag Extraction (%)



The following conclusions can be extracted from Table 13.25 and figures 13.12 and 13.13:

- Gold in oxide and mixed material types can be cyanide leached. Initial testeing show a flat response to particle size vs. gold extraction %, indicating amenability to conventional milling and/or heap leaching practice.
- Gold extractions ranged from 41-92 %.
- Silver in oxide and mixed material types can also be extracted by cyanide leaching; however, unlike gold, there is a marked decline in extraction %, with increasing particle size, indicating that silver mineralization will not be suitable for heap leaching.
- Silver extractions ranged from 30-73%; however, there is potential to improve silver extraction by various methods which have not been evaluated in this early stage of testing, such as: finer grinding, higher cyanide strength, lead nitrate addition, elevated temperature leaching, and pressure cyanidation.

A separate preg-robb analysis was conducted on all 16 oxide, mixed and sulfide master composite samples. Organic carbon ($C_{(org)}$) content ranged from 0.0% – 0.99% and the measured preg-robb ranged from -1.7% to 12.4%, indicating low preg-robbing potential.

Scoping Level Flotation Testing: Six of the master composites were identified as sulphide rock types and were the primary focus of flotation testing; however, one set of flotation tests was conducted on the oxide/mixed rock type composites.

Four flotation campaigns were conducted in Phase 1 as follows:

1. Initial scoping tests on sulphide rock types.
2. Additional tests on BLIT / BLIT2 master composites.
3. Flotation and cyanidation of oxide and mixed rock type composites.
4. Cyanidation of intermediate flotation products.

Additionally, a preliminary BLIT / BLIT2 flotation model was developed. There was not enough information to do the same for LASH / LATASH1materials, but average test data is provided for comparison.

Three BLIT composites of variable Cu, Au and Ag grade were tested to determine flotation response to feed grade. Results are shown in Table 13.26.

BLIT material type (the major rock type for high-grade sulfide Cu, and Au mineralization) testing indicated reasonable response to conventional flotation practice with:

- Rougher and scavenger flotation concentrate recoveries ranging from 87-96% for Cu, 78-93% for Ag and 89-95% for Au.
- 1st cleaner concentrate recovery ranges from 73-90% for Cu, 33-75% for Ag and 60-87% for Au.
- 2nd cleaner concentrate recovery ranges from 69-88% for Cu, 28-72% for Ag and 54-85% for Au.

LASH / LATASH1 material type (a modest volume rock type for sulphide Cu, Au and Ag mineralization) testing response, conducted on a single master composite blend of these two materials, is poor based upon limited testing:

- $C_{(org)}$ is present in some LASH / LATASH1 materials.
- Rougher and scavenger flotation concentrate recovery averaged 85.8% for Cu, 80.2% for Ag and 69.5% for Au.
- 1st cleaner flotation concentrate recovery averaged 61.9% for Cu, 29.9% for Ag and 27.7% for Au.
- 2nd cleaner flotation concentrate recovery averaged 55.9% for Cu, 25.2% for Ag and

23.6% for Au.

Table 13.26: BLIT Flotation Results

Summary of Flotation Results for BLIT Composites MC250-22, 23, and 24														
Flotation		Assays						Distribution						
Product &	Wt	Cu	Ag	Au	Fe	As	Sb	Cu	Ag	Au	Fe	As	Sb
Composite	%	%	gpt	gpt	%	%	%	%	%	%	%	%	%
Calc'd Feed													
MC250-22		0.190	7.1	0.57	4.13	0.044	0.027						
MC250-23		0.219	7.6	1.27	4.32	0.062	0.032						
MC250-24		0.994	12.9	6.27	3.87	0.242	0.097						
Ro Conc													
MC250-22	6.90	2.17	47	5.65	17.2	0.490	0.332	78.9	45.5	68.0	28.7	76.8	84.8
MC250-23	6.65	3.26	61	20.6	17.4	0.813	0.424	86.5	50.2	82.0	26.6	71.9	74.3
MC250-24	10.07	9.31	107	57.0	16.3	2.26	0.883	94.3	83.7	91.5	42.4	94.4	92.1
1st Clnr Conc													
MC250-22	1.97	7.03	118	17.4	25.1	1.61	1.11	73.0	33.0	59.8	12.0	72.4	81.0
MC250-23	2.32	9.28	143	56.4	23.0	2.27	1.19	83.0	40.9	74.7	12.1	68.6	70.9
MC250-24	3.81	23.6	255	142.9	16.7	5.76	2.25	90.4	75.4	86.9	16.4	90.7	88.8
2nd Clnr Conc													
MC250-22	1.15	11.4	174	27.1	25.2	2.64	1.82	69.0	28.3	54.4	7.0	69.0	77.5
MC250-23	1.99	11.9	192	68.0	23.4	2.85	1.53	84.1	45.9	74.3	10.7	71.0	70.9
MC250-24	2.94	29.7	316	180.5	13.9	7.24	2.84	87.9	72.2	84.5	10.6	88.1	86.5

All sulphide material types contain copper minerals with elevated levels of arsenic (As) and antimony (Sb). A significant portion of the contained As and Sb report to flotation concentrates, in concentration levels between 2-8%. The commercial concentrate smelting market is limited for concentrates containing elevated levels of As and Sb. Once sufficient flotation optimization test work is completed, a concentrate marketing study should be commissioned to evaluate potential placement of the KCD deposit concentrates.

In the event that KCD deposit concentrates cannot be sold into the commercial smelting market, on-site concentrate processing treatment options should be investigated. On-site concentrate treatment will most likely involve hydrometallurgical treatment, involving oxidation of sulphide minerals and economic recovery of Cu, Au and Ag. Potential treatment options should include: acid pressure oxidation (Cu, Au and Ag concentrates and whole ore), alkaline pressure oxidation (Ag and Au concentrates), Acid Albion Leach (Cu concentrates), Neutral Albion Leach (Au and Ag concentrates), others as necessary

The oxide and mixed rock type master composites were tested to determine their response to rougher flotation followed by cyanidation of the individual rougher concentrate and tail products. The purpose was to determine how such a process might compare to leaching of whole rock. Results obtained were similar to those from whole rock leaching. However, if the flotation concentrate is oxidized before cyanidation, there is potential to significantly improve overall extractions in the range of gold by ~10% and silver by ~11%.

13.5.2 KCD Phase 2 (2014)

Introduction: The KCD Project high-grade Cu/Au mineralization is overlain by a blanket of oxide, transition and sulfide silver mineralization. The transition and sulfide Ag resource is partially refractory to conventional cyanide leaching practice. In early 2014 metallurgical testing was initiated to investigate options for exploiting the overlying Ag resource. This work was commissioned at Hazen Research, Inc. (Gathje, 2014 and Hazen 2013d).

The metallurgical testing scope-of-work (SOW) focused on two main objectives:

1. Flotation of the sulfides to investigate the potential for making a high grade Ag concentrate.
2. Oxidative treatment of flotation concentrates to enhance Ag extraction and improve overall Ag recovery.

Phase 2 Composite Selection and Head Assays: Composite samples selected for Phase 2-2014 work were taken from the original samples generated for Phase 1. These samples were placed in freezer storage, and upon delivery in 2012, were in excellent condition for Phase 2 testing.

The KCD sulfide and transition Ag resource is a refractory resource, i.e., Ag mineralization is locked in sulfides, iron oxides and silica and in some material types, mildly preg-robbing organic carbon is present. For the Hazen SOW it was decided to composite sulfide material types that did not contain organic carbon, as this would be the least complex simple material for testing. See Table 13.27 for composite selection and head assays.

Table 13.27: Silver Sulphide Composite Make-up and Head Assays

	Comp	8TD	G907		G6	G907		1DX	2A Leco	2A-C	2A-C	2A11	1DX	G907	G908	
Comp	Wt	Ag	AgCN	AgCN	Au	AuCN	AuCN	S	TOT/C	C/ORG	C/GRA	CO2	Cu	CuCN	CuCN	CuCN
ID	Kg	PPM	PPM	%	PPM	PPM	%	%	%	%	%	%	PPM	%	PPM	%
Sulfide Material - No Corg																
Comp 13	2.5	**36**	17.3	47.9%	0.006	<0.01		3.38	0.02	<0.02	0.02	0.03	62	0.002	20	32.4%
Comp 21	2.5	**46**	36.5	79.4%	0.005	<0.01		8.78	0.03	<0.02	0.02	0.05	332	0.025	250	75.2%
Comp 25	1.0	**35**	13.2	37.7%	0.143	0.12	83.9%	1.17	0.12	<0.02	0.09	0.05	236	0.002	20	8.5%
Comp 33	5.0	**31**	11.6	37.3%	<0.005	<0.01		4.11	0.02	<0.02	0.02	0.04	153	0.004	40	26.2%
Comp 34	3.7	**49**	38.4	78.4%	<0.005	0.05		5.17	0.02	<0.02	0.02	0.03	249	0.017	170	68.4%
Comp 36	1.6	**140**	61.0	43.5%	<0.005	0.02		4.7	0.03	<0.02	0.04	<0.02	184	0.004	40	21.7%
Comp 39	13.4	**62**	38.8	62.5%	<0.005	<0.01		7.15	0.04	<0.02	0.05	0.04	638	0.047	470	73.6%
Comp 40	3.9	**36**	11.0	30.6%	0.006	<0.01		7.28	0.03	<0.02	0.02	0.03	258	0.01	100	38.8%
Wt Avg.	**33.5**	**52.9**	**30.1**	**55.4%**	**0.006**	**0.01**	**2.6%**	**6.04**	**0.03**	**0.0**	**0.04**	**0.04**	**380**	**0.0**	**247**	**64.9%**

Flotation Testing

The flotation test program was completed in three steps:

1. Step 1 - Preliminary tests to determine flotation response using a flow sheet established during testing in 2013.
2. Step 2 - Large scale flotation to generate concentrate to be used for oxidation/cyanidation testing.
3. Step 3 - Additional tests to determine if flotation Ag recovery and/or grade could be increased.

Step 1 – Preliminary Flotation Tests: Preliminary tests focused on rougher flotation response using a standard grind P_{80} of 75µm (200 mesh), using potassium amyl xanthate (PAX) and Cytec 404 as the sulfide collectors. For additional details of the flotation testing phases refer to the report (Gathje, 2014). Preliminary rougher and scavenger flotation results are summarized in Table 13.28.

Table 13.28: Summary of Preliminary Rougher Flotation Tests

Summary of Preliminary Rougher Flotation Tests Including Direct Cyanidation (Bottle Roll) of the Rougher Tails (All Tests at P80 = 75µm)															
	Rougher Concentrate							Rougher Tail							
		Assay			Distribution			Assay 1/		CN Residue		NaCN	Extraction 3/	
Test	Wt	Ag	Au	St	Ag	Au	St	Ag	Au	Ag	Au	Consm'd	Ag	Au
3024-39-	%	gpt	gpt	%	%	%	%	gpt	gpt	gpt	gpt	kg/mt 2/	%	%
1	29.43	140	0.26	18.4	76.8	78.6	na	17.5	0.03	9	0.11	0.80	48.6	ABDL
2	34.91	131	0.22	16.1	83.8	74.6	na	13.5	0.04	7	0.05	0.70	45.4	ABDL
3	32.59	130	0.34	16.8	78.8	84.3	na	17.0	0.03	8	0.05	0.78	51.2	ABDL
Average	**32.31**	**133**	**0.27**	**17.1**	**79.8**	**79.2**		**16.0**	**0.03**	**8**	**0.07**	**0.76**	**48.4**	**ABDL**

1/ Average for duplicate tail splits (as reported on flotation data sheets).
2/ Consumption based on leach feed, i.e rougher flotation tails.
3/ Extraction based on calculated mass balance. The designation "ABDL" indicates some gold values for the cyanidation products were at or below the detection limit and this precluded the ability to generate a mass balance.

General observations from Step 1 include:

1. Natural pH of the sample was low (pH<4).
2. Grind P_{80} = 75µm was too coarse to liberate many of the sulfides.
3. Finer grinding likely required to liberate the remaining sulfides.

Step 2 - Bulk Concentrate Production for Oxidative Leaching: The project schedule for starting the oxidative/leach part of the SOW did not allow for additional flotation optimization testing after completing the Step 1. To keep the project on schedule a bulk rougher flotation concentrate was generated using the same Step 1 grind P_{80} = 75µm. The flotation pH was adjusted with lime to ~9.5 and a more selective reagent scheme was used in an attempt to produce a higher grade concentrate for oxidative treatment. (Using the higher pH turned out to be a poor choice as flotation at natural pH achieved significantly higher Ag recovery into rougher flotation concentrate. See Table 13.29, Phase 3 test results.)A total of 20 kilograms of sulfide composite was floated and 5.1 kg of rougher concentrate was produced.

Table 13.29: Summary of Results for Floatation of KCD Sulphide Ag Composite

		Assays							
Flot Product	Wt	Ag	Au	As	Cu	Fe	Sb	S(t)	$S^=$
	%	gpt	g/t	%	%	%	%	%	%
Rougher Conc	**25.72**	**144**	**0.08**	**0.06**	**0.132**	**17.8**	**0.133**	**20.6**	**18.8**
Rougher Tail	74.28	15.8	0.01	21	0.013	2.44	0.02	2.25	1.61
Calc. Feed	100	48.8	0.028	0.031	0.044	6.39	0.049	6.97	6.03
Assayed Feed		52	0.025	0.031	-	-	0.041	6.87	5.31
		Distribution, %							
Rougher Conc	**25.72**	**75.9**	**73.5**	**49.4**	**77.4**	**71.6**	**69.3**	**76**	**80.2**
Rougher Tail	74.28	24.1	26.5	50.6	22.6	28.4	30.7	24	19.8

The hoped for selectivity, from higher pH, did not materialize and a major portion of the concentrate was visually observed to consist of pyrite. It was concluded that a significant portion of the pyrite is naturally activated. Refer to Step 3 section of this section of the report for the results of follow-up flotation testing.

Step 3 – Flotation Optimization Testing: The lack of selectivity during concentrate production was of concern and prompted a short series of additional tests to investigate options for improving silver recovery and grade. In total 12 additional batch flotation tests were conducted in three phases as follows:

- **Phase 1** - Consisted to four tests using the standard grind size P_{80} of 75µm with the exception of Tests 7 at 53µm. One test was done at natural pH and the other three utilized lime for pH modification.
- **Phase 2** - Consisted of five tests, one test was done at natural pH and the other four utilized lime for pH modification. For the first time these tests introduced the use of much finer grinding; one test at P_{80} of 53µm but the others ranged in size from 16µm to 40µm.
- **Phase 3** - Consisted of three tests, all at natural pH using either a 16µm or 28µm grind size.

The test results for all three phases are summarized in Table 13.30.

Results from Phase 1 and 2, tests 4 and 8, highlight the superior performance of rougher flotation at natural pH. Rougher flotation recovery was double that of any test that used lime for pH control and at any grind size.

Phase 3 testing focused upon flotation at natural pH. Test 15, used a water wash, after grinding, to remove the low pH solution and then proceeded to flotation at natural pH = 5.3 (without any lime addition). This technique achieved lower silver recovery, approximately 8-12% less than what was achieved at natural pH < 4.

A summary of comparative silver recovery, for flotation at natural pH vs. pH adjusted with lime, is shown in Figure 13.14.

Although silver recovery was significantly improved at natural pH, selectivity was not. Final rougher + scavenger concentrate grades were similar. Therefore, the following section on oxidative treatment and cyanide leaching is considered to be representative for any Ag resource rougher and or rougher + scavenger flotation concentrate produced at KCD.

Concentrate Oxidation Testing: The bulk sulfide flotation concentrate contained 18.8% sulfide sulfur. The high sulfide sulfur grade, combined with the relatively low Ag grade (144 g/t), necessitated the adoption of partial oxidation testing approach to determine if the Ag mineralization could be oxidized preferentially over pyrite. Partial-oxidation options selected for testing include:

- Alkaline Pressure Oxidation (APOX) at P_{80} = 25µm
- Neutral Albion Leach (NAL) at P_{80} = 10µm
- Caustic (NaOH) Oxidation (P_{80} = 25 µm)
- Caustic (NaOH) Oxidaiton (P_{80} = 10 µm)
- Trona ($Na_3(CO_3)(HCO_3)\cdot 2H_2O$) Oxidation ($P_{80}$ = 25 µm)

The bulk concentrate produced for oxidation testing was split into portions sufficient for each technology tested.

The testing conditions and results are reported in detail in: Summary Technical Report on Exploration Acitvities, 2012-2014, for the TV Tower Exploration Property, Canakkale, Western Turkey. January 23, 2015, 259 p., (Pilot Gold, 2015). Only summary results for the five partial oxidation technologies tested are provided in this report.

Retention Time (Hrs) vs. Sulfide Sulfur Oxidation %, for the five partial oxidation options tested, is shown in Figure 13.15.

Figure 13.14: Impact of Lime Addition on Ag Recovery

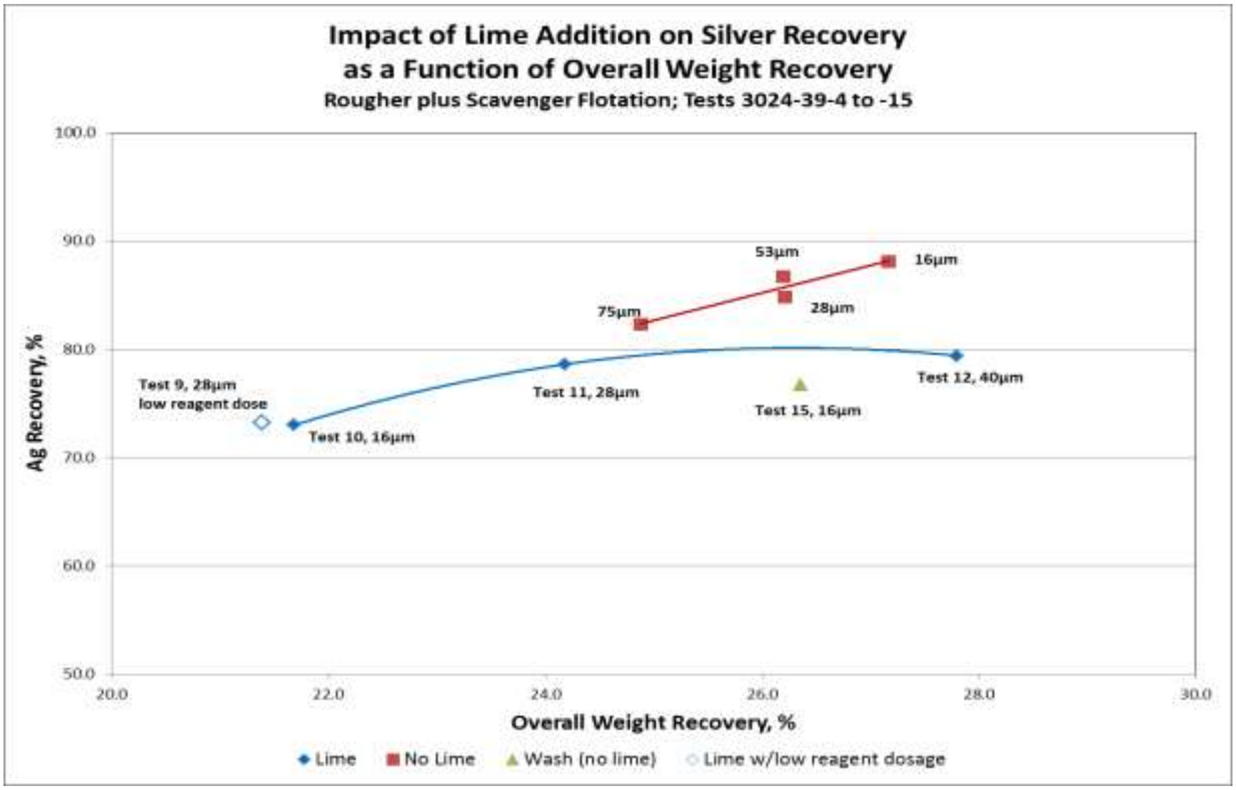


Table 13.30: Selective Floatation of Ag from KCD Sulphide Composite

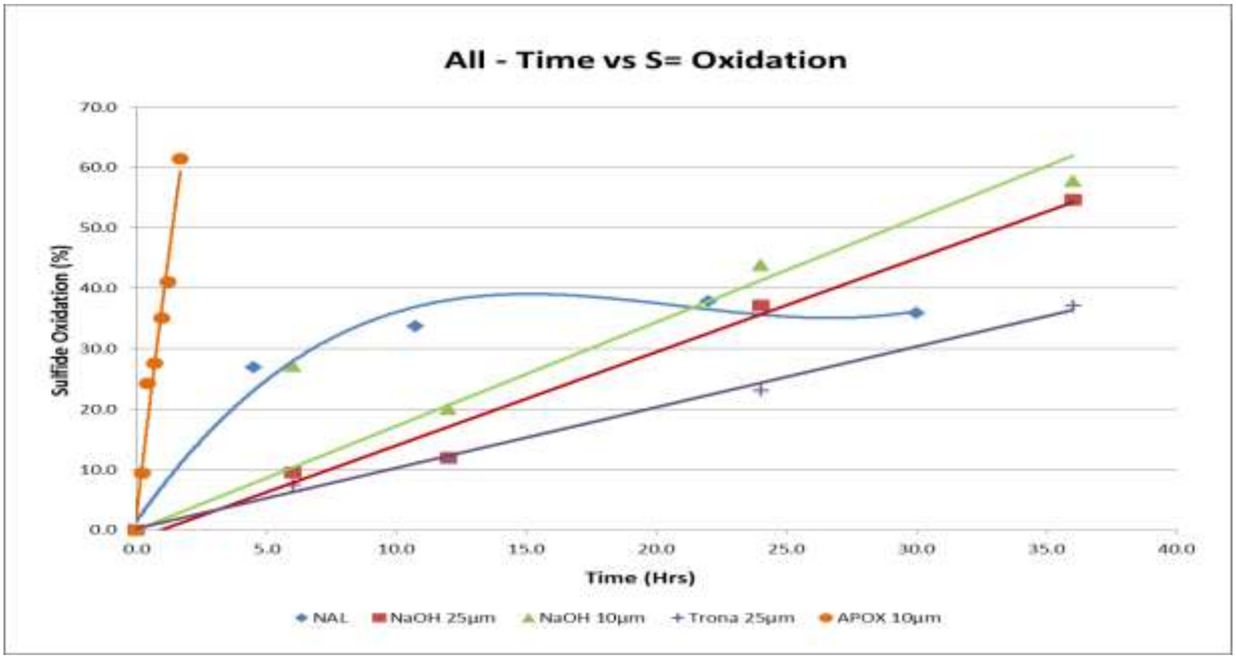
Selective Flotation of Silver from KCD Sulfide Composite

Test Series 3024-39; Stainless steel grinding media

Test	Grind		Lime		Calc'd	Rougher Concentrate [2/]			Ro	Scav Concentrate [3/]			Scav	Concentrate CN Extraction, % [4/]			Rough/Scav Flotation			Scavenger Tail CN		
3024-39	P80 µm	minus 25µm	gpt	pH [1/]	Feed Ag, gpt	Wt %	Ag, gpt	**Ag Recov, %**	Tail Ag, gpt	Wt %	Ag, gpt	**Ag Recov, %**	Tail Ag, gpt	RC	SVC	Overall	% Wt	Ag, gpt	**Ag Recov, %**	Ag Extrc'n, %	Residue Ag, gpt	Recovery % [7/]
PHASE 1																						
4	75	51	0 [5/]	3.5	50.9	13.60	246	**65.7**	12	11.28	75	**16.6**	12				24.88	168	**82.3**	37.3	9	**6.6**
5	75	49	500	7.1	50.4	6.74	249	**33.3**	36	na	na	**na**	na							38.5	23	**25.7**
6	75	50	6500	10.1	49.6	8.16	197	**32.4**	37	na	na	**na**	na							32.3	26	**21.8**
7	53	62	5750	10.0	51.2	5.82	305	**34.7**	36	na	na	**na**	na							32.4	26	**21.1**
PHASE 2																						
8	53	62	0 [5/]	3.7	50.1	21.89	179	**78.1**	14	4.30	100	**8.6**	9	26.1	38.7	23.7	26.19	166	**86.7**	33.7	8	**4.5**
9	28	76	1630	9.9	50.0	8.30	219	**36.3**	35	13.09	141	**36.9**	17	39.4	21.9	22.4	21.39	171	**73.2**			
10	16	93	880	7/8.6	52.2	10.55	172	**34.8**	38	11.13	179	**38.2**	18	12.9	28.0	15.2	21.68	176	**73.0**			
11	28	76	540	8.5	51.4	6.96	209	**28.3**	40	17.22	150	**50.3**	15	29.1			24.18	167	**78.6**			
12	40	59	1050	8.5	50.9	8.89	214	**37.4**	35	18.90	113	**42.0**	15	7.9			27.79	145	**79.4**			
PHASE 3																						
13	16	93	0 [5/]	3.6	48.8	24.33	173	**86.1**	9	2.83	34	**2.0**	8				27.16	158	**88.1**	31.7	6	**3.8**
14	28	76	0 [5/]	3.6	48.4	22.73	174	**81.5**	12	3.48	46	**3.3**	10				26.21	157	**84.8**	27.1	6	**4.1**
15	16	93	0 [6/]	5.3	47.5	21.48	149	**67.5**	20	4.87	90	**9.2**	15				26.35	138	**76.7**			

1/ Approximate average pH during rougher flotation
2/ Rougher flotation was selective and intended to maximize silver sulfide flotation and minimize pyrite flotation.
3/ Scavenger flotation used copper sulfate for activation of the pyrite and a xanthate as the collector to maximize flotation of all residual sulfides from the rougher tail.
4/ Extraction of silver using a 24 hour shake flask cyanide leach.
5/ Ground ore went directly to flotation; no pH modification.
6/ Ground ore was water washed 3 times by thickening/decantation; no pH modification
7/ Incremental overall recovery achieved by cyanidation of the final float tails.

Figure 13.15: Oxidation Options: Retention Time (Hrs.) vs. Sulfide Sulfur Ooxidation (%)

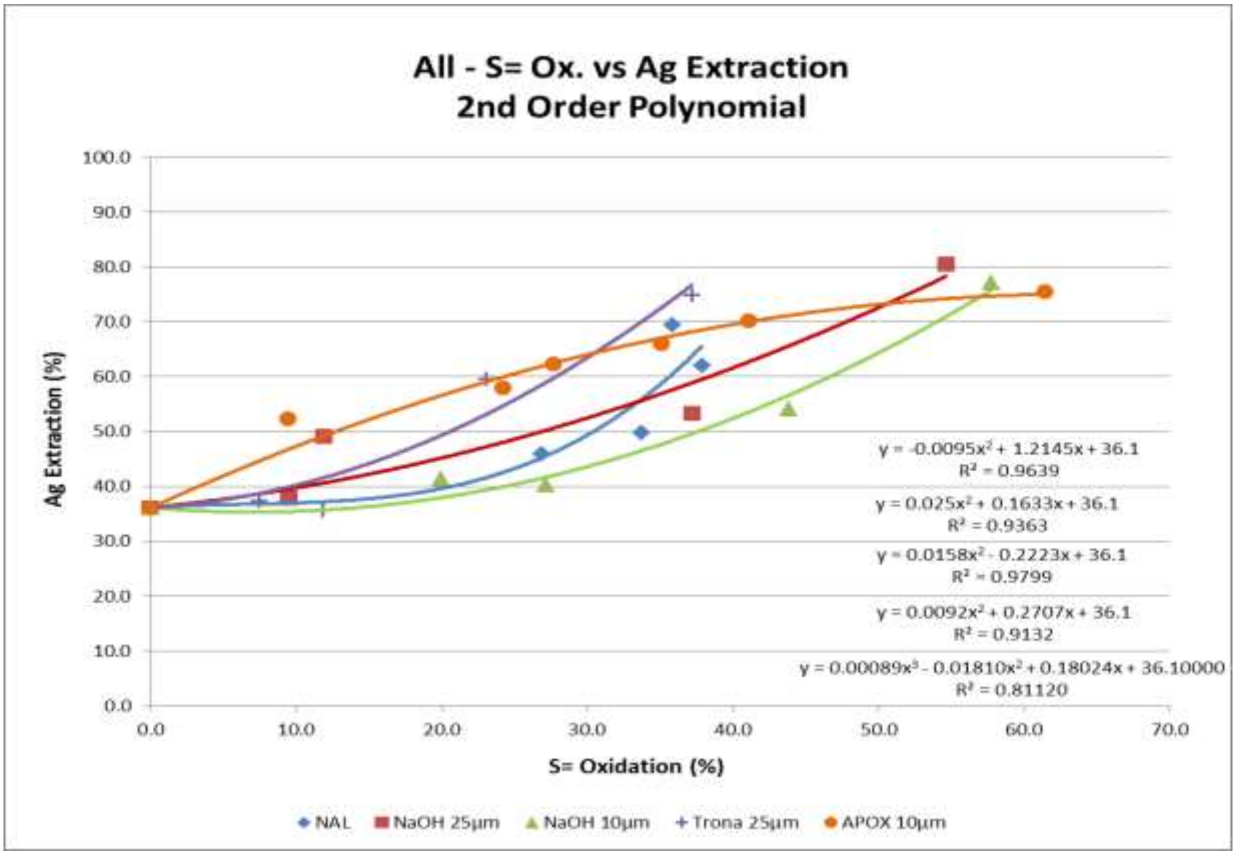


Observations from Figure 13.15 include:

- APOX vs. NAL: APOX is able to achieve higher oxidation levels at a higher P_{80} grind size (25µm) vs. NAL oxidation at 10µm.
- NAL oxidation slows down and stops at approximately 20 hours at 40% sulfide sulfur oxidation.
- NaOH vs. Trona: Highest sulfide sulfur oxidation is achieved using NaOH at P_{80} = 10 or 25µm. Trona sulfide sulfur oxidation is slower and lower, when compared to NaOH, but since no optimization work has been carried out it is not known if the relative sulfide sulfur oxidation % performance can be improved.
- The ability of Na based chemical oxidation (NaOH and Trona) over calcium based (NAL) oxidation, at atmospheric pressure, is demonstrated by the plateau in the NAL oxidation test vs. the continuous straight line progression of sulfide sulfur oxidation when using NaOH or Trona.

Sulfide Sulfur Oxidation (%) vs. Ag Extraction (%), for the five partial oxidation technologies is show in Figure 13.16.

Figure 13.16: Oxidation Options: Sulfide Sulfur Oxidation (%) vs. Ag Extraction (%)



Observations from Figure 13.16:

- APOX and NaOH oxidation options achieve significantly higher sulfur oxidation, levels than NAL or Trona.
- APOX Ag extractions might be significantly higher at a finer grind size P_{80} < 25 µm.
- Trona has a better response to Ag Extraction (%) compared to the other oxidation technologies, at significantly lower sulfur oxidation levels.

Recommendations: The percent sulfide sulfur oxidation vs. Ag extraction results demonstrated in Figure 13.15 does not indicate that silver mineralogy is preferentially oxidized for cyanide leach recovery. Follow-up work, using the five oxidation methods tested, is not recommended.

Acid Pressure Oxidation was not tested because it will produce argentojarosite ($AgFe^{3+}_3(SO_4)_2(OH)_6$). The silver in argentojarosite is not leachable in cyanide solution without a lime boil. A standard lime boil process would be applied to the acid pressure oxidation residue slurry, at atmospheric pressure, 90°C, lime addition to pH > 11.5 for a few hours, or until the argentojarosite is digested. Significantly higher cyanide leach Ag extractions may possible using this technology, although at higher cost.

14. MINERAL RESOURCE ESTIMATES

14.1 Introduction

In this report, first-time Mineral Resource Estimates ("MREs") are presented for four deposits within the Kayalı and Karaayı licenses in the southern portion of the TVT Tower Project (Kayalı, Yumrudağ, Hilltop and Valley) and one in the northeastern portion of the Project (Columbaz). They are based on data provided up to and including February 9th, 2021, the effective date of this report. Resource estimation methodologies, results and validations are presented below.

A maiden resource estimate for the KCD deposit was published in Hetman et al (2014). This estimate remains the current resource estimate for the KCD deposit and was not modified for this report. It is summarized at the end of this section, and the reader is refered to Hetman et al (2014) for a full description of the estimate.

The MRE presented herein has been prepared following the guidelines of the Canadian Securities Administrators' National Instrument 43-101 and in conformity with generally accepted "CIM Estimation of Mineral Resource and Mineral Reserves Best Practices" guidelines. The mineral estimate was prepared by Mehmet Ali Akbaba, P.Geo., Deputy General Manager of DAMA, an independent QP as defined in NI 43-101. Micromine version 2021 software was used to facilitate the resource estimation process.

14.2 South TV Tower Resource Estimates

The TV Tower property contains multiple zones of epithermal gold +/- silver +/- copper and gold-copper +/- Mo porphyry style mineralization hosted a large, highly-altered volcanic center or centers. Four areas of copper and gold mineralization were discovered by surface prospecting and drilling on the Kayalı and Karaayı tenures: Kayalı, Yumrudağ, Hilltop and Valley. This part of TV Tower is characterized by the oxidized high-sulphidation gold mineralization immediately overlying gold-copper porphyry mineralization, with a zone of supergene chalcocite intermittently present immediately beneath the oxidized gold zone. Thus, one deposit may consist of two or more ore types, each with a different cut-off depending on the application of likely beneficiation techniques.

The mineral resource estimates for each deposit are based on the current drill hole database, interpreted geology and fault structures, and topographic data. Three-dimensional geologic modelling, semi-variogram analysis, estimation of mineral resources and block model validation were completed using Micromine version 2020.

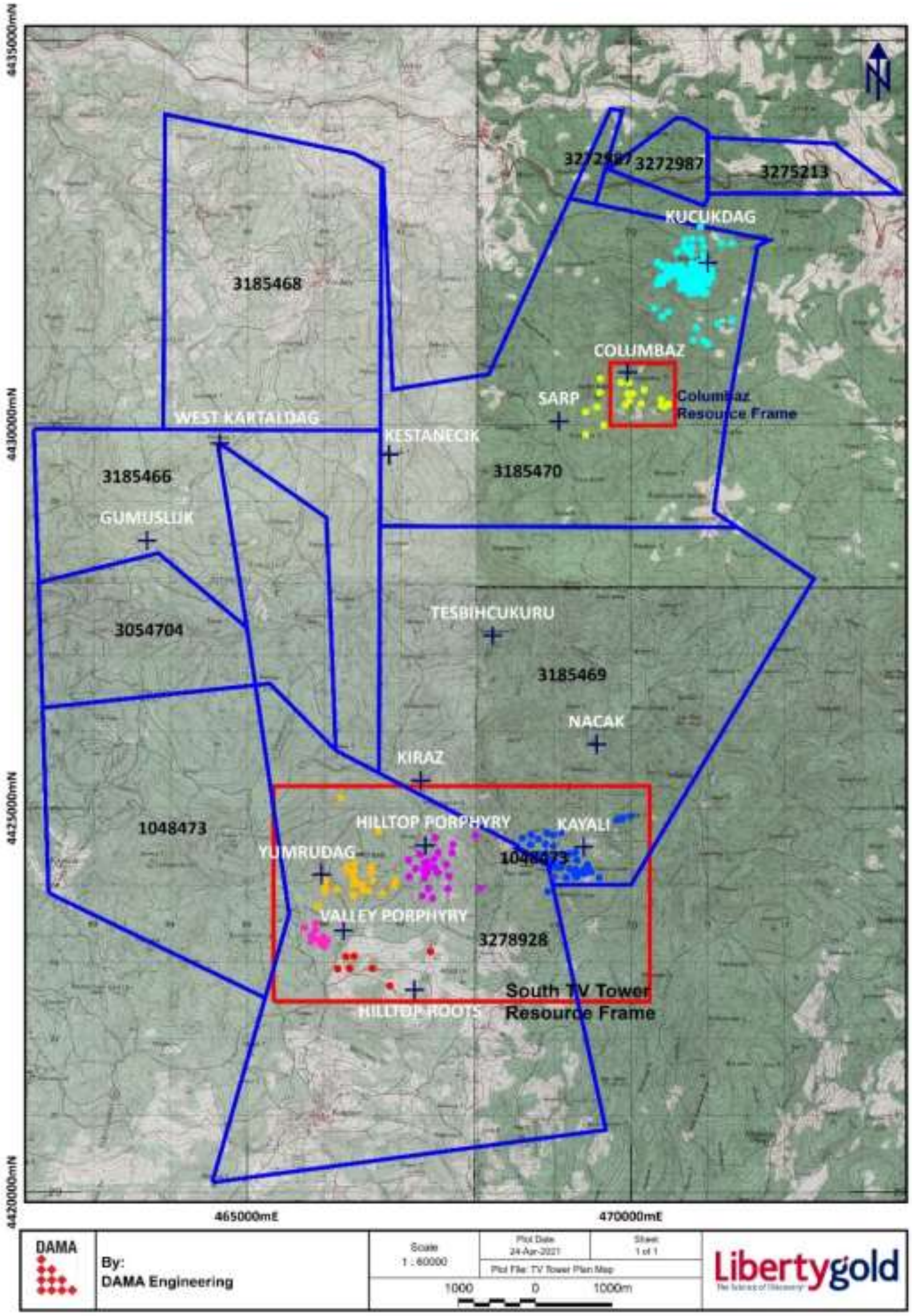
14.2.1 Drill Hole Database for the Resource

Liberty Gold prepared the drill hole database for TV Tower and it is determined to be of good quality, as discussed in Section 11. The drill hole data for the TV Tower Project was delivered as a Microsoft Access database that contains collar locations, drill hole survey orientations, sample intervals with gold, silver and copper assays in ppm, geologic intervals with rock types, alteration, and oxidation state, and specific gravity values. DAMA believes the drill hole assay data are sufficiently reliable to support the estimation of gold and copper mineral resources.

The exploration database for the Kayalı and Karaayı license areas, part of the larger TV Tower property database, contains drill hole information from numerous companies listed in **Table 14.1** and current as of the effective date of this report. The drill holes were validated during import with minor corrections made. After filtering out holes that were well outside the area covering Kayalı, Hilltop, Yumrudağ ("Yumru") and Valley deposits, and flagging 100 drill holes for exclusion, the resulting drill hole dataset contains 122 holes and is summarized in **Table 14.1 and Table 14.2**.

Figure 14.1 shows the position of the holes relative to the geologic model boundary for the resource.

Figure 14.1: Drill holes in the South TV Tower (Kayalı and Karaayı) and Columbaz resource area used in geologic models and resource estimation.



Note: Red rectangle outlines the boundary of the geologic and block models.

Table 14.1: Drill holes in the South TV Tower license areas used for resource estimation

Hole ID-Prefix	Company	Targets	# of holes
KAD	Chesser	Hilltop, Kayalı, Yumrudağ	10
KC	Tuprag	Yumrudağ, Hilltop	8
KRD	Liberty Gold	Bull Zone, Hilltop, Hilltop Roots, Valley, Yumrudağ	60
KYD	Teck	Kayalı	28
KYD	Liberty Gold	Kayalı	16
TOTAL			**122**

Table 14.2: Database Record Summary

Item	Records
Collar	144
Downhole Survey	846
Assay	20,235
Lithology	2,299
Redox	20,179
Density	3,098

All tables include 20 drillholes prepared by Eurogold and 2 drillholes that did not reach target depth.

14.2.2 Geologic Modelling

DAMA constructed 3D geological models of the four deposits deposits in five domains using various sources of information from drill holes and geological mapping. A list of the domains used is shown in **Table 14.3.**

Table 14.3: Summary of domain coding used in the Kayalı-Karaayı Mineral Resource Estimate

Domain	Domain Description
100	Hilltop-Yumru Gold Oxide Zone
200	Hilltop-Yumru Gold Copper Zone
300	Valley Gold Copper Zone
400	Kayalı Gold Oxide Zone
500	Kayalı Supergene Copper Zone

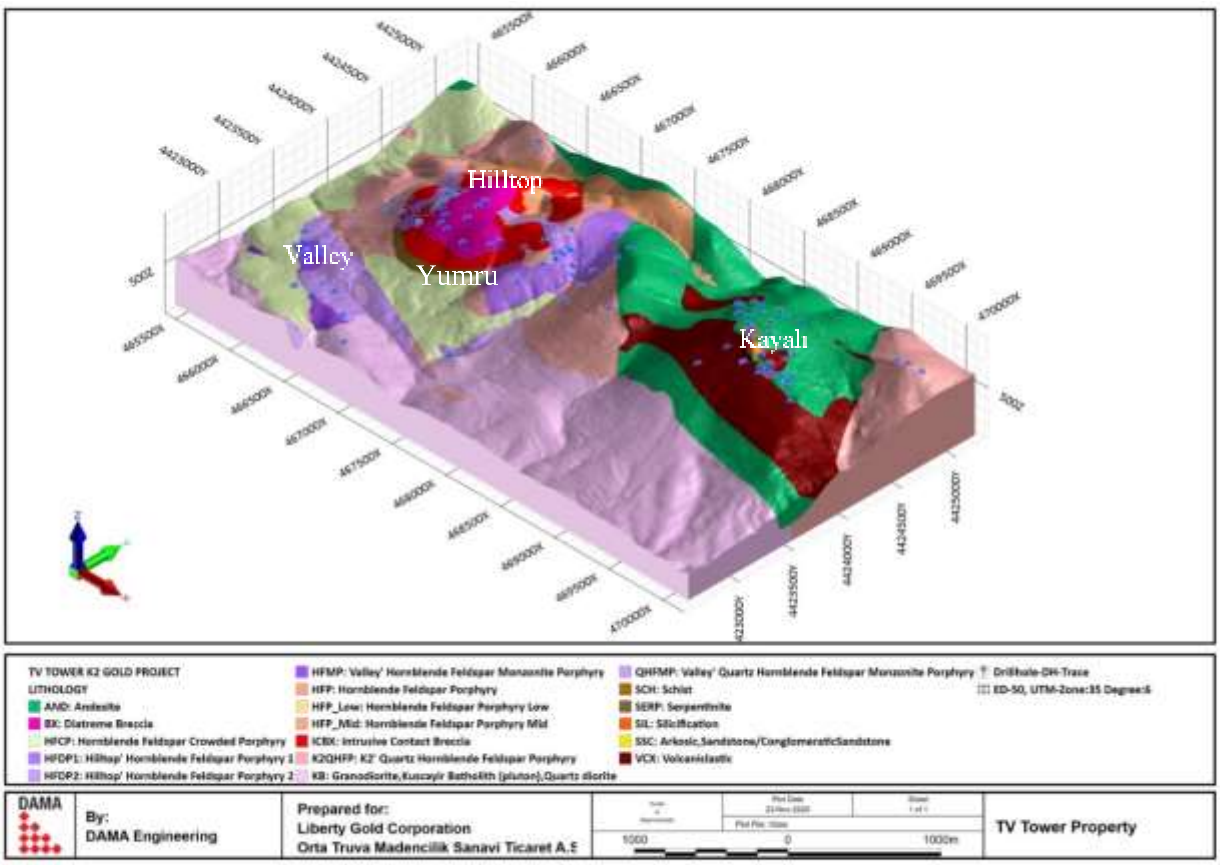
Implicit modelling with the Micromine 2020 software package was used to prepare three-dimensional (“3D”) models of the four deposits. These models were validated in close collaboration with the Project geologists from Liberty Gold, and were manually adjusted as required. The mineralized zones outlined to date were used to constrain data for capping and geostatistical analysis, and modelling and preparation of MREs were undertaken only for those mineralized domains or zones.

The resource estimation was further constrained by a 3D geologic model consisting of multiple rock types including the monzonite porphyry, volcanic and volcaniclastic rocks, diatreme breccia and other less common rock types.

Boundaries of mineralized domains were interpreted on cross sections plotted with drill data (geology and assay values), topography and surface geology, and then compiled into solid shapes constructed on a nominal threshold grade. Threshold values used were: 0.1 g/t Au for Hilltop, Yumru and Kayalı oxide mineralized domains; 0.1 g/t AuEq for Hilltop, Yumrudağ and Valley Au-Cu mineralized domains; and 0.05 % Cu for Kayalı supergene mineralized domains. In the modelling of mineralization, only single drill hole intersections having grades greater than or equal to threshold grade and a minimum 5 m width were utilized to delineate the mineralized zones. In order to maintain continuity between drilling fences, unmineralized intercepts (i.e., with a grade lower than threshold grade) up to 5 m were included within larger intercepts as internal waste. Extrapolation was generally up to half of the average drill hole spacing. In rare cases, to achieve continuity, the wireframes were allowed to pass through intersections below the threshold grade if above threshold grade intersections were found on either side. All solid models were cut to the topography, and the final geological model was reviewed by Liberty Gold for approval and has been deemed acceptable by DAMA for use in determining the Mineral Resource Estimate.

The 3D geological model of the four mineralized zones is shown in **Figure 14.2**. The model is also interpreted on cross sections shown **Figure 14.4 to 14-6**.

Figure 14.2: 3D Geological model of the South TV Tower area, oblique view to the northwest



The Yumrudağ deposit comprises a large residual quartz ledge hosted in volcaniclastic rocks, cut by west-northwest-striking structural ribs and intruded by a diatreme body. Yumrudağ is interpreted as an oxidized high sulphidation epithermal gold deposit overlying a zone of supergene copper, likely derived from oxidation of enargite, and transitional into gold-copper porphyry mineralization. The deposit was modelled in two estimation domains, i.e., a surficial high-grade gold-oxide zone and a deeper gold-copper zone (**Figure 14.4**).

Table 14.4: Rock codes used in the South TV Tower Mineral Resource Estimate

Lith Code	Description
AND	AND: Andesite
VCX	VCX: Volcaniclastic
SIL	SIL: Silicification
SCH	SCH: Schist
HFP	HFP: Hornblende Feldspar Porphyry
HFDP2	HFDP2: Hilltop' Hornblende Feldspar Porphyry 2
HFDP1	HFDP1: Hilltop' Hornblende Feldspar Porphyry 1
KB	KB: Granodiorite, Kuscayir Batholith (pluton), Quartz diorite
ICBX	ICBX: Intrusive Contact Breccia
HFP_Low	HFP_Low: Hornblende Feldspar Porphyry Low
HFP_Mid	HFP_Mid: Hornblende Feldspar Porphyry Mid
BX	BX: Diatreme Breccia
SSC	SSC: Arkosic, Sandstone/ConglomeraticSandstone
SERP	SERP: Serpentinite
HFMP	HFMP: Valley' Hornblende Feldspar Monzonite Porphyry
K2QHFP	K2QHFP: K2' Quartz Hornblende Feldspar Porphyry
QHFMP	QHFMP: Valley' Quartz Hornblende Feldspar Monzonite Porphyry
HFCP	HFCP: Hornblende Feldspar Crowded Porphyry

The Hilltop porphyry deposit is located immediately beneath and to the east of the Yumrudağ deposit, where a polyphaser, intermediate intrusive body is partially exposed in a gully. Surface rocks are quartz-sericite altered with abundant quartz stockwork and malachite staining. At depth, sericite alteration gives way to biotite alteration with fracture-controlled sericite and chalcopyrite. The Hilltop porphyry deposit was modeled in two estimation domains: a shallow, gold oxide zone and a higher-grade copper-gold zone reflecting the presence of hypogene porphyry mineralization partially overprinted by a chalcocite blanket (**Figure 14.3**).

Figure 14.3: Plan view of the geological model of the South TV Tower deposits.

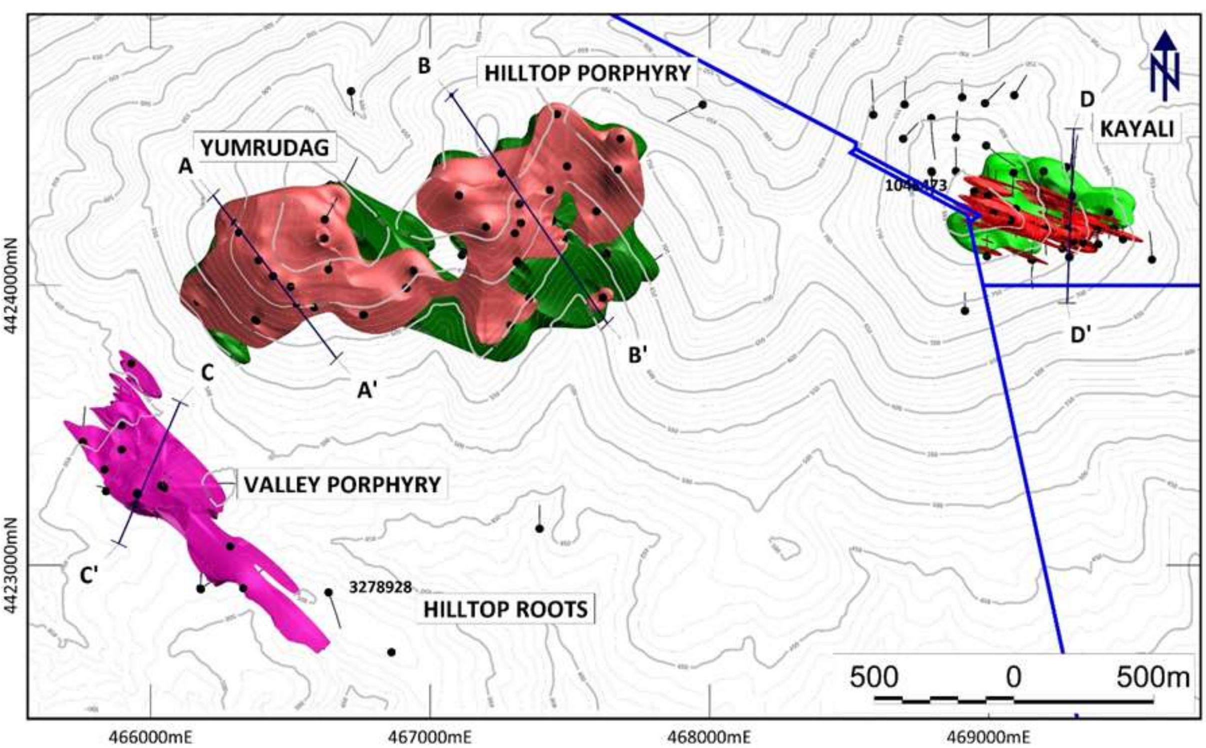
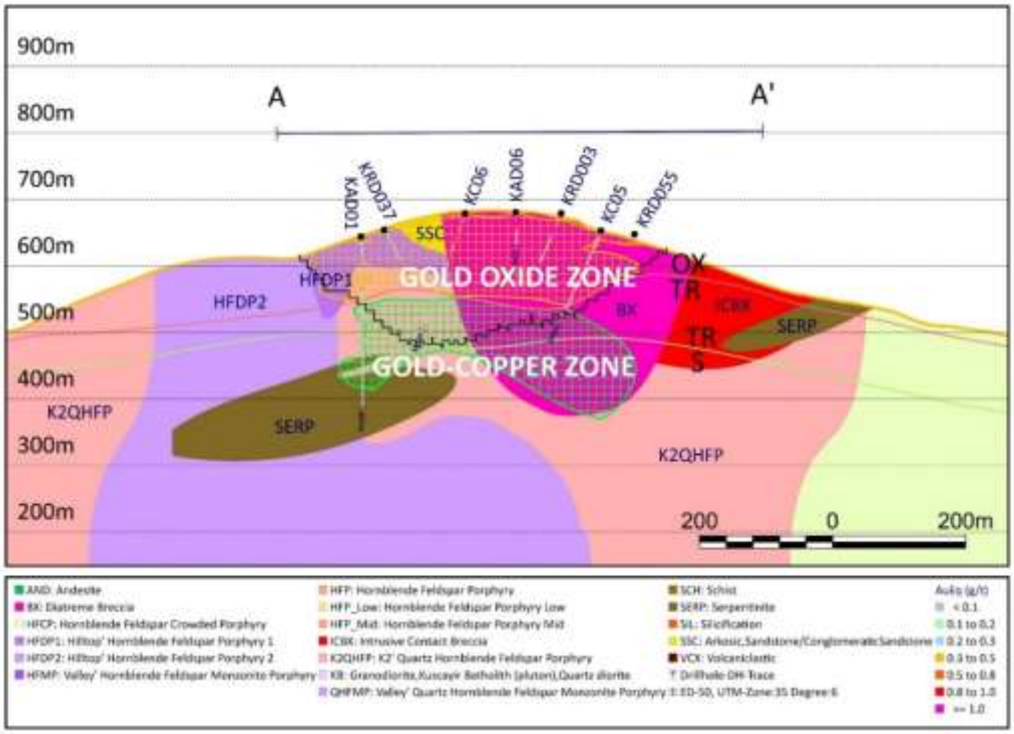
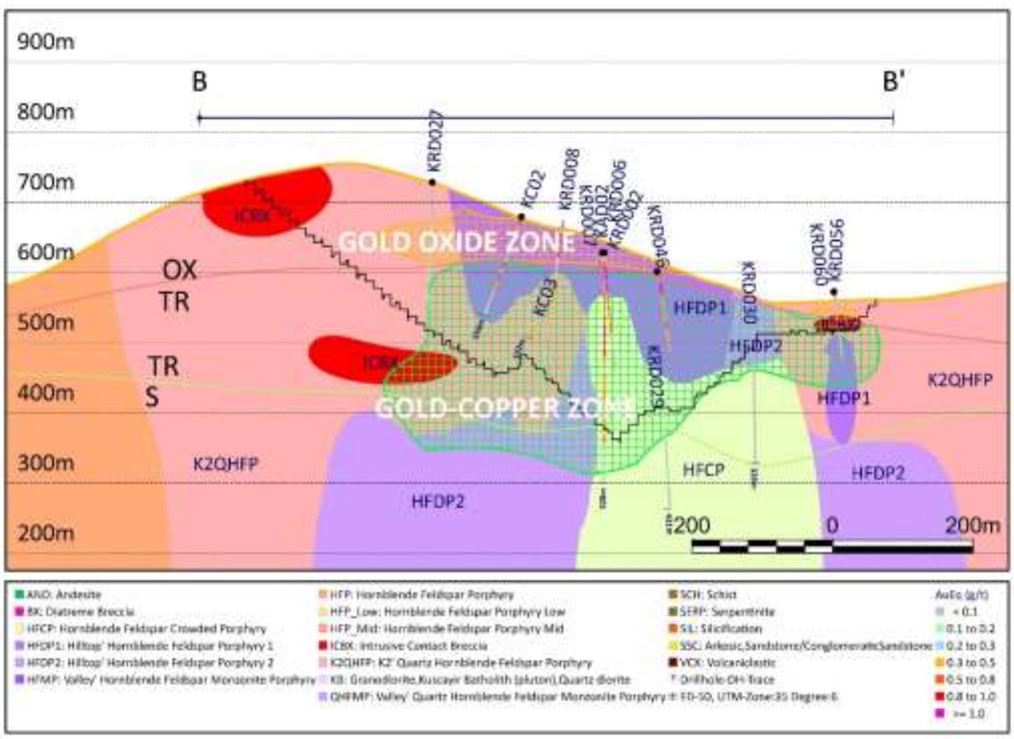


Figure 14.4: Estimation Domains for the Yumrudağ Deposit, Vertical Section



Mineralization types clipped by the limits of the 0.1 g/t Au (Oxide Zone) and 0.1 g/t AuEq (Au-Cu Zone). Section line is shown in the Figure 14-3.

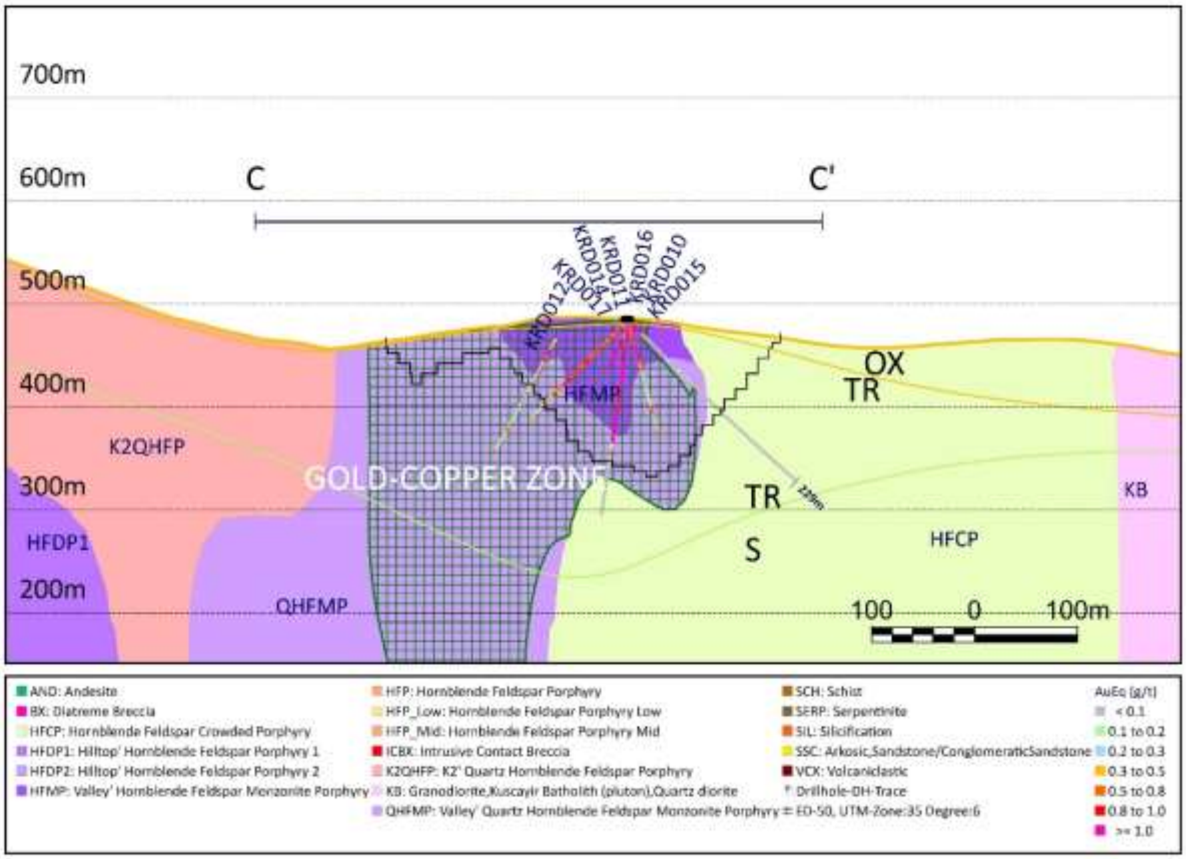
Figure 14.5: Estimation Domains for the Hilltop Deposit, Vertical Section



Mineralization types clipped by the limits of the 0.1 g/t Au (Oxide Zone) and 0.1 g/t AuEq (Au-Cu Zone). Section line is shown in the Figure 14.3.

The Valley Porphyry Au-Cu deposit consists of NW-trending, mineralized dyke-like bodies of porphyritic rock intruded into basement rocks of the Kuscayir batholith. Higher-grade rocks contain a dense stockwork of quartz-magnetite veins in a matrix of pervasive K-feldspar-magnetite-sericite alteration. It was modelled based on the data from 31 drill holes over a 1500 metre distance from northwest to southeast.

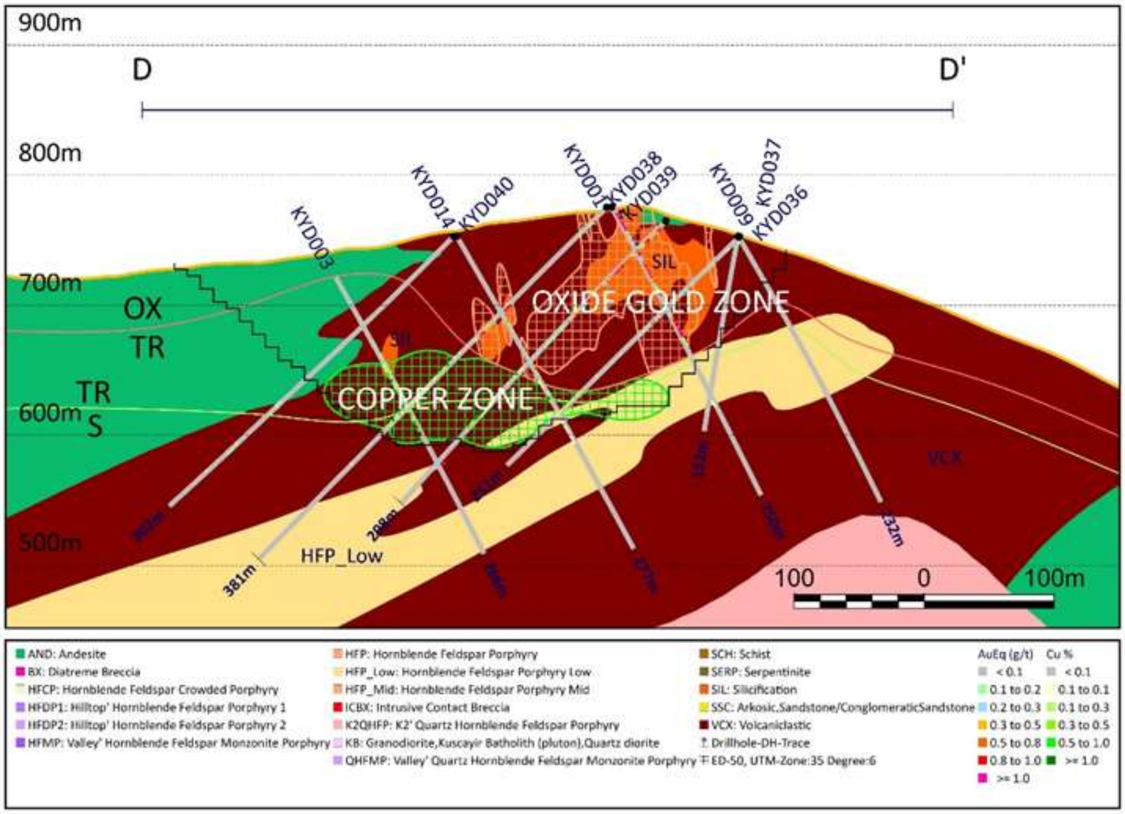
Figure 14.6: Estimation Domains for the Valley Deposit, Vertical Section



Mineralization types clipped by the limits of the 0.1 g/t AuEq zone. Section line is shown in Figure 14.3.

The Kayalı high sulphidation epithermal gold oxide deposit, gold is hosted in west-northwest-trending, steeply south-dipping breccia zones (ribs) hosted in a ~100 metre-thick, gently north-dipping sequence of strongly silicified and oxidized volcaniclastic strata (ledge). Copper has been leached from the ledge and redeposited as a supergene copper blanked immediately below it. The Kayalı deposit was modelled in two domains accordingly (**Figure 14.7).** The model is based on the data from 51 drill holes.

Figure 14.7: Estimation Domains for the Kayalı Deposit, Vertical Section



Mineralization types clipped by the limits of the 0.1 g/t Au (Oxide Zone) and 0.05 %Cu (Supergene Zone). Section line is shown in the Figure 14.3.

14.2.3 Outlier Analysis and Assay Capping

The raw sample gold assay data was statistically examined by domain for the presence of extreme high-grade outliers which can bias block grade estimates. DAMA evaluated the grade distributions for outliers using decile and percentile analyses of the domained samples (**Figure 14.8**). The capping thresholds were initially selected by the statistical guidences given below, while paying attention to the coefficient of variation (CV) and the effect on the metal content:

- The last decile (upper 10% of samples) contains more than 40% of the metal; or
- The last decile contains more than 2.3 times the metal of the previous decile; or
- The last centile (upper 1%) contains more than 10% of the metal; or
- The last centile contains more than 1.75 times the next highest centile.

As a final check, identified outliers were checked before top-cutting to ensure that they weren't clustered in one particular area, forming a geographically distinct high-grade zone.

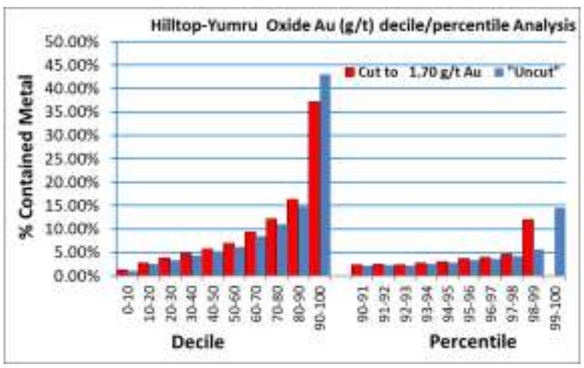
Based on this assessment, the capping thresholds selected for each domain are shown in **Table 14.5**, along with the number of samples which required capping and the effects of capping. "Metal Loss" shown in the table is the difference in the length-weighted mean of the un-capped and capped populations. The effect on the estimated block model grades and metal content will likely be different.

Table 14.5: Summary of capping used per Estimation domain for gold and copper

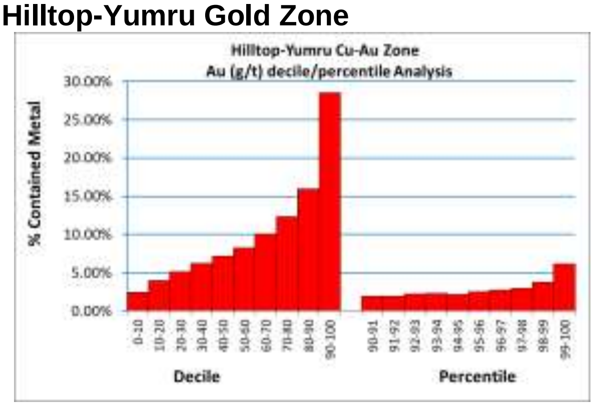
Domain Code	Domain	Elements	#Sample	Before Capp			Capp			After Capp	
				Max	Mean	COV	Value	#Sample	Sample%	Mean	COV
100	HilltopYumru OX	Au g/t	1,376	10.80	0.32	1.72	1.70	22	1.50%	0.28	1.09
200	HilltopYumru Cu-Au	Au g/t	4,869	4.20	0.12	0.95	-	-	-	0.12	0.95
		Cu %	4,869	4.56	0.16	1.48	1.50	20	0.40%	0.15	1.18
300	Valley Cu-Au	Au g/t	2,171	7.10	0.28	1.73	2.00	29	1.30%	0.26	1.37
		Cu %	2,171	1.44	0.15	1.09	1.00	13	0.60%	0.15	1.05
400	Kayalı oxide	Au g/t	1,067	19.90	0.49	2.12	2.00	44	4.10%	0.41	1.16
500	Kayalı Supergene	Cu %	498	6.40	0.37	1.60	1.80	13	2.60%	0.33	1.19

Domain Codes: 100: Hilltop-Yumru Oxide 200: Hilltop-Yumru Copper Gold; 300: Valley Copper Gold Zone; 400: Kayalı Gold Zone Oxide; 500: Kayalı Copper Zone -TR-S

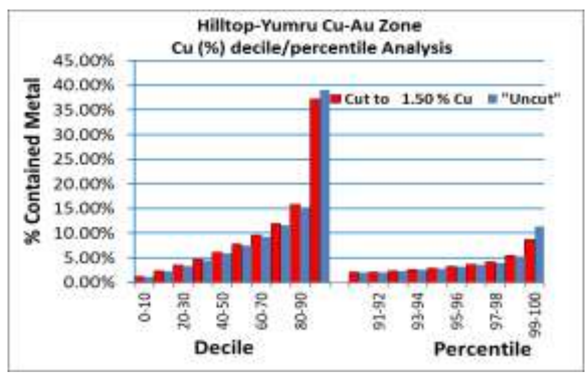
Figure 14.8: Plots for capping analysis for Au data within each estimation domain



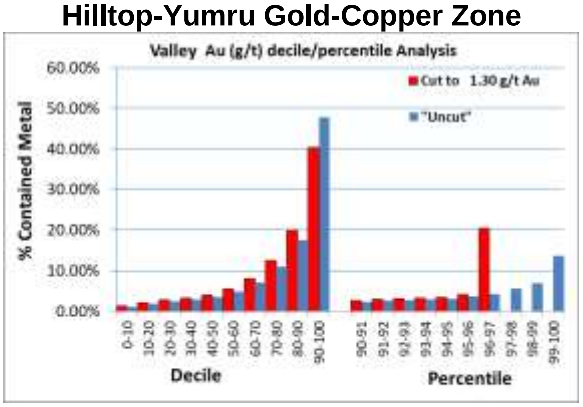
Hilltop-Yumru Gold Zone

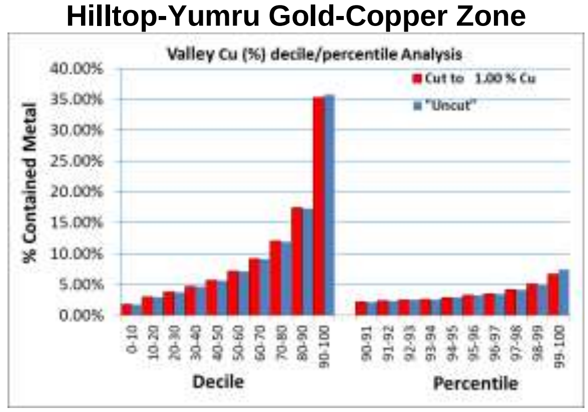


Hilltop-Yumru Gold-Copper Zone

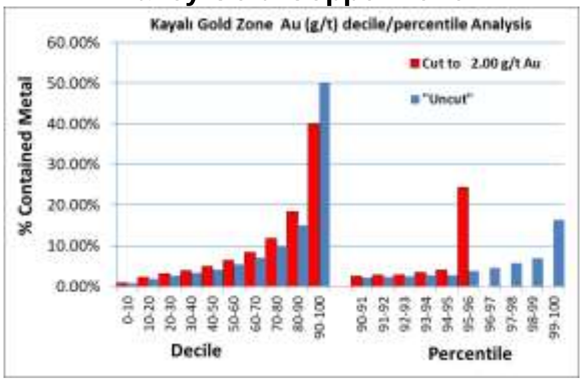


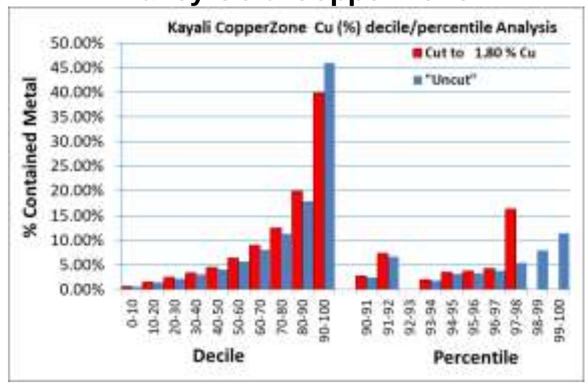
Hilltop-Yumru Gold-Copper Zone





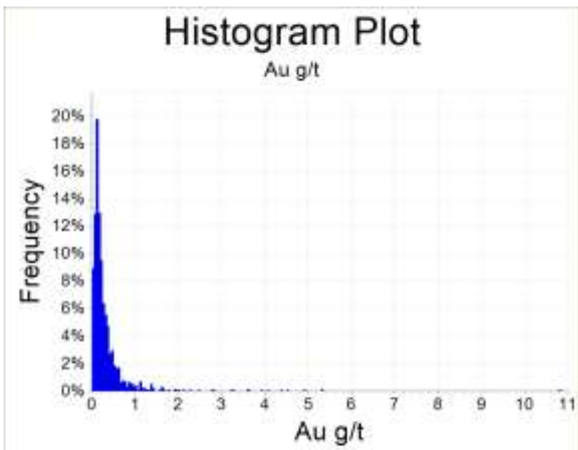
Valley Gold-Copper Zone **Valley Gold-Copper Zone**

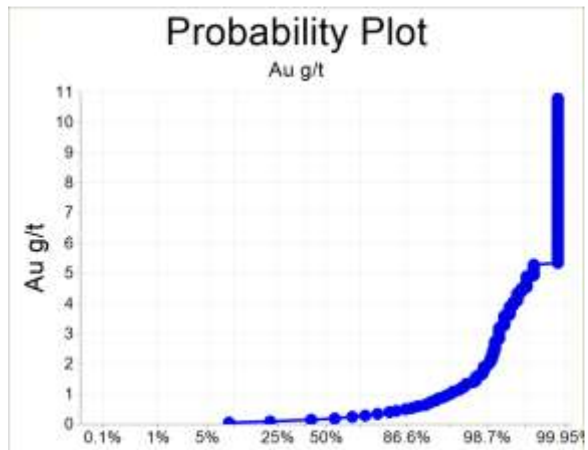




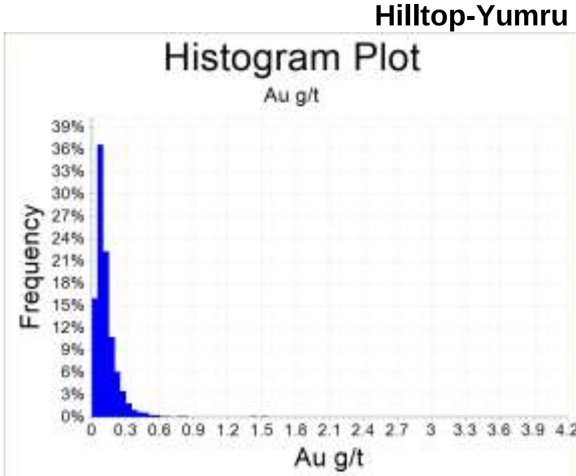
Kayalı Gold Zone **Kayalı Copper Zone**

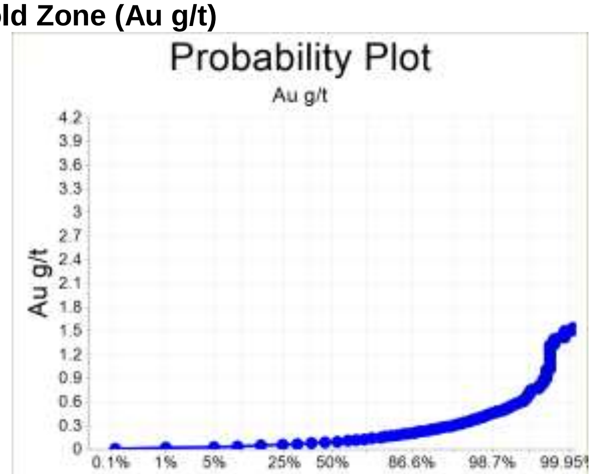
Figure 14.9: Plots for capping analysis for gold data within each estimation domain



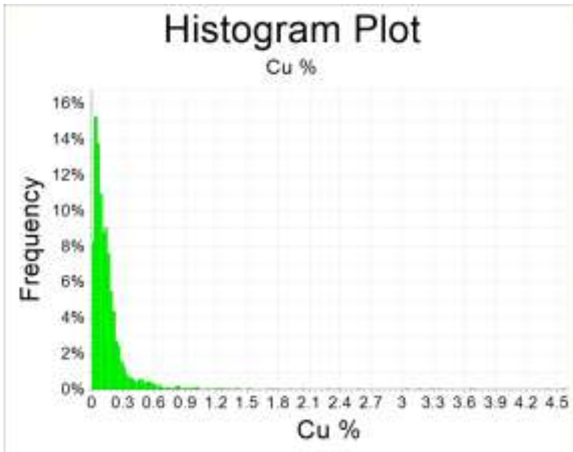


Hilltop-Yumru Gold Zone (Au g/t)

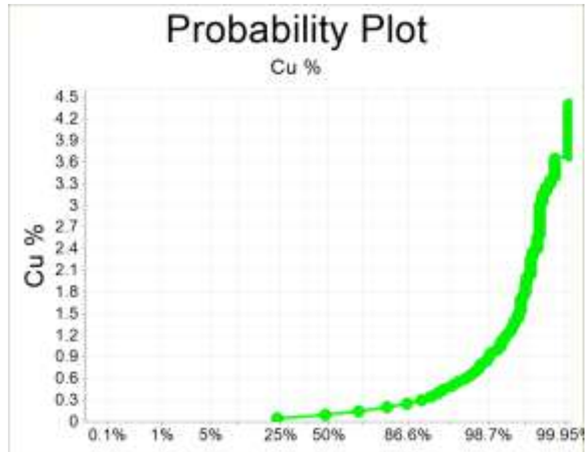




Hilltop-Yumru Gold-Copper Zone (Au gpt) **Hilltop-Yumru Gold-Copper Zone (Au gpt)**

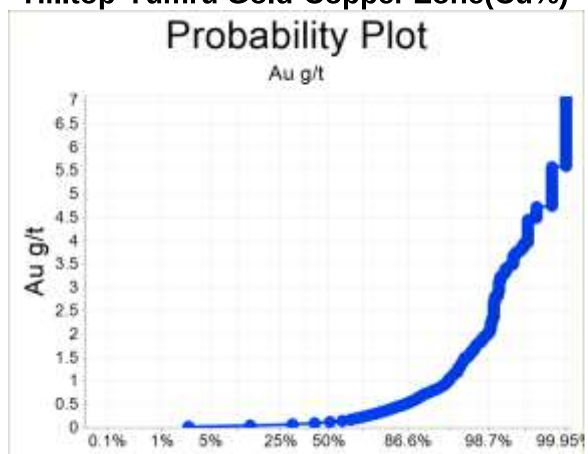


Hilltop-Yumru Gold-Copper Zone (Cu%)

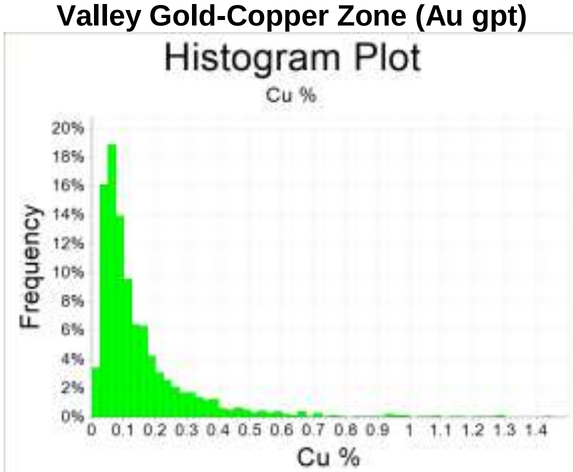


Hilltop-Yumru Gold-Copper Zone(Cu%)

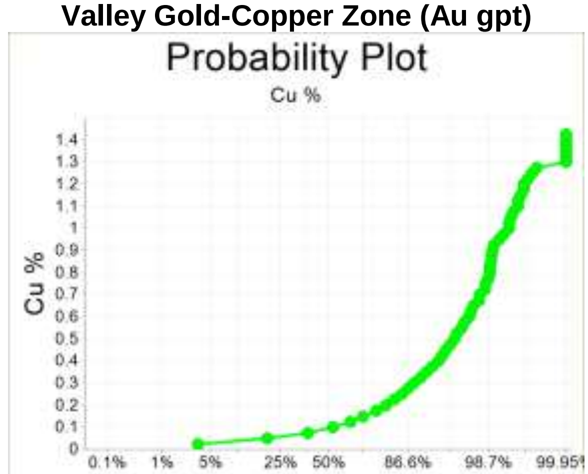
Valley Gold-Copper Zone (Au gpt)



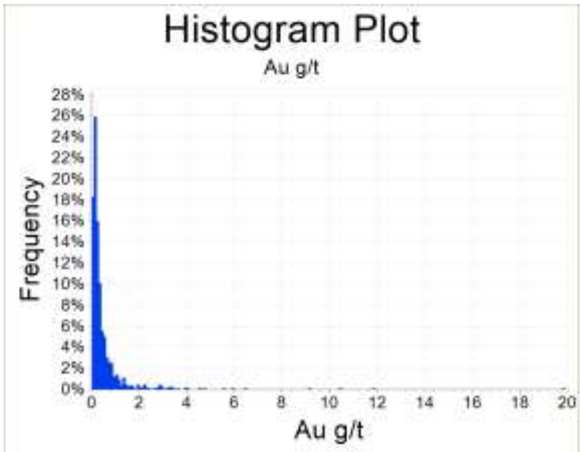
Valley Gold-Copper Zone (Au gpt)



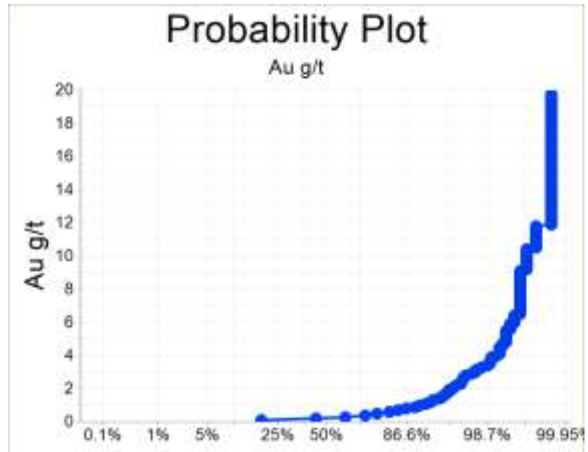
Valley Gold-Copper Zone (Cu %)



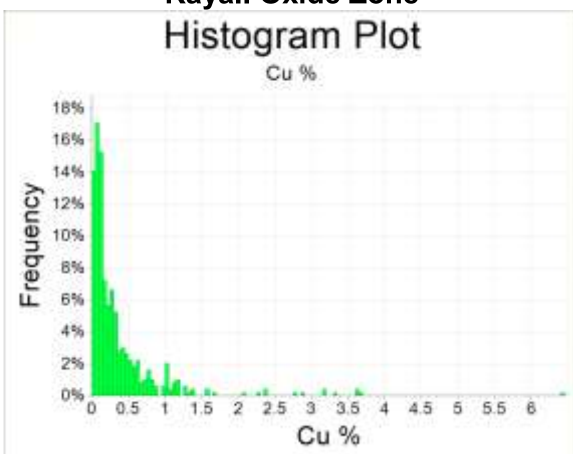
Valley Gold-Copper Zone (Cu %)



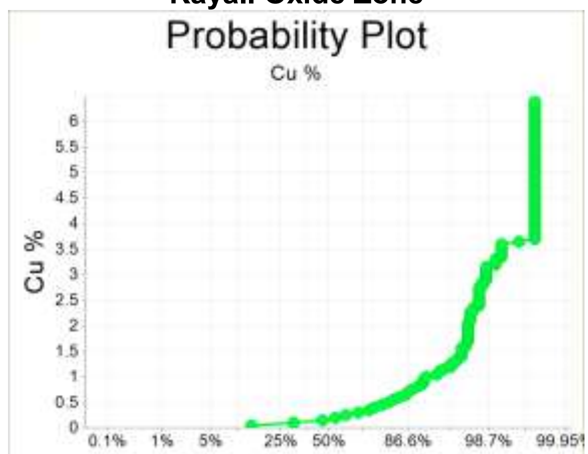
Kayalı Oxide Zone



Kayalı Oxide Zone



Kayalı Supergene Zone



Kayalı Supergene Zone

14.2.4 Sample Compositing

The Kayalı, Hilltop, Yumru and Valley deposit drill holes were composited to a down-hole length of 2.0 m, so that the majority of the assay intervals were not split into separate composite values since 98 percent of samples were either equal or less than 2.0 m length. The composite samples were constructed within the boundary limits for each of the estimation domains and tagged with the associated domain code. Non-assayed intervals were assigned a value of half the detection limit (i.e., 0.0025 ppm Au, 0.1ppm Cu) in the composite generation process **(Table 14.6)**.

The summary statistics of the composites for gold and copper data from the Kayalı, Hilltop, Yumru and Valley deposits are shown in **Table 14.7** and **Table 14.8** respectively.

Table 14.6: summary statistics of the composites for gold and copper data from the Kayalı, Hilltop, Yumru and Valley deposits

FROM	TO	NUMBER	FREQUENCY	CUM_NUMBER	CUM_FREQUENCY
0.2	0.3	1	0.0%	1	0.0%
0.3	0.4	1	0.0%	2	0.0%
0.4	0.5	10	0.1%	12	0.1%
0.5	0.6	4	0.0%	16	0.2%
0.6	0.7	12	0.1%	28	0.3%
0.7	0.8	17	0.2%	45	0.5%

FROM	TO	NUMBER	FREQUENCY	CUM_NUMBER	CUM_FREQUENCY
0.8	0.9	53	0.5%	98	1.0%
0.9	1	351	3.5%	449	4.5%
1	1.1	169	1.7%	618	6.2%
1.1	1.2	263	2.6%	881	8.8%
1.2	1.3	509	5.1%	1390	13.9%
1.3	1.4	751	7.5%	2141	21.5%
1.4	1.5	5409	54.2%	7550	75.6%
1.5	1.6	803	8.0%	8353	83.7%
1.6	1.7	831	8.3%	9184	92.0%
1.7	1.8	397	4.0%	9581	96.0%
1.8	1.9	183	1.8%	9764	97.8%
1.9	2	64	0.6%	9828	98.5%
2	2.1	135	1.4%	9963	99.8%
2.1	2.2	11	0.1%	9974	99.9%
2.2	2.3	2	0.0%	9976	100.0%
2.3	2.4	3	0.0%	9979	100.0%
2.5	2.6	1	0.0%	9980	100.0%
2.9	3	1	0.0%	9981	100.0%

Figure 14.10: Histogram for the Sample Interval Lengths.

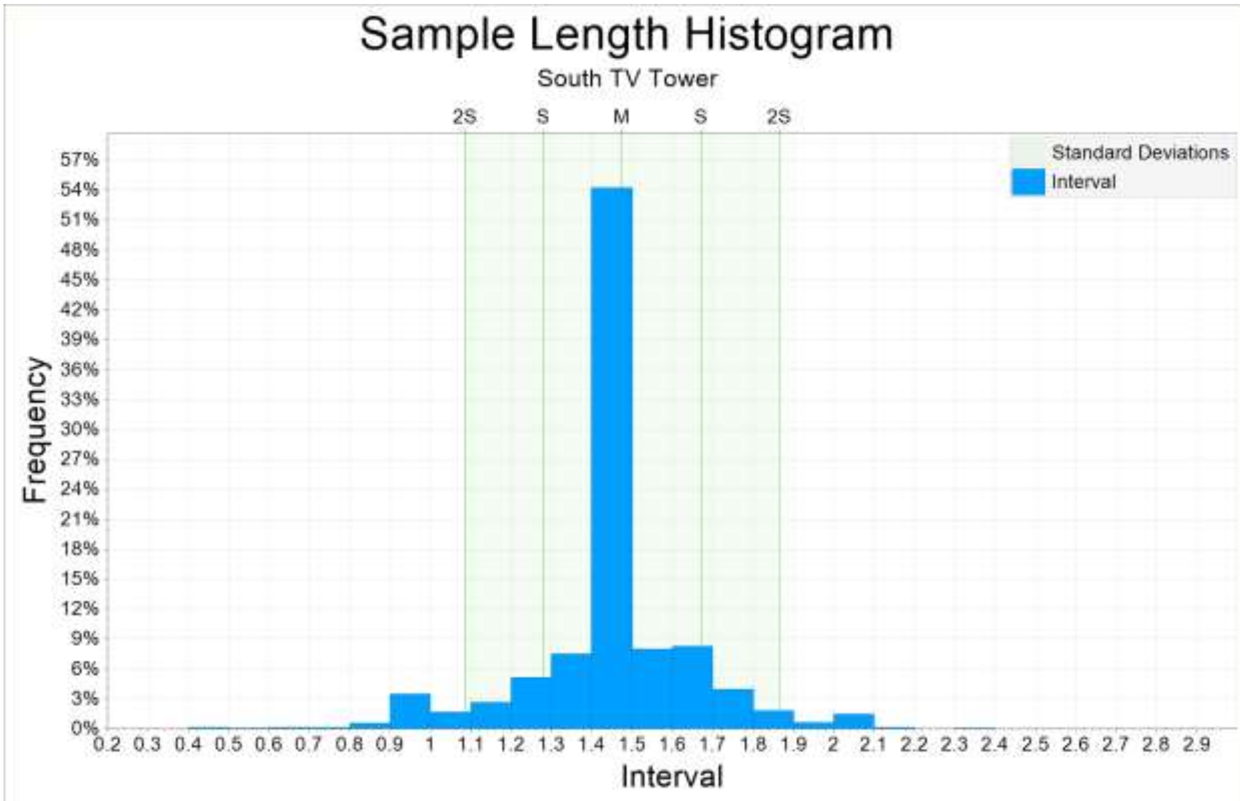


Table 14.7: Comparison raw gold data statistics with capped and Composited gold data statistics.

Domain	Metadata Value	Count	Min	Max	Mean	Variance	Std. Dev.	COV
100	Raw Before Cap	1,376	0.01	10.80	0.32	0.2834	0.53	1.72
	Raw After Cap	1,376	0.01	1.70	0.29	0.0971	0.31	1.09
	Composite	1,036	0.01	1.70	0.29	0.0745	0.27	0.95
200	Raw Before Cap	4,869	0.01	4.20	0.12	0.0139	0.12	0.95
	Raw After Cap	4,869	0.01	4.20	0.12	0.0139	0.12	0.95
	Composite	3,634	0.01	3.27	0.12	0.0114	0.11	0.87
300	Raw Before Cap	2,171	0.01	7.10	0.28	0.2417	0.49	1.73
	Raw After Cap	2,171	0.01	2.00	0.26	0.1307	0.36	1.37
	Composite	1,671	0.01	2.00	0.26	0.1252	0.35	1.35
400	Raw Before Cap	1,067	0.00	19.90	0.49	1.0850	1.04	2.12
	Raw After Cap	1,067	0.00	2.00	0.41	0.2186	0.47	1.15
	Composite	766	0.00	2.00	0.41	0.1820	0.43	1.05

Domain Codes: 100: Hilltop-Yumru Oxide 200: Hilltop-Yumru Copper Gold; 300: Valley Copper Gold Zone; 400: Kayalı Gold Zone Oxide; 500: Kayalı Copper Zone -TR-S

Table 14.8: Comparison raw copper data statistics with capped and composited copper data statistics.

Domain	Metadata Value	Count	Min	Max	Mean	Variance	Std. Dev.	COV
200	Raw Before Cap	4,869	0.00	4.56	0.16	0.0497	0.22	1.48
	Raw After Cap	4,869	0.00	1.50	0.15	0.0310	0.18	1.18
	Composite	3,634	0.00	1.50	0.15	0.0266	0.16	1.08
300	Raw Before Cap	2,171	0.00	1.44	0.15	0.0256	0.16	1.09
	Raw After Cap	2,171	0.00	1.00	0.15	0.0233	0.15	1.05
	Composite	1,671	0.01	1.00	0.15	0.0216	0.15	1.01
500	Raw Before Cap	498	0.00	6.40	0.37	0.3222	0.57	1.60
	Raw After Cap	498	0.00	1.80	0.33	0.1544	0.39	1.19
	Composite	346	0.01	1.80	0.33	0.1275	0.36	1.07

Domain Codes: 100: Hilltop-Yumru Oxide 200: Hilltop-Yumru Copper Gold; 300: Valley Copper Gold Zone; 400: Kayalı Gold Zone Oxide; 500: Kayalı Copper Zone -TR-S

14.2.5 Variography

As part of the current Mineral Resource estimate, the grade continuity of the gold capped composite data was analysed by variography, using the capped 2.0 m composite dataset. In completing variogram analysis, the down-hole variogram was first calculated and modeled to characterize the nugget effect. Then, omnidirectional variograms were generated to define the appropriate lag distances. Afterwards the directional variograms were modelled in the three principal directions, the along strike, cross strike and down-dip directions. In all cases a spherical variogram model has been fitted to the experimental variograms, as illustrated in **Figure 14.11.** The resultant variogram parameters are given in **Tables 14.9 and 14.10**. The orientations and ranges for the along strike, cross strike and down-dip directions for each domain were used as the basis of kriging search criteria.

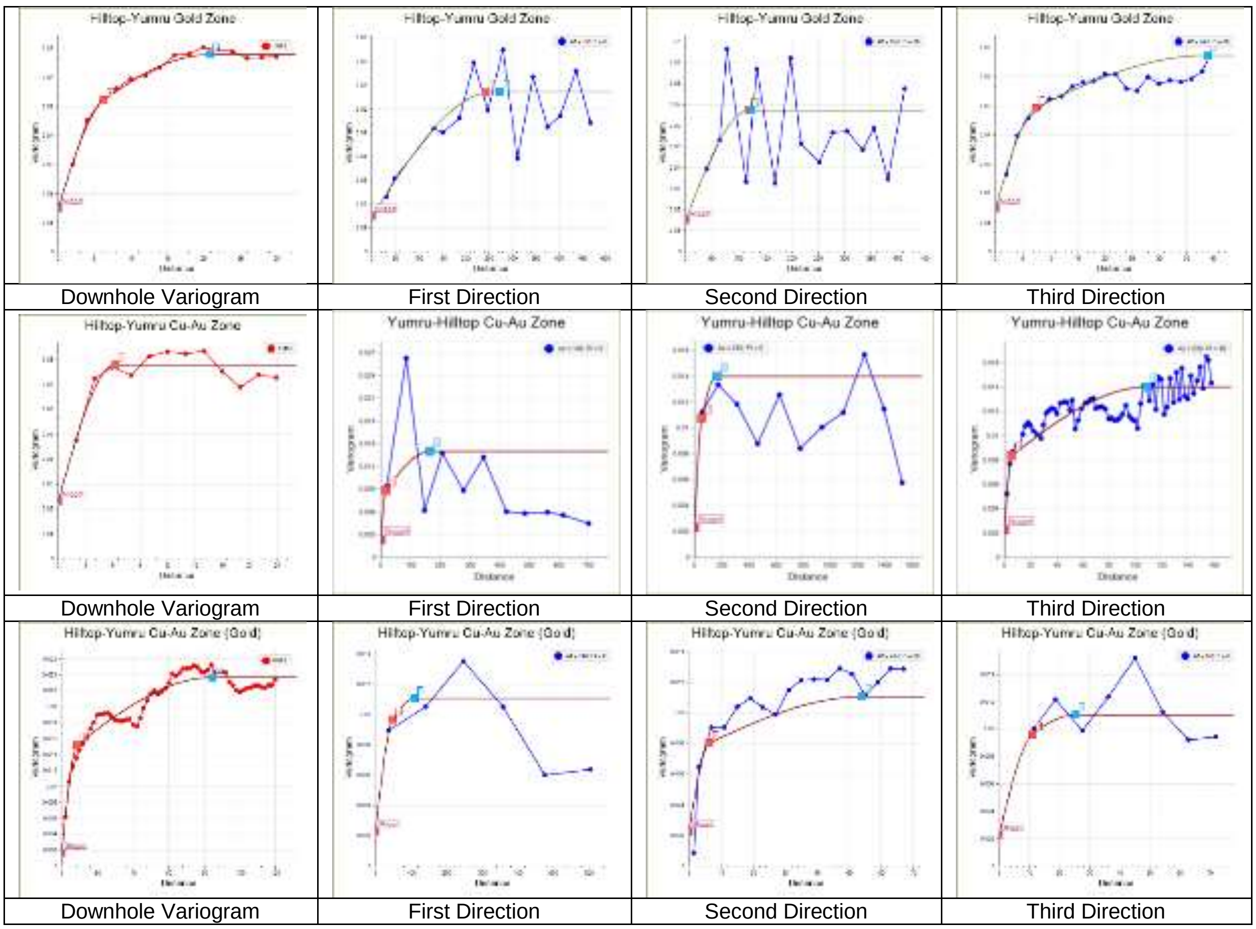
Table 14.9: TV Tower Variogram Models by Estimation Domain for Gold

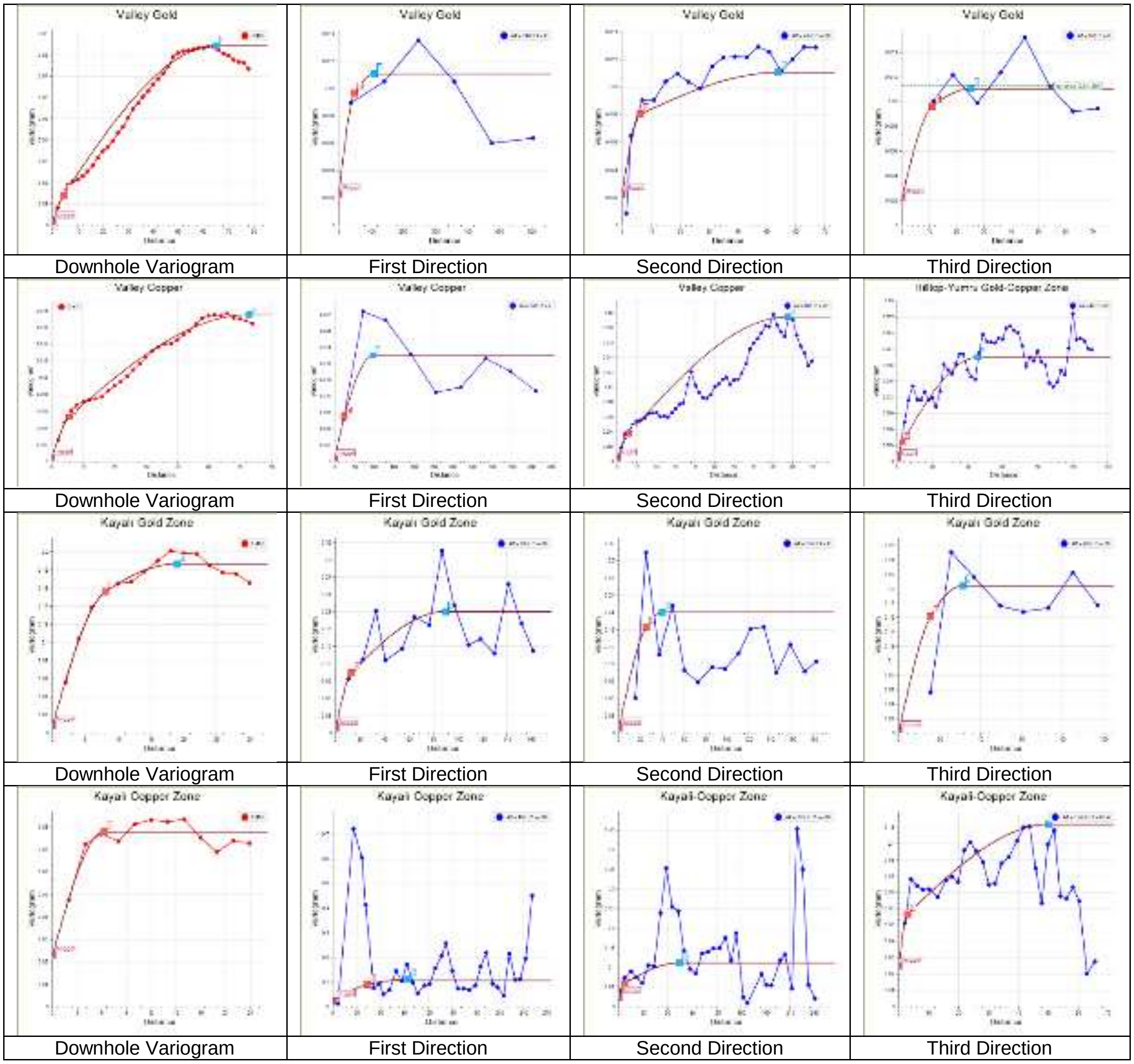
Domain	Direction (dip/azimuth)	Nugget Effect	Spherical Component 1		Spherical Component 2	
			Sill	Range(m)	Sill	Range(m)
Hilltop-Yumru Gold Zone	70/0	0.015	0.0272	244	0.0252	275
	160/10			118		124
	340/80			7		39
Hilltop-Yumru Gold-Copper Zone	140/0	0.0023	0.0056	18	0.0061	165
	230/0			53		164
	230/90			6		109
Valley Gold-Copper Zone	130/0	0.00153	0.0036	57	0.0928	106
	225/0			33		92
	225/90			6		70
Kayalı Gold Zone	110/8	0.009	0.1091	90	0.1285	100
	238/77			5		40
	19/10			12		24

Table 14.10: TV Tower Variogram Models by Estimation Domain for Copper

Domain	Direction (dip/azimuth)	Nugget Effect	Spherical Component 1		Spherical Component 2	
			Sill	Range(m)	Sill	Range(m)
Hilltop-Yumru Gold-Copper Zone	145/5	0.0017	0.00143	92	0.02207	166
	235/0			72		162
	356/76			4		110
Valley Gold-Copper Zone	130/0	0.0005	0.0015	24	0.0175	96
	220/90			6		88
	225/90			3		46
Kayalı Copper Zone	100/-10	0.0253	0.0262	44	0.0603	95
	194/-20			7		74
	165/67			3		50

Figure 14.11: Graphs of Semi-Variograms





14.2.6 Cross Validation

Cross-validation was performed to evaluate the "predictive" abilities of the variogram models. Results of this analysis show that the means of the standardized residuals squared are close to zero, the standard deviations of the kriging prediction error are more than 1, and the standard deviation of the kriging prediction errors are also low, and were, therefore, deemed acceptable.

14.2.7 Block Model

A three-dimensional block model was established using Micromine version 2020 for the purpose of the current resource estimate. The selected block size was based on the geometry of the domain interpretation, the data configuration and plausible mining methods. A parent block size of 10mE by 10mN by 5mRL was selected for all TV Tower South deposits. Sub-blocking to a 2mE by 2mN by 1mRL cell size was applied to improve volume representation of the interpreted wireframe models. The volumes of the mineralized domains in the block model were compared to the volumes from the mineralization wireframes and were within ±0.01 % (**Table 14.11**).

Table 14.11: Comparison of Wireframe Volume and Block Model Volume

Domain	Wireframe	Block Model	Dif %
100	31,352,229	31,339,520	-0.04%
200	122,815,861	122,813,132	0.00%
300	25,580,441	25,577,348	-0.01%
400	5,701,445	5,698,708	-0.05%
500	7,914,002	7,914,140	0.00%
Total	193,363,978	193,342,848	-0.01%

Gold grades are estimated for the primary parent blocks, and all categorical data such as estimation domains, oxidation, resource class, or optimized pits are evaluated into the sub-blocks. The block model parameters and attribute table for the deposits studied are presented in **Table 14.12** and **Table 14.13.**

Table 14.12: TV Tower Block Model Parameters

Block	X	Y	Z
Min origin center	465,600	4,422,600	150
Max origin center	470,100	4,425,200	900
size	10	10	5
Min Block Size	2	2	1
*n*blk	451	261	151

Table 14.13: Block Model Attribute Table

Attribute Name	Type	Decimals	Description
EAST	DOUBLE	6	Easting coordinate
_EAST	FLOAT	6	Block size (Easting)
NORTH	DOUBLE	6	Northing coordinate
_NORTH	FLOAT	4	Block size (Northing)
RL	DOUBLE	4	Z coordinate
_RL	FLOAT	4	Block size (Z)
Domain	CHARACTER	-	Mineralisation Domain
			100: Hilltop-Yumru Gold Oxide Zone,
			200: Hilltop-Yumru Gold Copper Zone,
			300: Valley Gold Copper Zone,
			400: Kayalı Gold Oxide Zone,
			500: Kayalı Copper Zone
Rock	CHARACTER	-	AND: Andesite
			VCX: Volcaniclastic
			SIL: Silicification
			SCH: Schist
			HFP: Hornblende Feldspar Porphyry
			HFDP2: Hilltop' Hornblende Feldspar Porphyry 2
			HFDP1: Hilltop' Hornblende Feldspar Porphyry 1
			KB: Granodiorite, Kuscayir Batholith (pluton),Quartz diorite

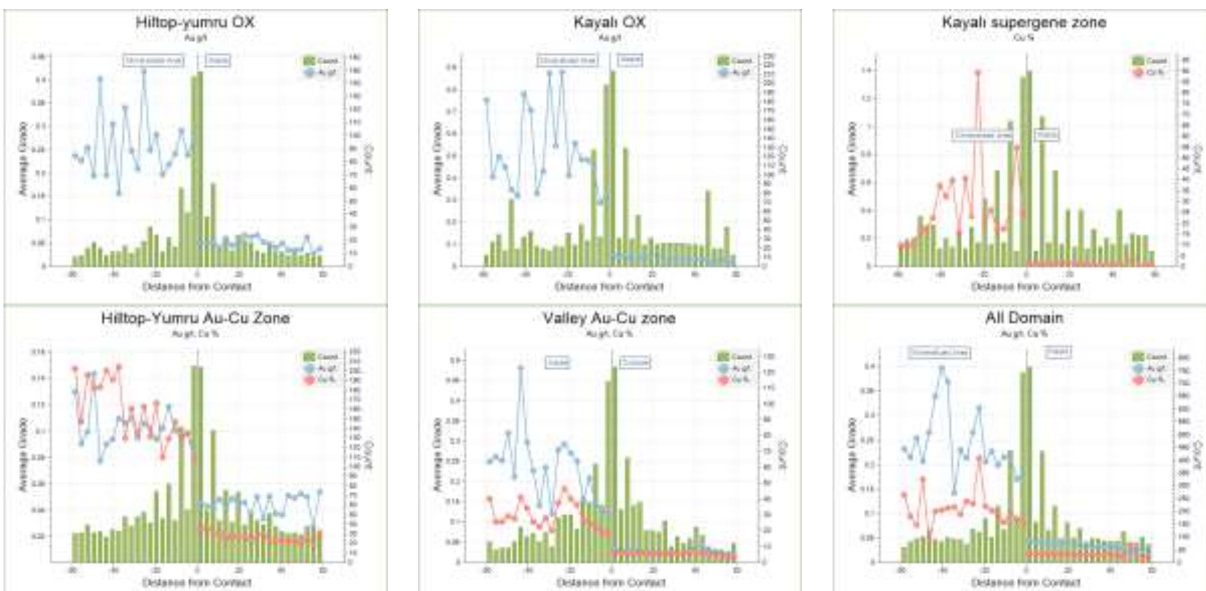
Attribute Name	Type	Decimals	Description
			ICBX: Intrusive Contact Breccia
			HFP_Low: Hornblende Feldspar Porphyry Low
			HFP_Mid: Hornblende Feldspar Porphyry Mid
			BX: Diatreme Breccia
			SSC: Arkosic, Sandstone/ConglomeraticSandstone
			SERP: Serpentinite
			HFMP: Valley' Hornblende Feldspar Monzonite Porphyry
			K2QHFP: K2' Quartz Hornblende Feldspar Porphyry
			QHFMP: Valley' Quartz Hornblende Feldspar Monzonite Porphyry
			HFCP: Hornblende Feldspar Crowded Porphyry
Sub Domain	CHARACTER	-	Mineralisation Sub-Domain
			101, 102, 103, 201, 202, 203, 301, 302, 401, 402, 501, 502
REDOX	CHARACTER	-	S: Sulphide Rock, TR = Transitional Rock, OX= Oxidised Rock
Sector	CHARACTER	-	Hiltop Oxide
			Yumrudağ Oxide
			Kayalı Oxide
			Hilltop Au-Cu
			Yumru Au-Cu
			Valley Au-Cu
			Kayalı Supergene
AuOK	DOUBLE	3	gold ordinary krige estimate
AuIDW	DOUBLE	3	gold inverse distance estimate
NN_AuOK	DOUBLE	3	gold neighbour attribute
CuOK	DOUBLE	3	copper ordinary krige estimate
CuIDW	DOUBLE	3	copper inverse distance estimate
NN_CuOK	DOUBLE	3	copper neighbour attribute
AuEq OK	DOUBLE	3	gold equivalent (by ordinary krige estimate values)
AuEq IDW	DOUBLE	3	gold equivalent (by inverse distance estimate values)
AuEq NN	DOUBLE	3	gold equivalent (by ordinary krige estimate values)
SG	DOUBLE	3	Bulk density - assigned
KR_VAR	DOUBLE	3	Kriging variance
KR_STDERR	DOUBLE	3	Standard error
KR_EFF	DOUBLE	3	Kriging efficiency
SLOPE	DOUBLE	3	Slope of regressions
Run	CHARACTER	-	First pass: Run-1, Second pass: Run-2
POINTS	SHORT	-	Number of points
Cf	SHORT	-	Count field
AVERAGE DISTANCE	FLOAT	3	Average distance
CLOSEST DISTANCE	FLOAT	3	Closest distance
NUMSECT	SHORT	-	Number of sectors
SECTOR1	SHORT	-	Sector-1
SECTOR2	SHORT	-	Sector-2

Attribute Name	Type	Decimals	Description
SECTOR3	SHORT	-	Sector-3
SECTOR4	SHORT	-	Sector-4
SECTOR5	SHORT	-	Sector-5
SECTOR6	SHORT	-	Sector-6
SECTOR7	SHORT	-	Sector-7
SECTOR8	SHORT	-	Sector-8
Res-cat	CHARACTER	-	Resource Classification,
			Ind: Indicated, Inf: Inferred, UN-C: Un-classified
Res Pit	CHARACTER	-	1: Inside resource pitshell
TP	DOUBLE	3	Percent for Topography

14.2.8 Grade Estimation

Ordinary Kriging (OK) was the primary estimation method for all models, and Inverse-distance-squared (IDW2) and nearest neighbour estimates was run for cross validation checks within domains. The contacts between the domains were hard boundaries where metal grades across the domains change substantially at distances shorter than the average drill hole spacing (**Figure 14.12**). Accordingly, only data from a particular domain were used to estimate a block in that domain.

Figure 14.12: Boundary analysis for South TV Tower mineralized domains



The search ellipsoids were built from the results of the variography study on the gold or copper data from each wireframed mineralized zone, as well as the dominant azimuth and dip for each domain. The estimate was generated in two interpolation passes each for Au and Cu, using the search volumes and capped composite data and data requirements summarized in **Table 14.14** for gold and in **Table 14.15** for copper. After careful examination of the grade estimates in each mineral zone, final decisions were made on the minimum and maximum data requirements as well as whether to limit the amount of data from a single hole. The shorter first pass was designed to interpolate gold grades for blocks that are well-informed by drill hole composite samples. The second pass was designed to estimate most of the remaining blocks within the geologic domains including extrapolated estimates.

Table 14.14: Search Ellipsoid Parameters by domain (for gold)

Zone	Search Orientation			Pass	Search	Min Point	Max Point Per Sector	Max comp Per Hole	Search Distances		
	Azim.	Plunge-1	Rot.						Major*	Semi-Major*	Minor*
100	70	0	-10	1	Octants	3	3	3	270	120	40
				2		3	4	3	540	240	80
200	140	0	0	1	Octants	6	3	3	150	150	100
				2		6	4	3	300	300	200
300	130	0	-90	1	Octants	6	3	3	100	90	50
				2		4	4	3	200	180	100
400	110	8	-80	1	Octants	4	3	3	100	40	20
				2		2	4	3	200	80	40

Table 14.15: Search Ellipsoid Parameters by domain (for Copper)

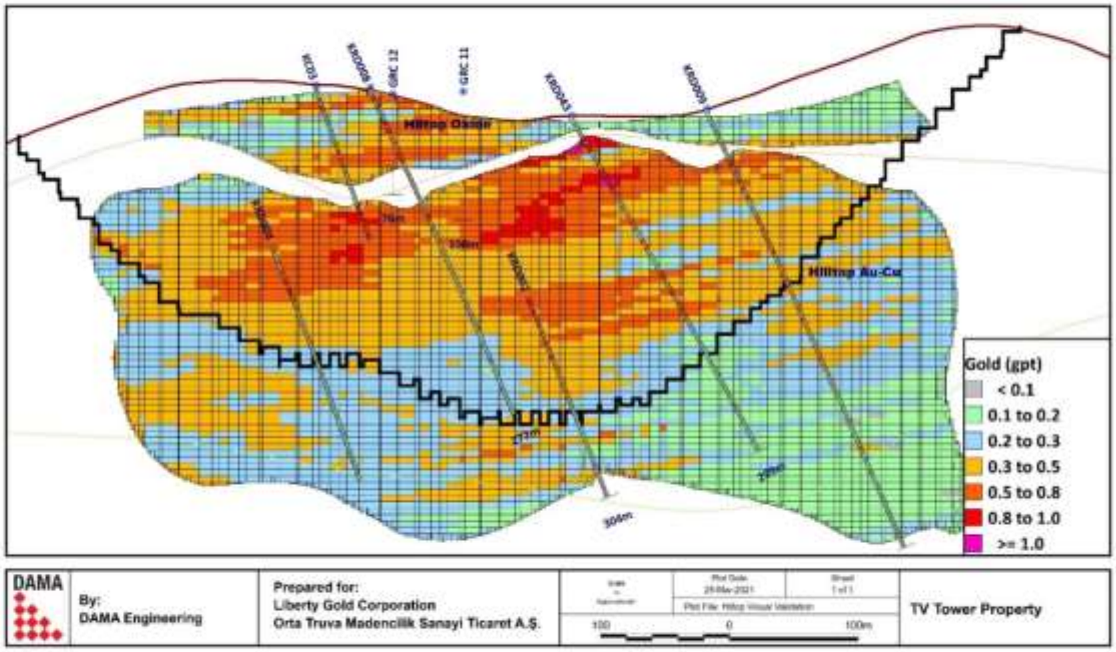
Zone	Search Orientation			Pass	Search	Min Point	Max Point Per Sector	Max comp Per Hole	Search Distances		
	Azim.	Plunge-1	Rot.						Major*	Semi-Major*	Minor*
200	140	0	0	1	Octants	6	3	3	150	150	100
				2		6	4	3	300	300	200
300	130	0	-90	1	Octants	6	3	3	100	90	50
				2		4	4	3	200	180	100
500	100	-10	20	1	Octants	4	3	3	95	75	50
				2		2	4	3	190	150	100

14.2.9 Block Model Validation

The mineral resource block model estimates were validated to ensure that the models fairly represent the data used in their generation. The work includes visual checks, statistical comparison of the composite sample grades to estimated block values, and comparing average composite sample values with average estimated block grades on Swath plots along east, north, and elevation orientations.

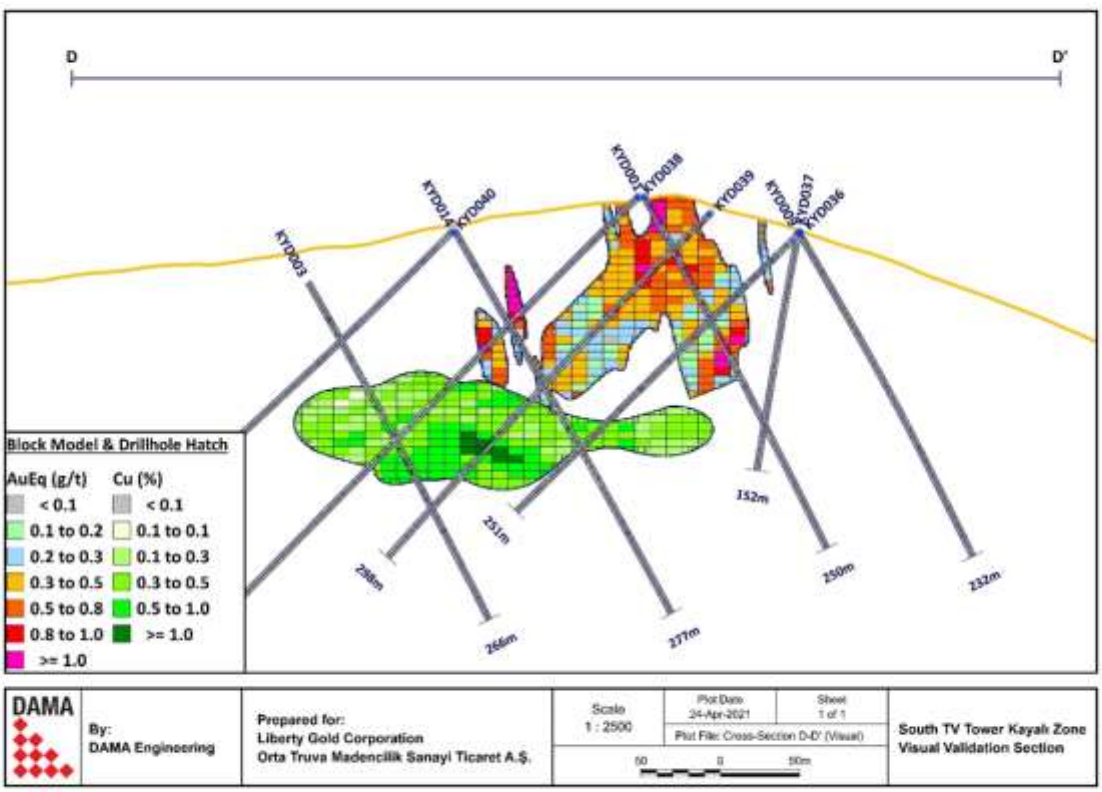
Visual Comparison: Estimated Au, Cu and SG block grades were visually inspected in a series of detailed vertical sections across the deposit. This review confirmed that the supporting composite sample grades closely match the estimated block values. **Figures 14.13** and **14.14** displays a representative vertical section of the estimated gold block grades and the composite sample values used in the estimation.

Figure 14.13: Example of Visual Validation of Grade Distribution for Gold, Vertical Cross Section.



Hilltop Deposit, View to the Northeast

Figure 14.14: Example of Visual Validation of Grade Distribution for Copper, Vertical Cross Section.



Kayalı Deposit, View to the East

Comparative Statistics: DAMA has also completed a statistical validation of the block estimates (NN, OK and IDW) versus the mean of the composite samples per domain. In general, the results indicate a reasonable comparison (**Tables 14.16 and 14.17**) between the sample mean grades (declustered composite) and the block estimates. As expected, the block grade variances are smaller than the composited sample data, and typically the mean block model grades compare reasonably well with the corresponding mean capped composite grades, within satisfactory levels of errors (mostly ±10 %).

Table 14.16: Comparison of Composited Au Grades to Block Model Au Grades Statistics by Domain

Domain	Type	Count	Min	Max	Mean	Variance	Std. Dev.	COV
100	Composite	1,036	0.01	1.70	0.29	0.0745	0.27	0.95
	BM-OK	173,192	0.02	1.55	0.30	0.029	0.17	0.56
	BM-IDW	173,192	0.02	1.68	0.30	0.031	0.18	0.60
	BM-NN	173,192	0.01	1.70	0.31	0.079	0.28	0.91
200	Composite	3,634	0.01	3.27	0.12	0.0114	0.11	0.87
	BM-OK	464,656	0.02	1.42	0.12	0.003	0.05	0.46
	BM-IDW	464,656	0.01	1.45	0.12	0.004	0.06	0.52
	BM-NN	464,656	0.01	3.27	0.11	0.008	0.09	0.76
300	Composite	1,671	0.01	2.00	0.26	0.1252	0.35	1.35
	BM-OK	117,902	0.02	1.83	0.16	0.031	0.18	1.00
	BM-IDW	117,902	0.01	1.95	0.17	0.034	0.18	1.04
	BM-NN	117,902	0.01	2.00	0.16	0.053	0.23	1.34
400	Composite	766	0.00	2.00	0.41	0.1820	0.43	1.05
	BM-OK	51,414	0.01	1.83	0.38	0.051	0.23	0.60
	BM-IDW	51,414	0.01	1.99	0.38	0.071	0.27	0.73
	BM-NN	51,414	0.00	2.00	0.38	0.172	0.41	1.12

Domain Codes: 100: Hilltop-Yumru Oxide 200: Hilltop-Yumru Copper Gold; 300: Valley Copper Gold Zone; 400: Kayalı Gold Zone Oxide; 500: Kayalı Copper Zone -TR-S

Table 14.17: Comparison of Composited Cu Grades to Block Model Cu Grades Statistics by Domain

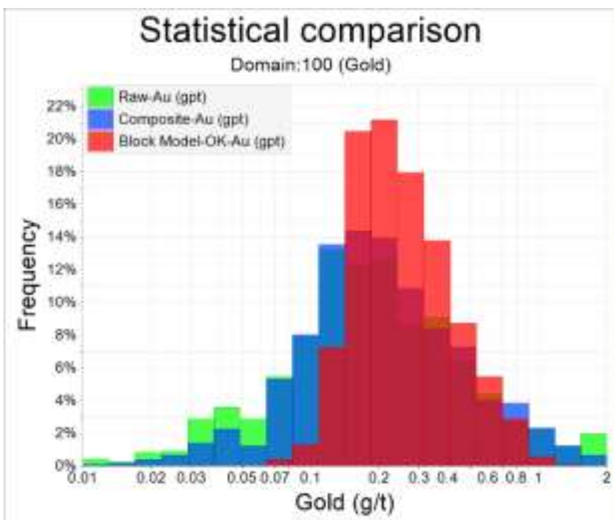
Domain	Type	Count	Min	Max	Mean	Variance	Std. Dev.	COV
200	Composite	3,634	0.00	1.50	0.15	0.0266	0.16	1.08
	BM-OK	464,656	0.01	1.33	0.13	0.009	0.09	0.77
	BM-IDW	464,656	0.00	1.38	0.13	0.01	0.10	0.80
	BM-NN	464,656	0.00	1.50	0.13	0.022	0.15	1.20
300	Composite	1,671	0.01	1.00	0.15	0.0216	0.15	1.01
	BM-OK	117,902	0.01	0.86	0.10	0.006	0.08	0.70
	BM-IDW	117,902	0.01	0.95	0.10	0.007	0.08	0.76
	BM-NN	117,902	0.01	1.00	0.10	0.012	0.11	1.02
500	Composite	346	0.01	1.80	0.33	0.1275	0.36	1.07
	BM-OK	51,029	0.03	1.36	0.35	0.029	0.17	0.49
	BM-IDW	51,029	0.02	1.63	0.36	0.05	0.22	0.63
	BM-NN	51,029	0.01	1.80	0.31	0.107	0.33	1.05

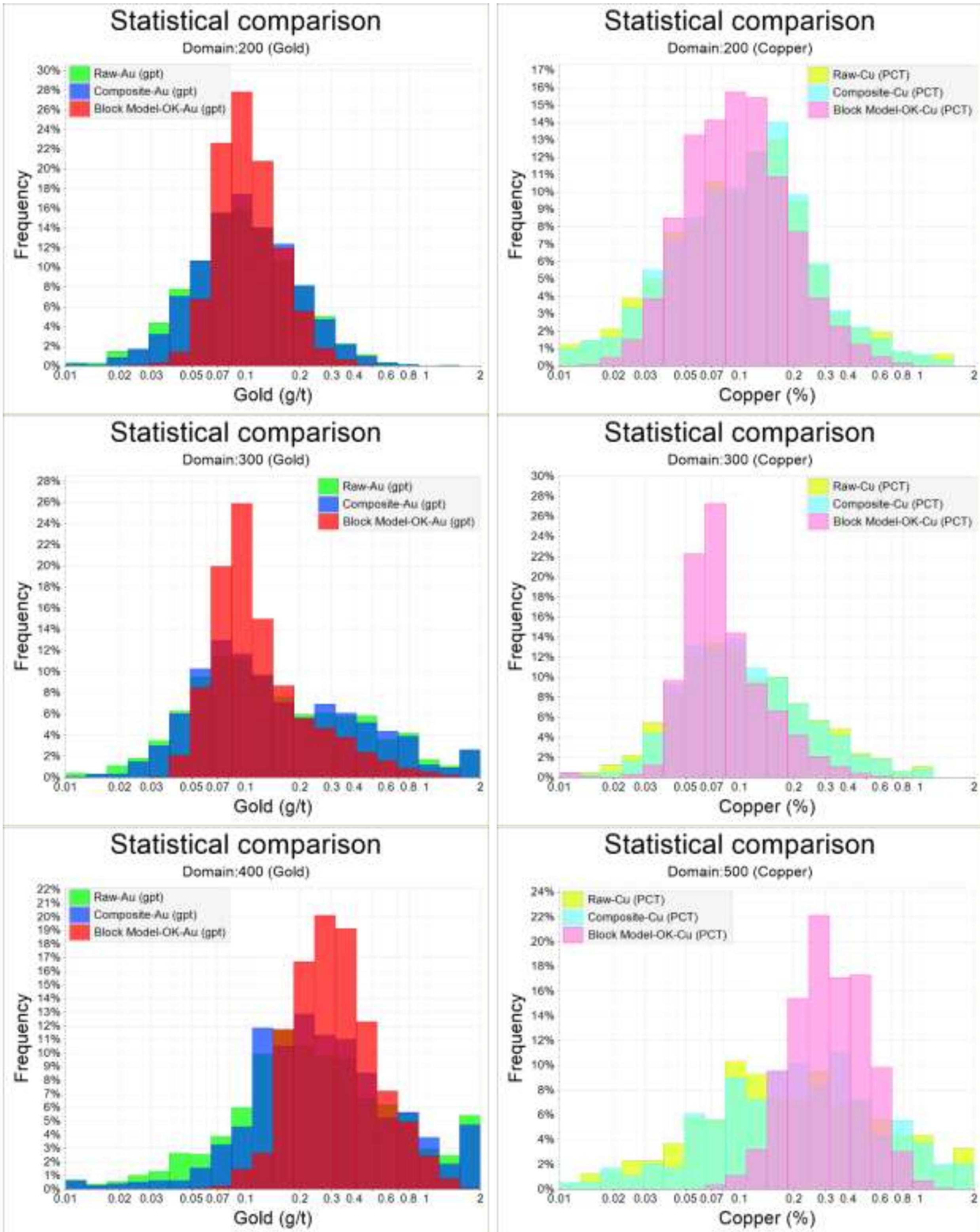
Domain Codes: 100: Hilltop-Yumru Oxide 200: Hilltop-Yumru Copper Gold; 300: Valley Copper Gold Zone; 400: Kayalı Gold Zone Oxide; 500: Kayalı Copper Zone -TR-S

Table 14.18: Comparison of the blocks and composites mean grades by Domain.

Domain	Composite	Block Model		
	Au Capp	Au-OK	Au-IDW	Au-NN
100	0.28	0.30	0.30	0.31
Diff (%)	-	3.5%	3.5%	6.9%
200	0.12	0.12	0.12	0.11
Diff (%)	-	-6.2%	-0.1%	-1.6%
300	0.26	0.16	0.17	0.16
Diff (%)	-	-39.0%	3.3%	-3.5%
400	0.41	0.38	0.38	0.38
Diff (%)	-	-5.8%	-1.2%	0.4%
Domain	**Cu Capp**	**Cu-OK**	**Cu-IDW**	**Cu-NN**
200	0.15	0.13	0.13	0.13
Diff (%)	-	-15.9%	1.2%	-0.5%
300	0.15	0.10	0.10	0.10
Diff (%)	-	-29.9%	2.4%	-1.4%
500	0.33	0.35	0.36	0.31
Diff (%)	-	4.1%	2.8%	-12.9%

Figure 14.15: Comparison of copper and gold statistics on histograms for the raw data, composite and block grades.

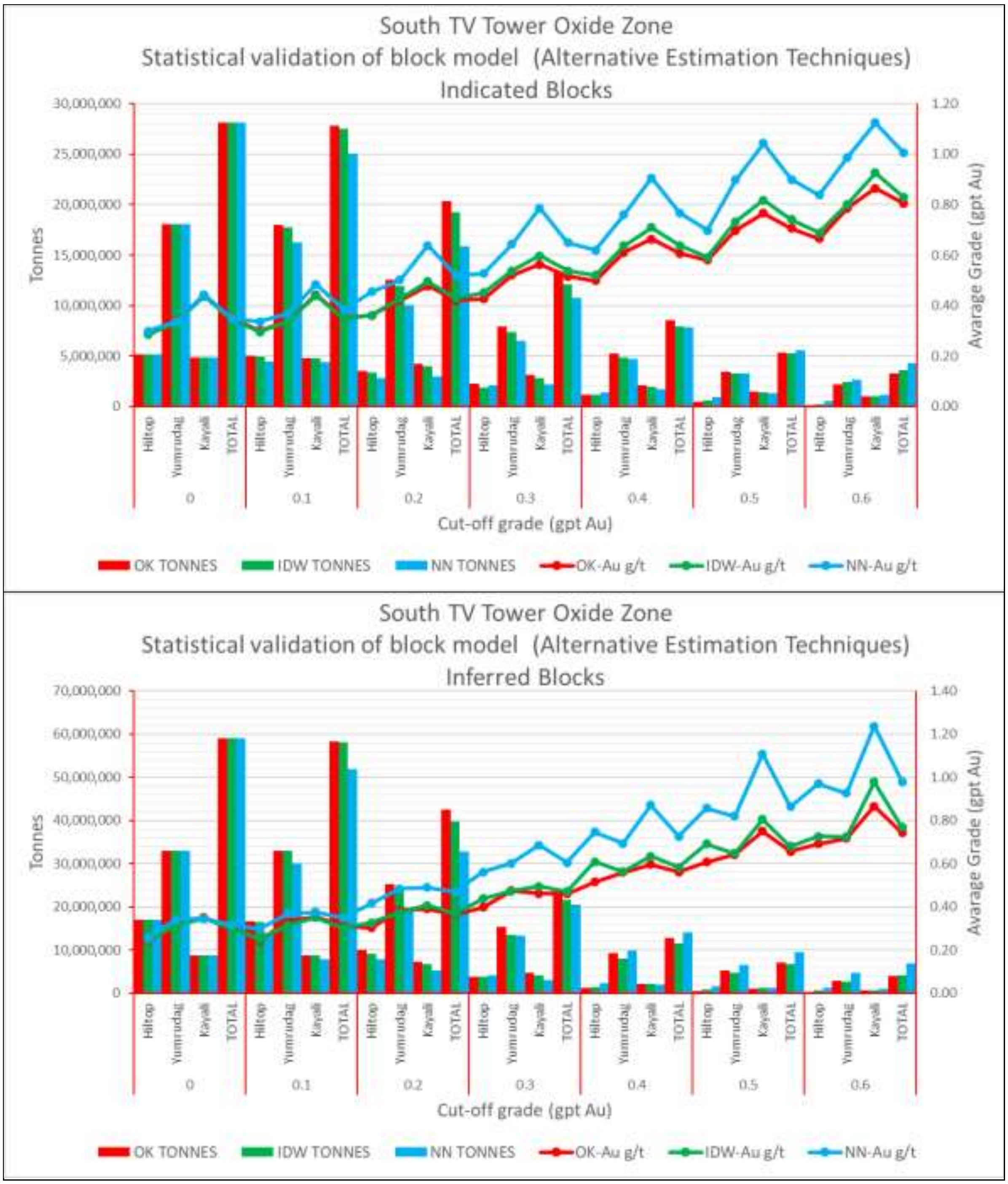


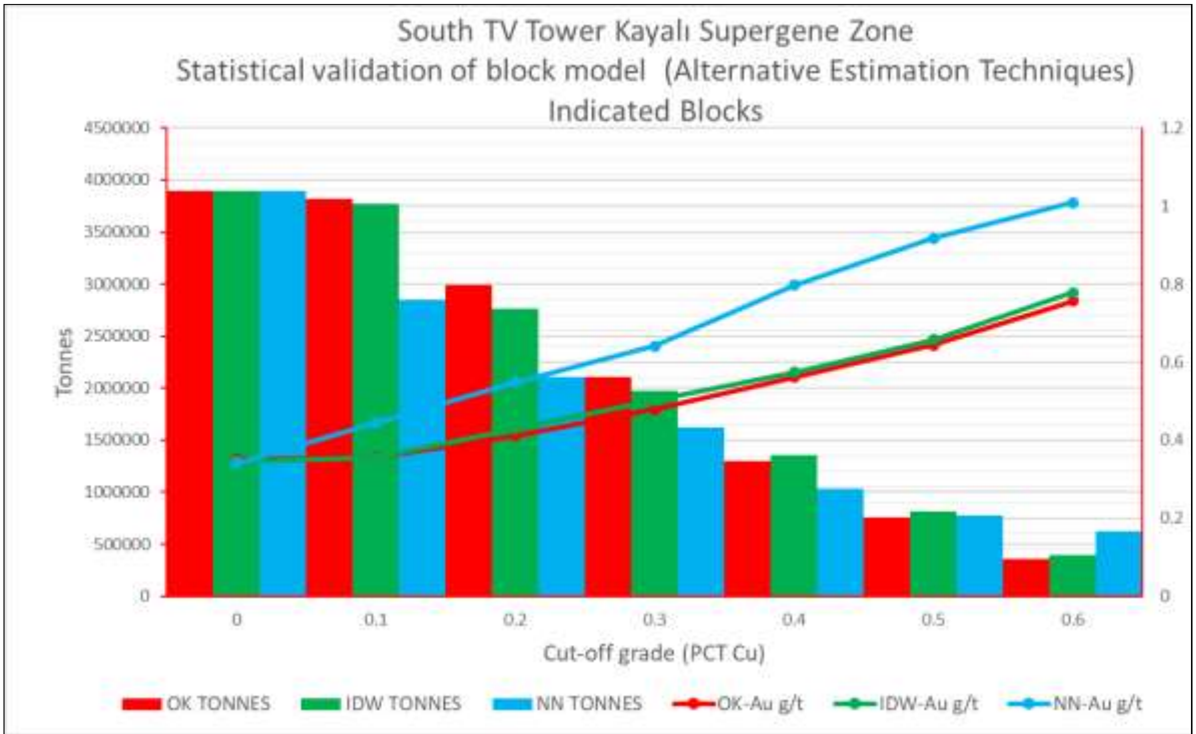


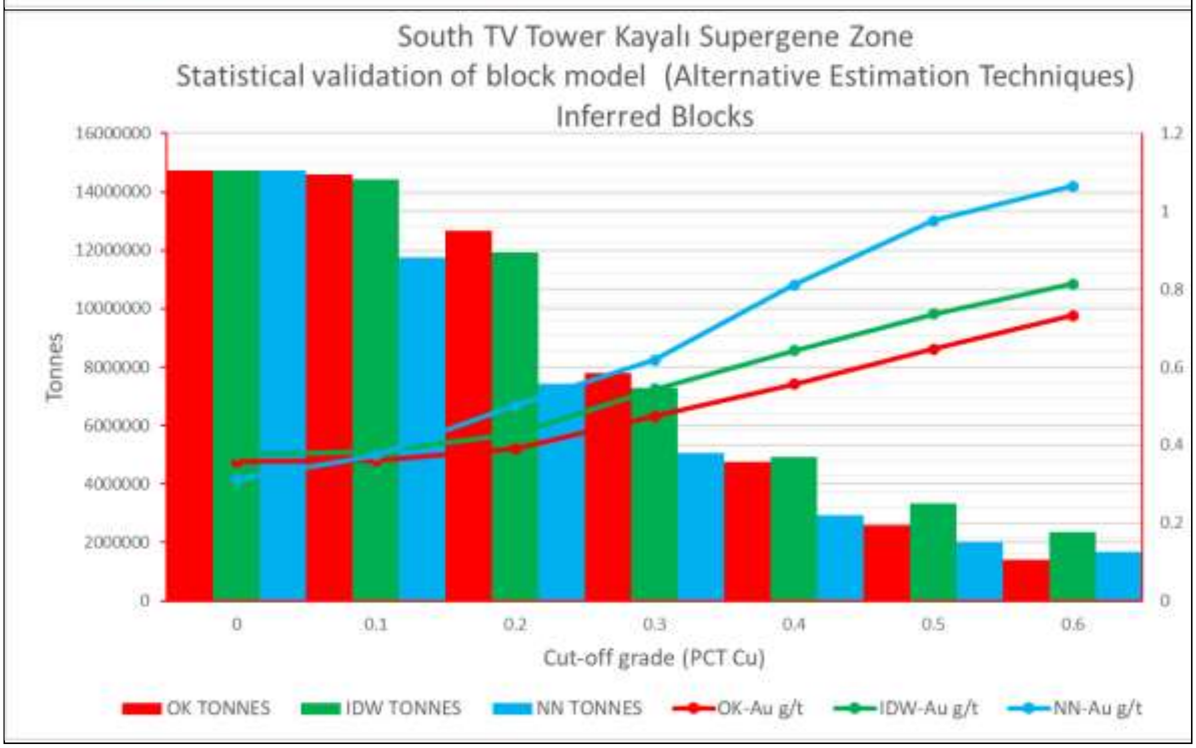
Domain Codes: 100: Hilltop-Yumru Oxide 200: Hilltop-Yumru Copper Gold; 300: Valley Copper Gold Zone; 400: Kayalı Gold Zone Oxide; 500: Kayalı Copper Zone -TR-S

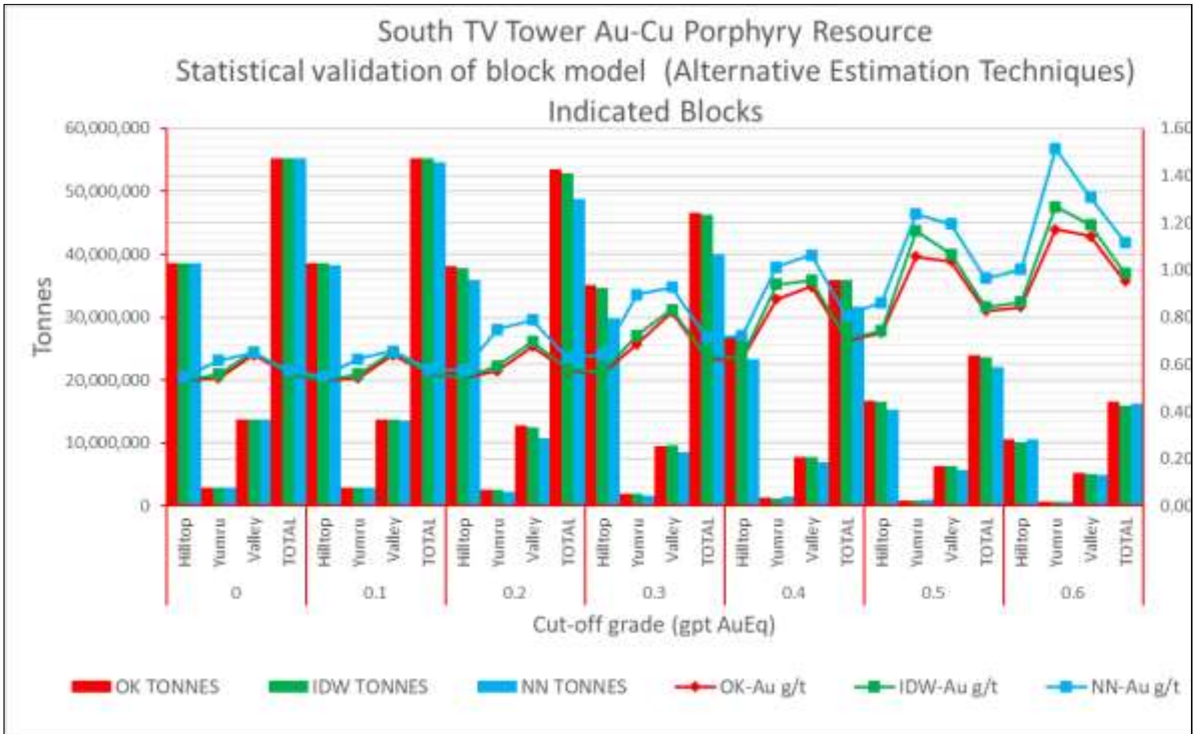
Validation by Alternative Estimation Methods: The block grades were also estimated by alternative estimation methods of IDW^2 and nearest neighbour to ensure the kriged estimate was not reporting a global bias (**Figure 14.16**). The alternative estimates show good correlations. Nearest neighbors analysis shows less tonnes and higher grade (less contained metal) as it does not employ averaging techniques to estimate the block gradeThe IDW^2 estimate is closer to kriging as it does use averaging weighted by distance. But it is not able to take into account anisotropy, nor nugget effect. Also, IDW^2 can not de-cluster the input data. Using the kriging algorithm provides a reliable estimate due to the ability of kriging to de-cluster data and weight the samples based on a variogram.

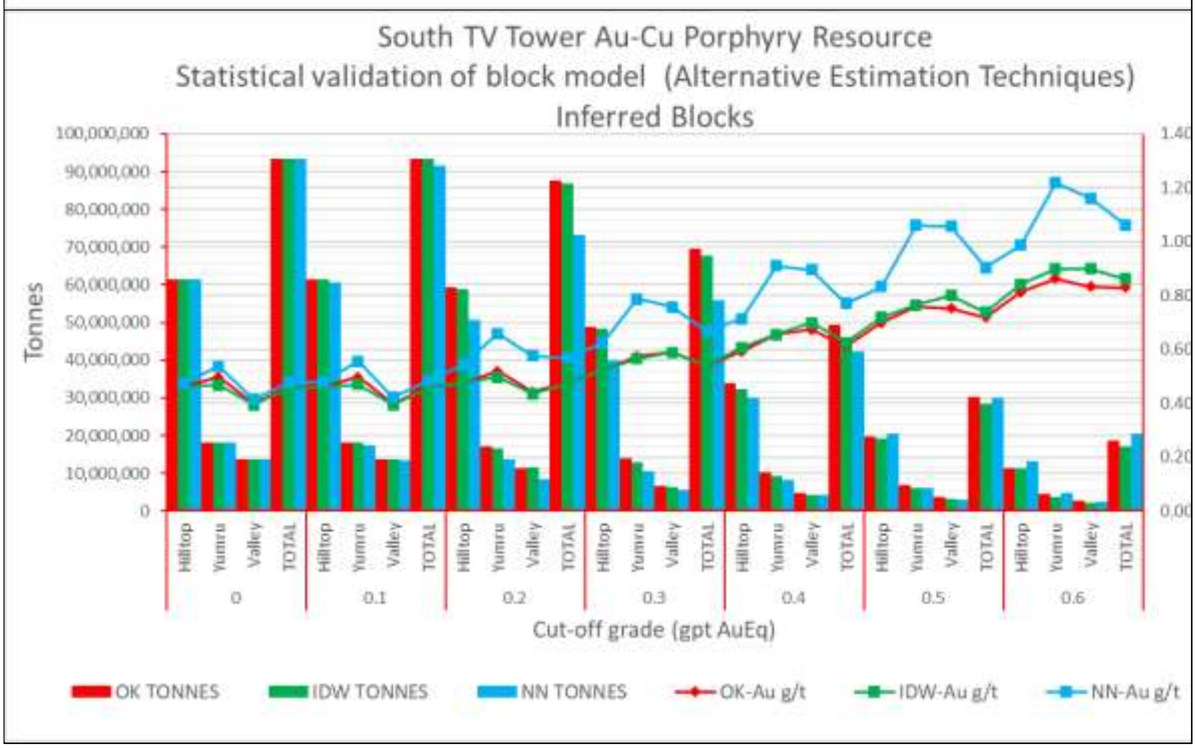
Figure 14.16Alternative Estimation Techniques




South TV Tower Kayalı Supergene Zone
Statistical validation of block model (Alternative Estimation Techniques)
Indicated Blocks
Tonnes
4500000
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
1.2
1
0.8
0.6
0.4
0.2
0
0
0.1
0.2
0.3
0.4
0.5
0.6
Cut-off grade (PCT Cu)
OK TONNES
IDW TONNES
NN TONNES
OK-Au g/t
IDW-Au g/t
NN-Au g/t


South TV Tower Kayalı Supergene Zone
Statistical validation of block model (Alternative Estimation Techniques)
Inferred Blocks
Tonnes
16000000
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
1.2
1
0.8
0.6
0.4
0.2
0
0
0.1
0.2
0.3
0.4
0.5
0.6
Cut-off grade (PCT Cu)
OK TONNES
IDW TONNES
NN TONNES
OK-Au g/t
IDW-Au g/t
NN-Au g/t

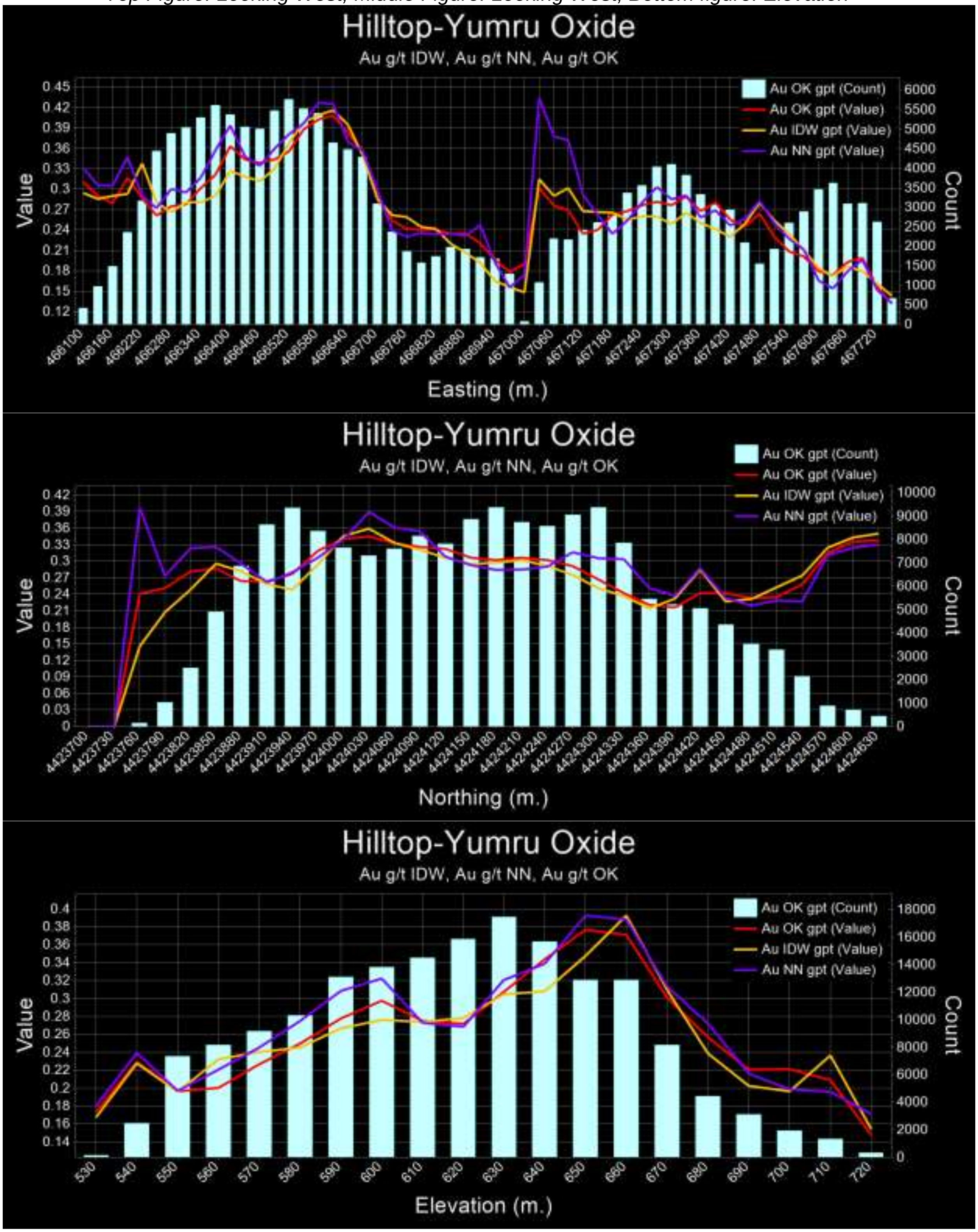


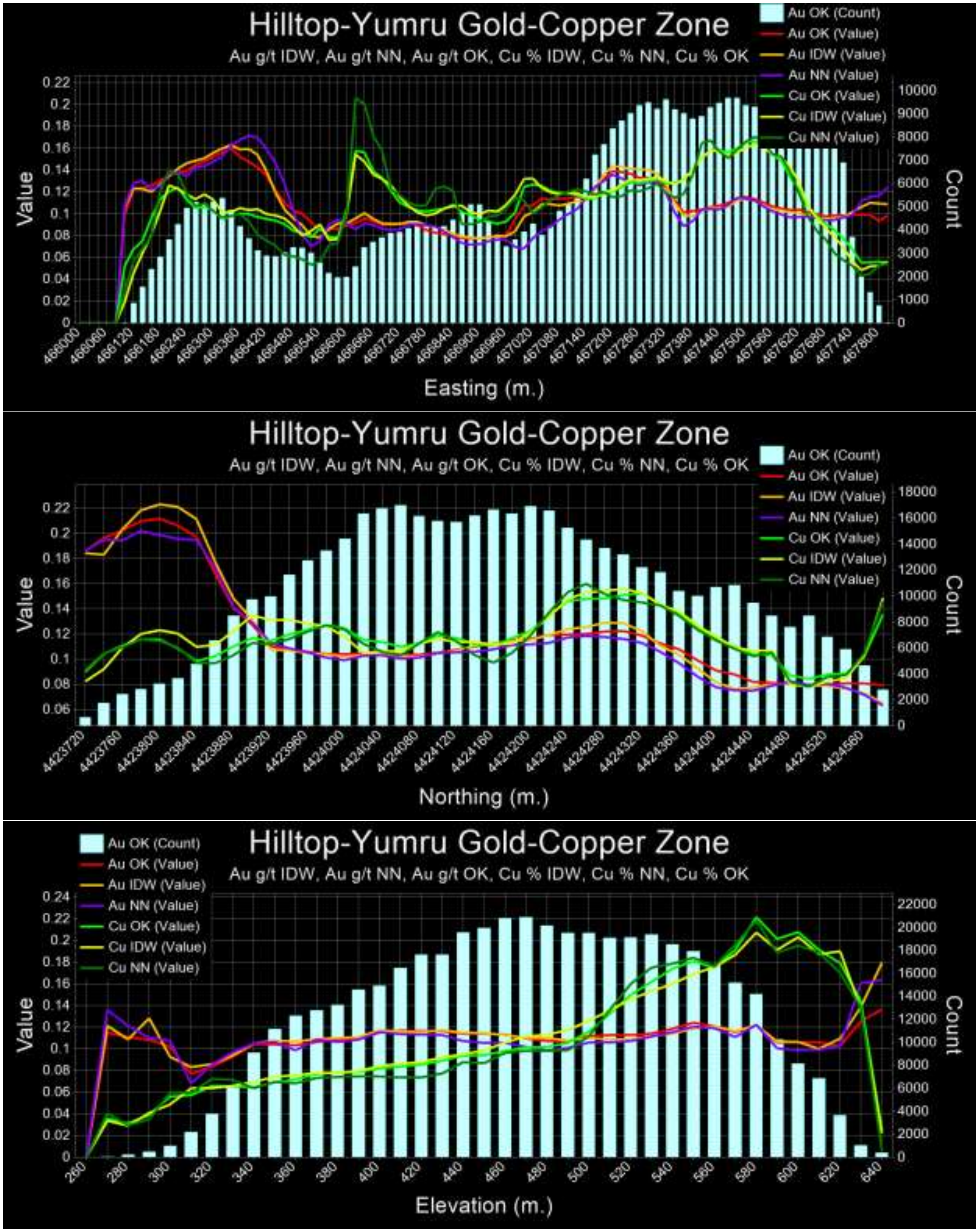


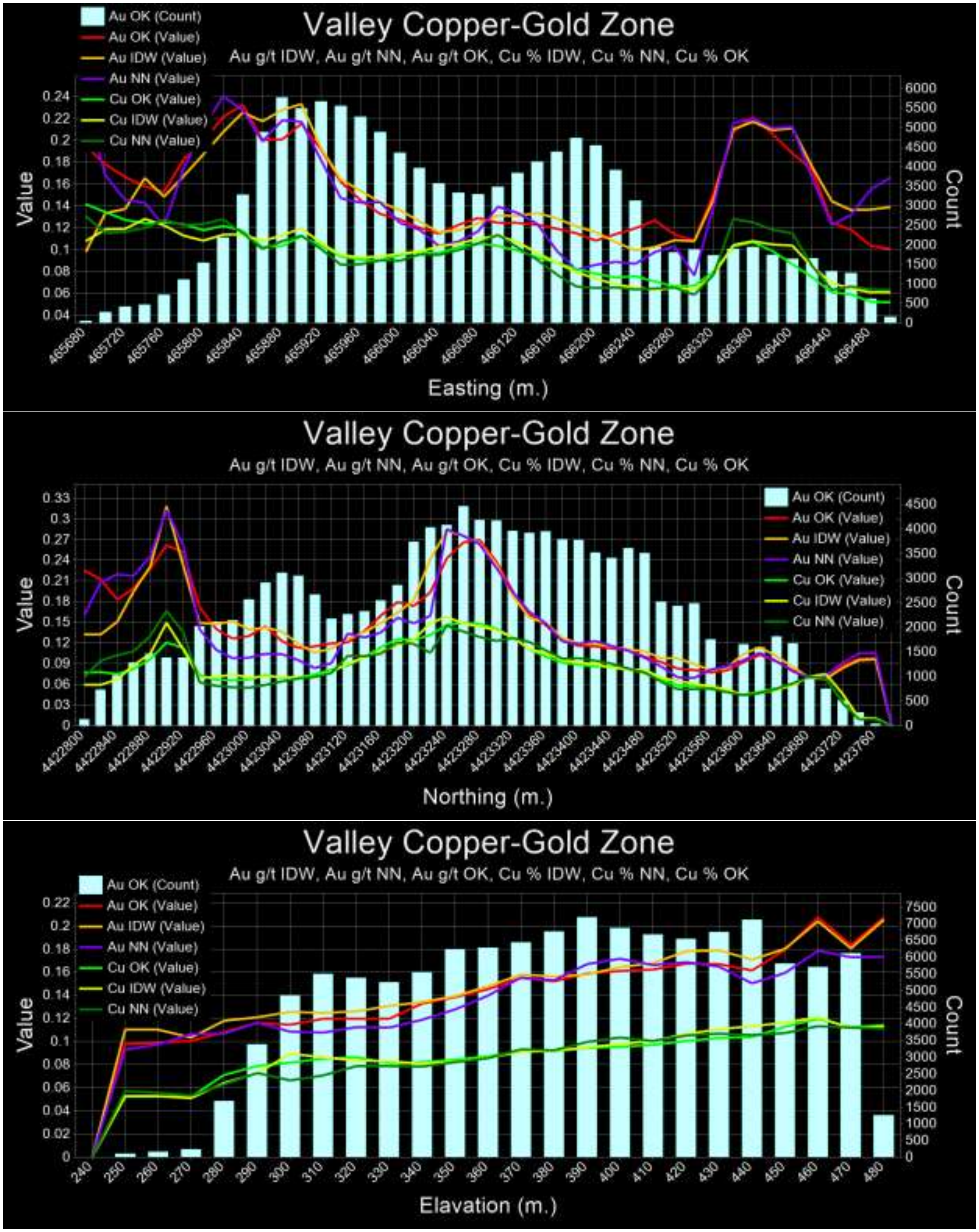
Swath Plots: As part of the validation process, swath plots were created to check for visual discrepancies between block grades and the input data along a number of corridors in three orthogonal directions through the deposit. Examples of the swath plots are shown in **Figures 14.17** shows for the gold and copper grades. No grade bias in the form of biased high (primary swath line with consistently above the validation swath line) or biased low (the primary swath line is consistently below the validation swath line) is identified.

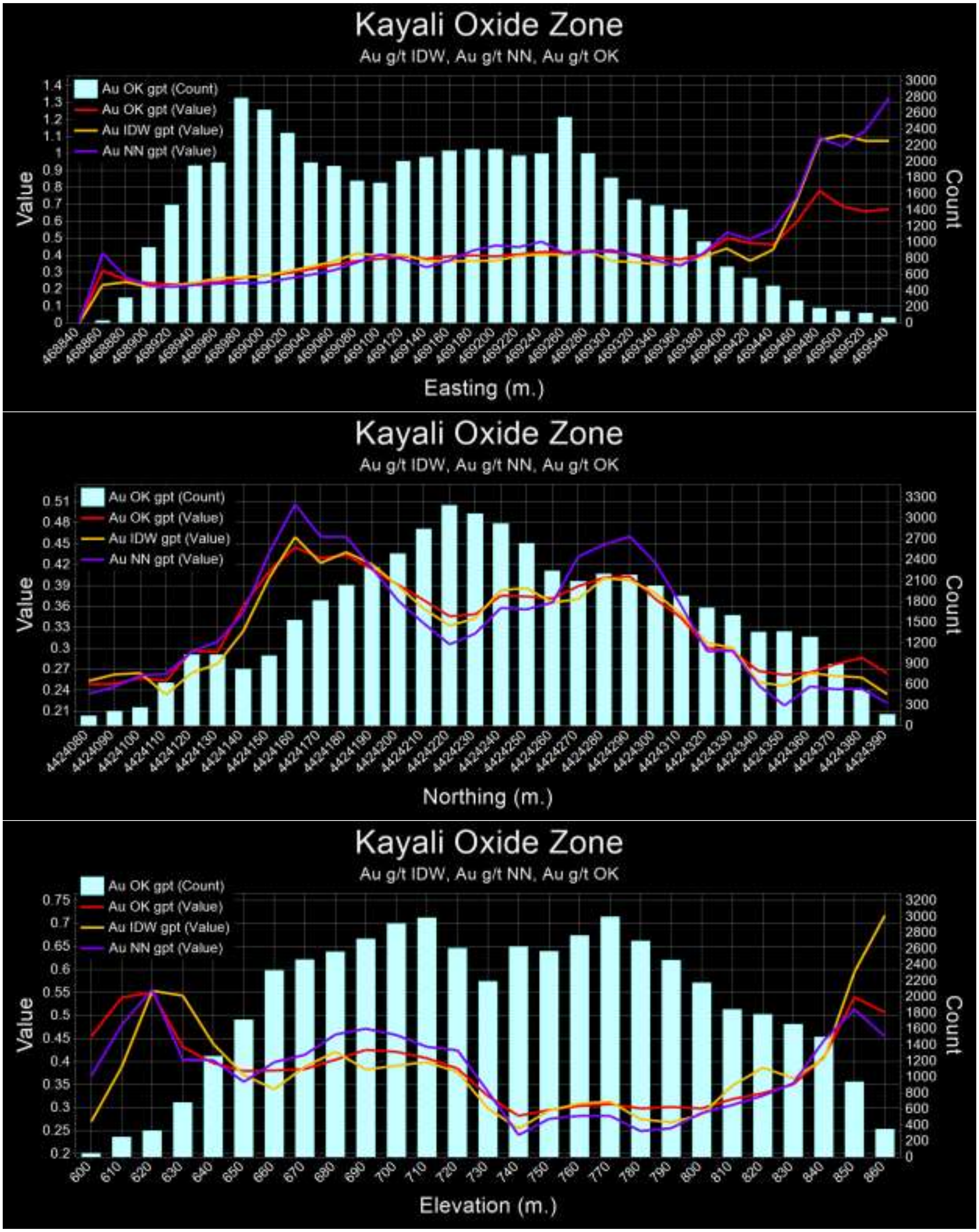
Figure 14.17: Swath Plots showing the local Au grade (g/t) trends across the South TV Tower Deposits

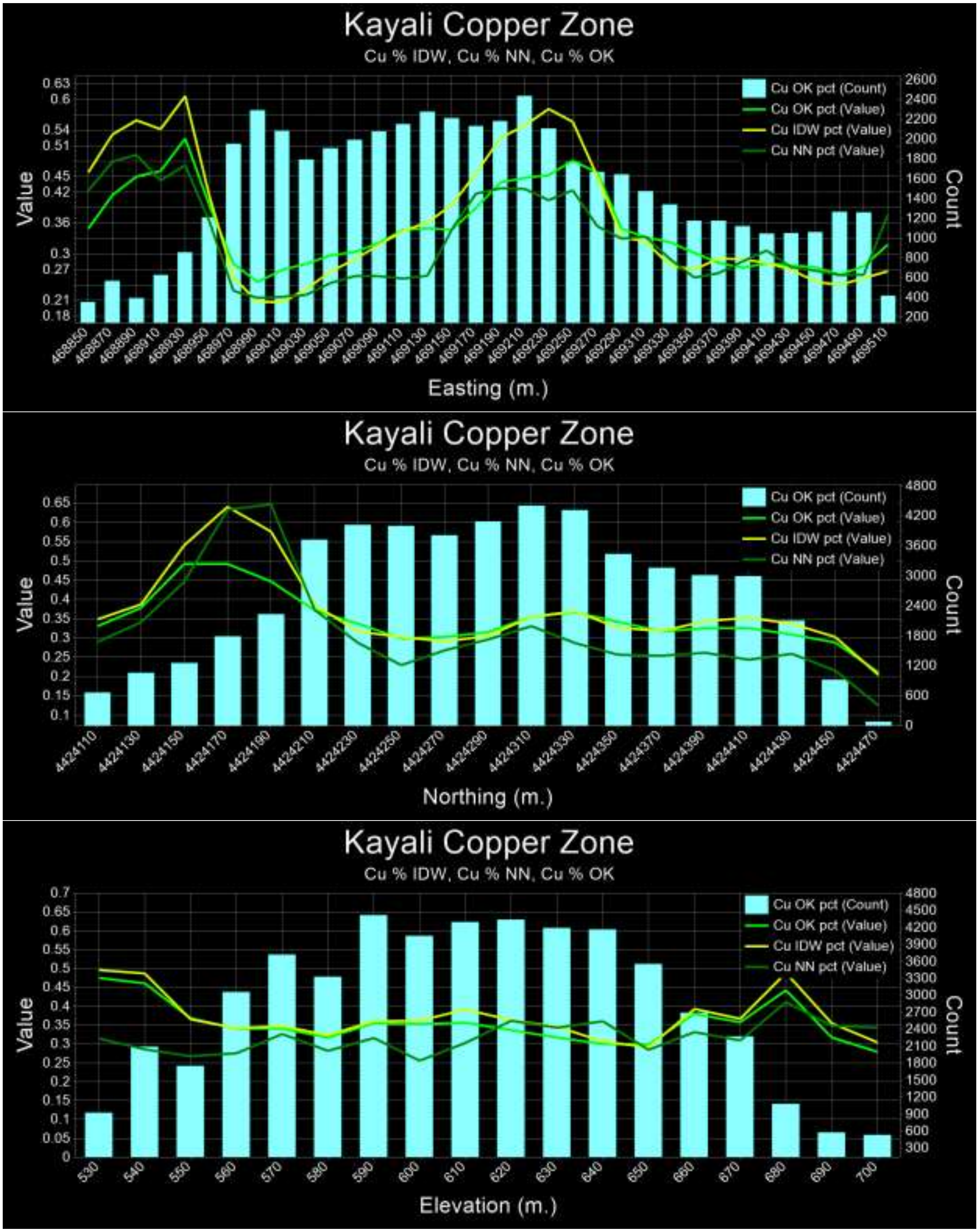
Top Figure: Looking West, Middle Figure: Looking West, Bottom figure: Elevation




Hilltop-Yumru Gold-Copper Zone
Au g/t IDW, Au g/t NN, Au g/t OK, Cu % IDW, Cu % NN, Cu % OK
Au OK (Count)
Au OK (Value)
Au IDW (Value)
Au NN (Value)
Cu OK (Value)
Cu IDW (Value)
Cu NN (Value)
Value
Count
Easting (m.)
Hilltop-Yumru Gold-Copper Zone
Au g/t IDW, Au g/t NN, Au g/t OK, Cu % IDW, Cu % NN, Cu % OK
Au OK (Count)
Au OK (Value)
Au IDW (Value)
Au NN (Value)
Cu OK (Value)
Cu IDW (Value)
Cu NN (Value)
Value
Count
Northing (m.)
Hilltop-Yumru Gold-Copper Zone
Au g/t IDW, Au g/t NN, Au g/t OK, Cu % IDW, Cu % NN, Cu % OK
Au OK (Count)
Au OK (Value)
Au IDW (Value)
Au NN (Value)
Cu OK (Value)
Cu IDW (Value)
Cu NN (Value)
Value
Count
Elevation (m.)


Valley Copper-Gold Zone
Au g/t IDW, Au g/t NN, Au g/t OK, Cu % IDW, Cu % NN, Cu % OK
Au OK (Count)
Au OK (Value)
Au IDW (Value)
Au NN (Value)
Cu OK (Value)
Cu IDW (Value)
Cu NN (Value)
Value
Count
Easting (m.)
Valley Copper-Gold Zone
Au g/t IDW, Au g/t NN, Au g/t OK, Cu % IDW, Cu % NN, Cu % OK
Au OK (Count)
Au OK (Value)
Au IDW (Value)
Au NN (Value)
Cu OK (Value)
Cu IDW (Value)
Cu NN (Value)
Value
Count
Northing (m.)
Valley Copper-Gold Zone
Au g/t IDW, Au g/t NN, Au g/t OK, Cu % IDW, Cu % NN, Cu % OK
Au OK (Count)
Au OK (Value)
Au IDW (Value)
Au NN (Value)
Cu OK (Value)
Cu IDW (Value)
Cu NN (Value)
Value
Count
Elavation (m.)


Kayali Oxide Zone
Au g/t IDW, Au g/t NN, Au g/t OK
Au OK gpt (Count)
Au OK gpt (Value)
Au IDW gpt (Value)
Au NN gpt (Value)
Value
Count
Easting (m.)
Kayali Oxide Zone
Au g/t IDW, Au g/t NN, Au g/t OK
Au OK gpt (Count)
Au OK gpt (Value)
Au IDW gpt (Value)
Au NN gpt (Value)
Value
Count
Northing (m.)
Kayali Oxide Zone
Au g/t IDW, Au g/t NN, Au g/t OK
Au OK gpt (Count)
Au OK gpt (Value)
Au IDW gpt (Value)
Au NN gpt (Value)
Value
Count
Elevation (m.)


Kayali Copper Zone
Cu % IDW, Cu % NN, Cu % OK
Cu OK pct (Count)
Cu OK pct (Value)
Cu IDW pct (Value)
Cu NN pct (Value)
Value
Count
Easting (m.)
Kayali Copper Zone
Cu % IDW, Cu % NN, Cu % OK
Cu OK pct (Count)
Cu OK pct (Value)
Cu IDW pct (Value)
Cu NN pct (Value)
Value
Count
Northing (m.)
Kayali Copper Zone
Cu % IDW, Cu % NN, Cu % OK
Cu OK pct (Count)
Cu OK pct (Value)
Cu IDW pct (Value)
Cu NN pct (Value)
Value
Count
Elevation (m.)

14.2.10 Specific Gravity

Specific gravity ("SG") has been measured by wax dip immersion of >10 cm long core samples for 815 representative drill core specimens from all rock and alteration types impacting the host rock types present at the studied deposit at the time of this resource estimation. The SG values range from 1.83 to 3.06 t/m^3 depending on the rock types and oxidation state, across the deposit. Accordingly, the host rock types at TV Tower were sub-divided by modeled oxide, transition and sulphide zones, resulting in 45 SG sub-domains that best outline the density variation at TV Tower. Average rock type density values for the combined domains are displayed in **Table 14.19.**

Table 14.19: Average rock type density

	OX				TR				S			
Rock	Count	Min	Max	Mean	Count	Min	Max	Mean	Count	Min	Max	Mean
AND	49	1.88	2.62	2.31	32	1.68	2.66	2.34	3	2.46	2.52	2.49
BX	98	2.22	2.85	2.50	78	1.50	2.94	2.67	46	2.40	2.90	2.69
HFCP	22	2.32	3.00	2.64	187	2.08	2.85	2.54	43	2.42	2.69	2.58
HFDP1	82	2.03	2.55	2.33	324	1.99	3.00	2.41	*			
HFDP2	25	1.90	2.85	2.32	250	2.00	3.03	2.48	32	2.26	2.67	2.51
HFMP	68	2.20	2.70	2.52	142	2.45	2.78	2.62	1	2.69	2.69	2.69
HFP_Low	*				12	1.91	3.00	2.59	35	2.33	2.97	2.72
HFP_Mid	*				9	2.18	2.58	2.50	*			
ICBX	33	2.09	2.55	2.38	98	2.23	2.81	2.54	7	2.04	2.69	2.50
K2QHFP	47	2.09	2.61	2.42	214	1.76	3.06	2.51	50	2.29	3.00	2.57
KB	20	2.27	2.73	2.63	29	2.44	2.72	2.66	*			
QHFMP	34	2.24	2.68	2.60	501	1.67	2.80	2.61	3	2.49	2.56	2.53
SERP	*				12	2.18	2.83	2.54	5	2.52	2.76	2.64
SIL	90	1.69	3.00	2.44	3	2.50	2.57	2.54	2	2.63	2.75	2.69
VCX	247	1.83	3.00	2.37	91	2.13	2.93	2.59	74	1.94	3.07	2.70

**no measurements available, value based on average oxidation state difference applied to sulphide value*.

14.2.11 Mineral Resource Classification

The initial Mineral Resource classification was done based on the the confidence in the geological continuity of the mineralized structures and quality of exploration data supporting the estimates. DAMA is satisfied that the geological modelling honors the current geological information and knowledge. The location of the samples and the assay data are sufficiently reliable to support resource estimation. To classify the estimated blocks, DAMA used the following criteria.

- Confidence in interpretation of the mineralized zones.
- Continuity of gold or copper grades defined from variogram models.
- Number of samples used to estimate a block.
- Number of drill holes used to estimate a block.

Each block within the block model was assigned into one of the following categories:

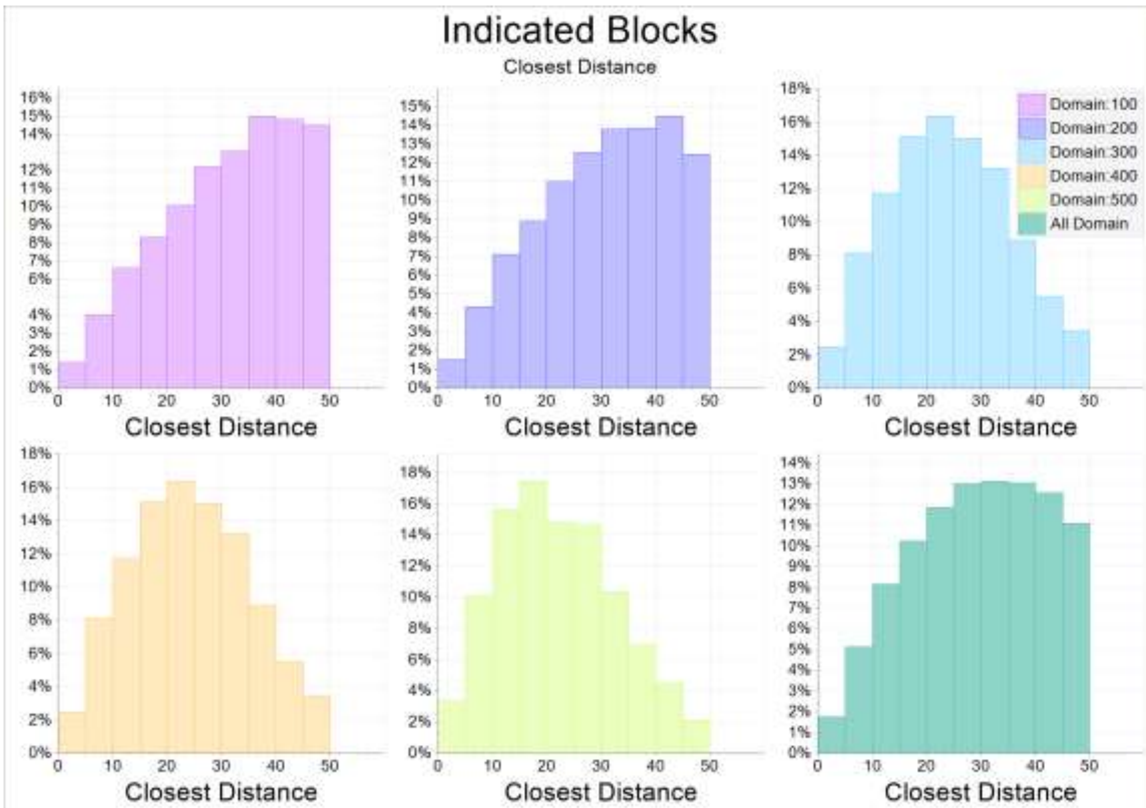
- Indicated Mineral Resource was assigned to the blocks interpolated at first run, using search radii equal to the variogram range distances. The Indicated blocks were predominantly informed by at least 3 samples from at least 2 drill holes with a distance closer than 50 m to the block.
- The remaining blocks within the optimized pit shell were classified as Inferred Mineral Resources.
- All the blocks out of the optimized pit were classified as unclassified mineralized materials.

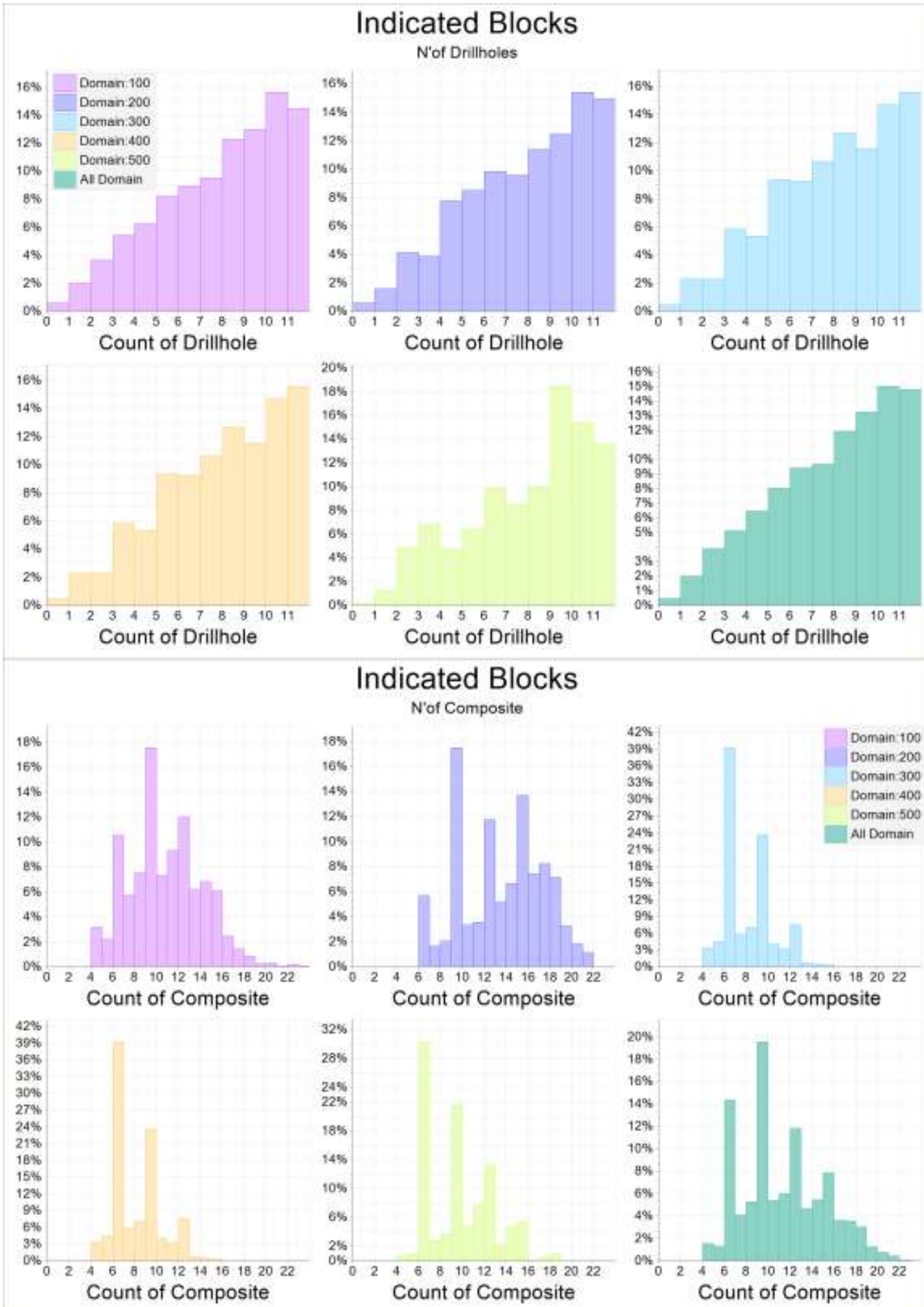
DAMA subsequently made some adjustments to delineate regular areas at similar resource classification.

DAMA is of the opinion that the South TV Tower mineral resource estimates are classified in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves, Definitions and Guidelines prepared by CIM Standing Committee on Reserve Definitions and adopted by CIM Council on May 10, 2014. Mineral resources were estimated in conformity with generally accepted CIM "Estimation of Mineral Resource and Mineral Reserve Best Practices" Guidelines.

It should be noted that the confidence of the Inferred resources is insufficient to allow for the meaningful application of technical and economic parameters or to enable an evaluation of economic viability.

Figure 14.18: Distribution of Indicated resources at South TV Tower deposits.




Indicated Blocks
N'of Drillholes
Domain:100
Domain:200
Domain:300
Domain:400
Domain:500
All Domain
Count of Drillhole
Count of Drillhole
Count of Drillhole
Count of Drillhole
Count of Drillhole
Count of Drillhole
Indicated Blocks
N'of Composite
Domain:100
Domain:200
Domain:300
Domain:400
Domain:500
All Domain
Count of Composite
Count of Composite
Count of Composite
Count of Composite
Count of Composite
Count of Composite

14.2.12 Expectations of Economic Extraction

In order to meet the “reasonable prospects for eventual economic extraction” requirement, pit constrained Mineral Resources were reported at an appropriate cut-off grade, taking into account extraction and processing scenarios.

At the present project stage, open pit mining would be considered the appropriate operating scenerio for the studied near-surface deposits. Based on the matallurgical tests completed to date, it is assumed that the oxide material would be amenable to recovery by heap leaching, while sulphide material would be amenable to recovery by flotation processing.

To determine the quantities of material offering “reasonable prospects for eventual economic extraction”, DAMA constructed open pit scenarios developed from the resource block model estimate using Micromine’s Lerchs-Grossman miner “Pit Optimizer” software. No part of the block model that falls outside of the pit shell is included in the resource.

Reasonable mining assumptions presented in **Table 14.20** were applied to evaluate the portions of the block model that could be “reasonably expected” to be mined from an open pit. The gold and copper prices used for the estimate are based forecast prices quoted from Apex Forecasting Q4 2020 and Monthly commodity Insights by ABN AMRO Groups Economic February 2021, in accordance with 2020 CIM Guidance on Commodity Pricing. The cost parameters were assumed based on experience and benchmarking against similar projects in Turkey. The heap leach and flotation process recoveries were assumed as given in the **Table 14.20**, taking into account results of the initial metallurgical tests (see Section 13) and experience in similar project in the region.

Table 14.20: Assumptions for the TV Tower Project Cut-off Grade and Pit Optimization Parameters

Gold Price $/oz	1,600$/oz
Copper Price $/t	3.4 $/lb
Pit slope angle	50˚
Mining Cost	1$/ton
Oxide Gold Zone	
G&A Cost (including other costs)	1.0 $/ton
Process Cost	5$/ton
Hilltop-Yumru (100)	
Au Recovery %	91%
Kayalı (400)	
Au Recovery %	76%
Gold Copper Zone (200,300,500)	
G&A Cost (including other costs)	1.0 $/ton
Process Cost	11.35$/ton
Au Recovery %	65%
Cu Recovery %	87%

Using these parameters DAMA calculated the cut-off grades given in the **Table 14.21** for the current Mineral Resource Estimate with the following equation, with gold equivalence derived from parameters in **Table 14.22**:

Cut-off Grade= (Mining cost + Processing cost + G&A cost)/ (Au Price x Au Recovery+ Ag Price x Ag Recovery)

Table 14.21: Cut-off grades used for the current South TV Tower Mineral Resource Estimates

Domain	Resource Cut-off		
	Au (g/t)	Cu (%)	AuEq (g/t)
100	0.2	-	
200 and 300	-	-	0.4
400	0.2	-	
500		0.2	

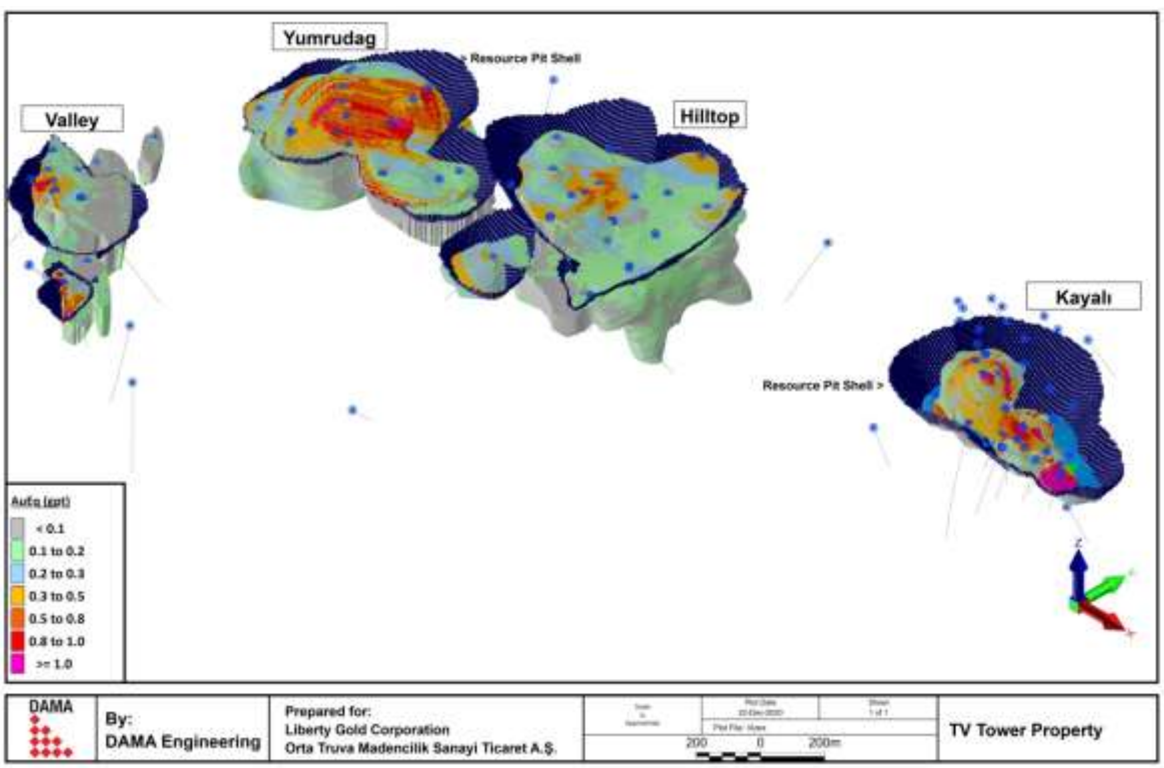
Table 14.22: Gold equivalence parameters

Metal	Price	Recovery
Au	$ 1600 / oz	65%
Cu	$ 3.4 / lb	87%

Consequently, DAMA defined the mineralization with potential for economic extraction (the Mineral Resources) based on three separate cut-off grades: 1) 0.20 g/t Au for Kayalı, Yumrudağ and Hilltop gold oxide zones; 2) 0.2 % Cu for the Kayalı supergene copper zone; and 3) 0.4 g/t AuEq for Hilltop, Yumrudağ and Valley Au-Cu porphyry zones. DAMA considers that the blocks located within the resulting conceptual pit envelope show "reasonable prospects for economic extraction" and can be reported as a mineral resource. It should be noted that although a reasonable prospect for economic extraction exists for the estimated resources, economic viability has not yet been demonstrated. There are presently no mineral reserves on the project.

The Resource block model is shown graphically for each of the South TV Tower deposits in figures 14.19 through 14.24.

Figure 14.19: 3D Oblique View of Open Pit Design and for South TV Tower Deposits



Block model illustrates grade in gold equivalent.

Figure 14.20: Indicated and Inferred Resources classified at South TV Tower deposits.

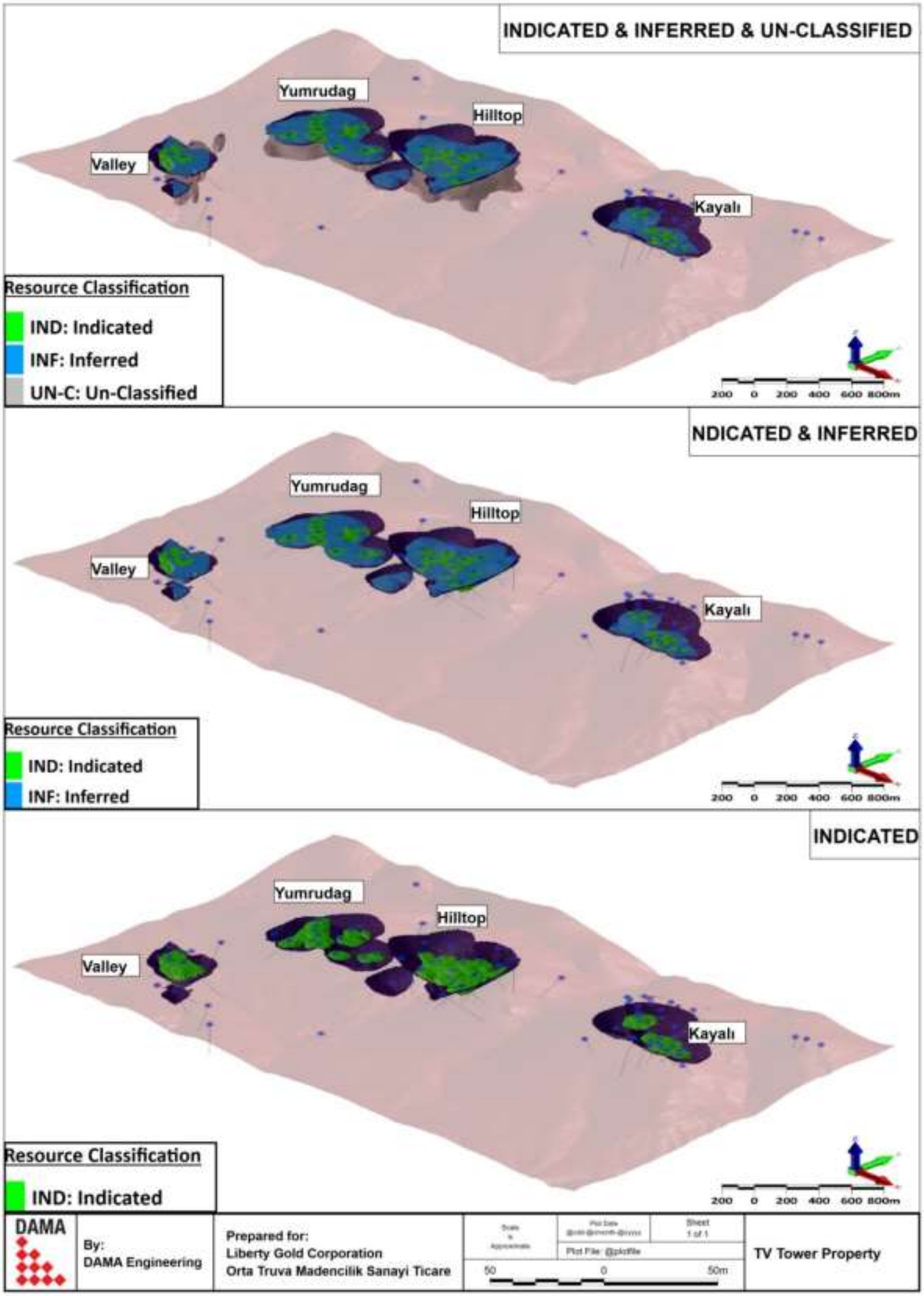
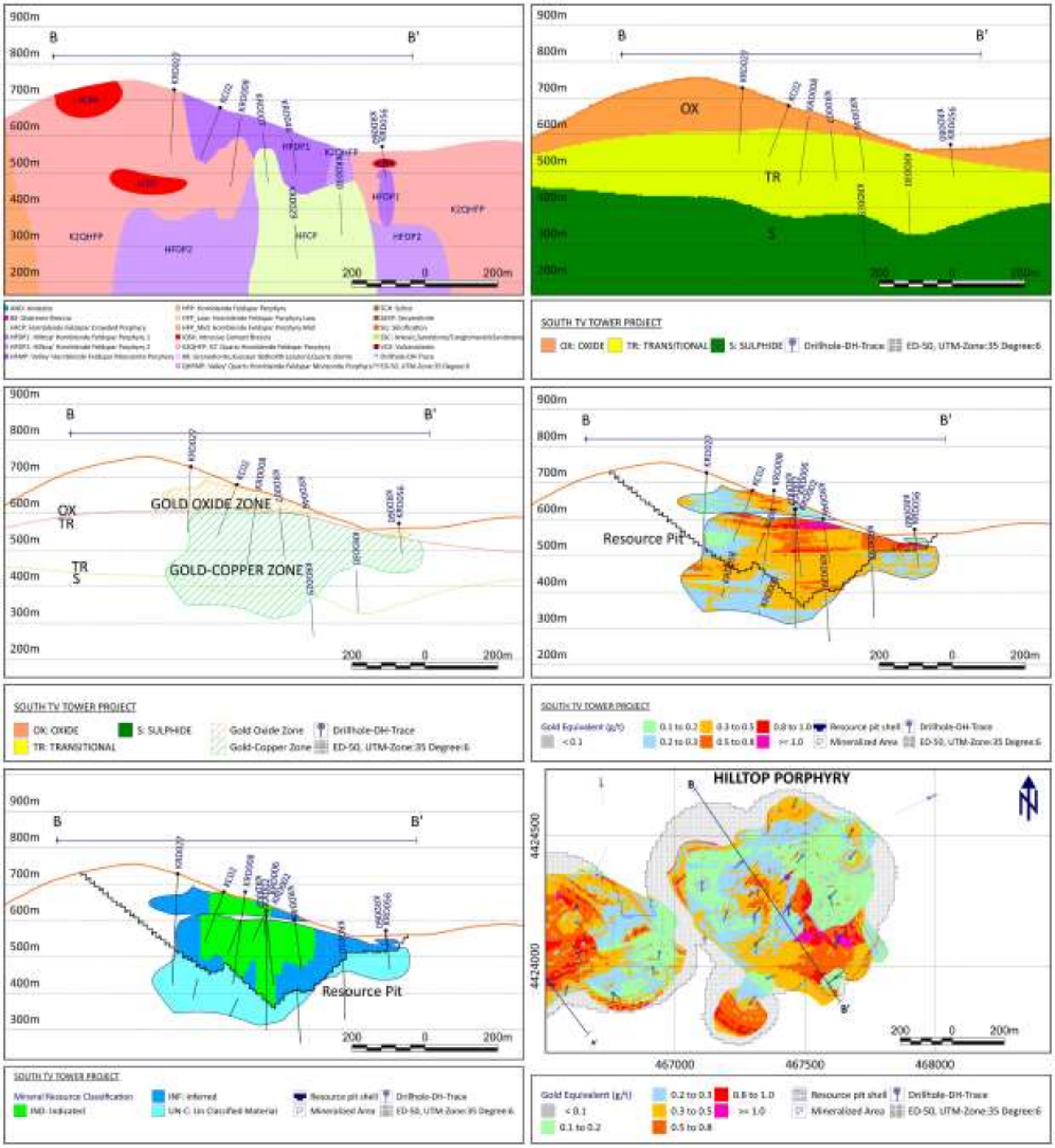
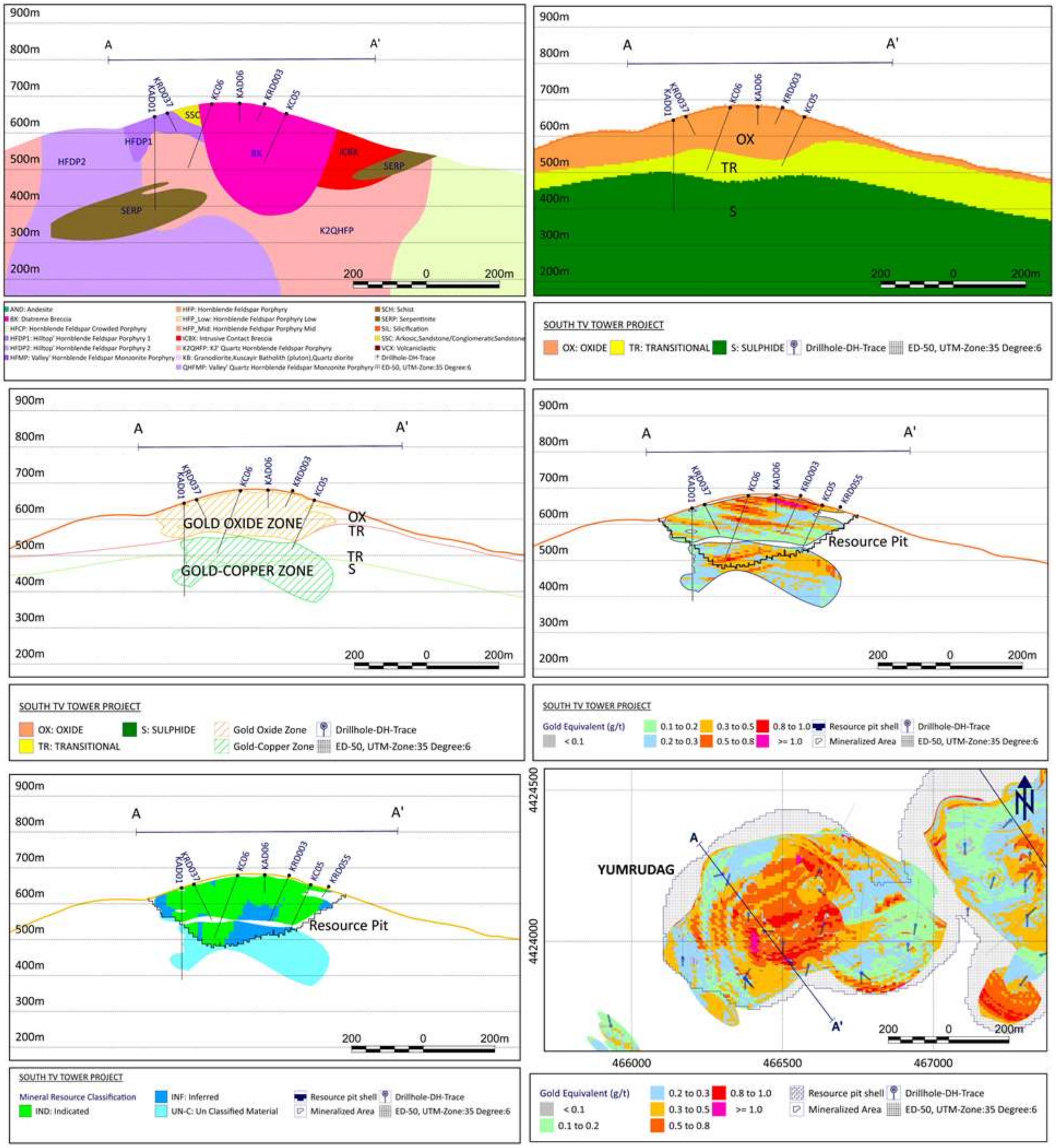


Figure 14.21: Representative Vertical Sections for the Hilltop Porphyry Deposit



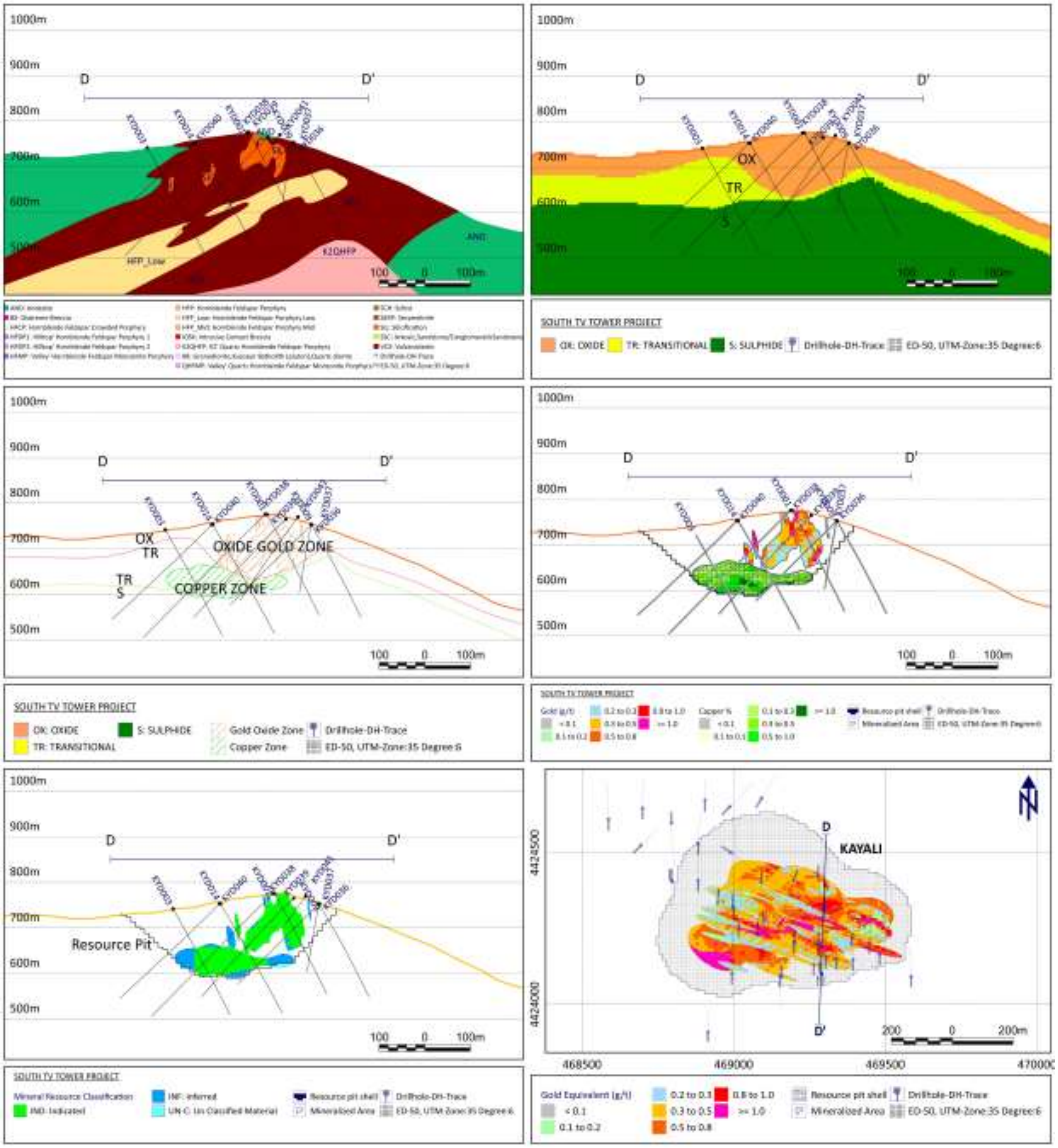
Top left: Geological interpretation; Top right: Oxidation: Middle left: Mineralization zones; Middle right: Block model grades; Bottom left: Resource classification; Bottom right: Plan view of block model.

Figure 14.22: Representative Vertical Sections for the Yumrudağ Gold Deposit



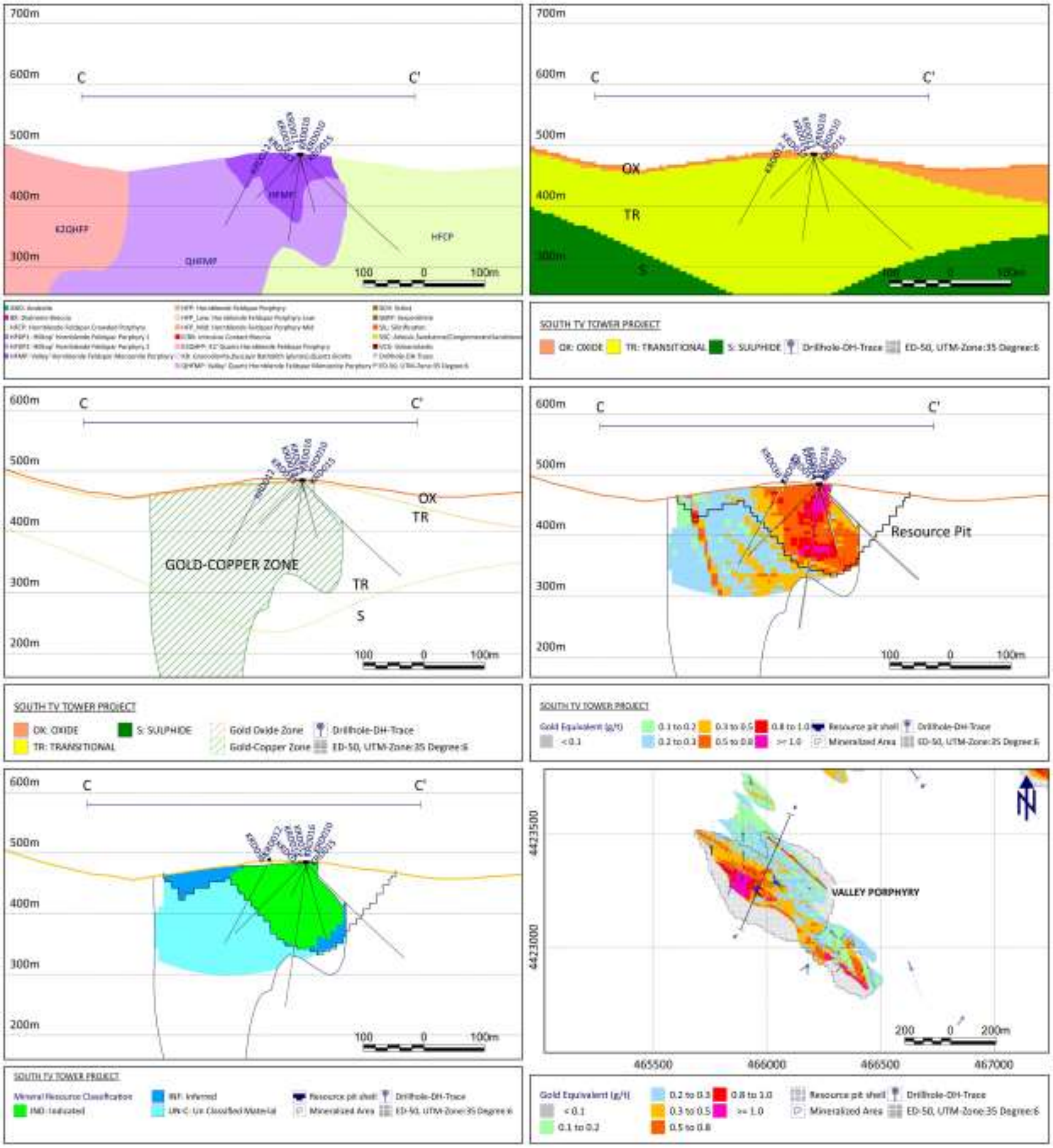
Top left: Geological interpretation; Top right: Oxidation: Middle left: Mineralization zones; Middle right: Block model grades; Bottom left: Resource classification; Bottom right: Plan view of block model.

Figure 14.23: Representative Vertical Sections for the Kayalı Gold Deposit



Top left: Geological interpretation; Top right: Oxidation: Middle left: Mineralization zones; Middle right: Block model grades; Bottom left: Resource classification; Bottom right: Plan view of block model.

Figure 14.24: Representative Vertical Sections for the Valley Gold-Copper Deposit



Top left: Geological interpretation; Top right: Oxidation: Middle left: Mineralization zones; Middle right: Block model grades; Bottom left: Resource classification; Bottom right: Plan view of block model.

14.2.13 Mineral Resource Statement

The South TV Tower pit-constrained Mineral Resource is reported in **Table 14.23**.

Table 14.23: In-Pit Mineral Resource Statement for the SouthTV Tower Deposit

Resource	Resource Classification	SOUTH TV TOWER Gold Resource Subset							Cut-off
		TONNES	GRADE			METAL CONTENT $x10^3$			
			Au	Cu	AuEq	Au	Cu	AuEq	
		$X10^6$	g/t	%	g/t	Oz	lb	Oz	
ALL OXIDE	**Indicated**	**20.35**	**0.42**		**0.42**	**276**		**276**	**0.2 g/t Au**
	Inferred	**42.48**	**0.37**		**0.37**	**501**		**501**	
Kayalı	Indicated	4.26	0.48		0.48	65		65	
	Inferred	7.33	0.39		0.39	92		92	
Yumrudağ	Indicated	12.54	0.42		0.42	169		169	
	Inferred	25.18	0.39		0.39	312		312	
Hilltop	Indicated	3.55	0.36		0.36	41		41	
	Inferred	9.97	0.30		0.30	97		97	
Kayalı SUPERGENE	**Indicated**	**2.99**		**0.41**			**27,151**		**0.2 % Cu**
	Inferred	**12.65**		**0.39**			**108,652**		
ALL Au-Cu PORPHYRY	**Indicated**	**35.85**	**0.23**	**0.24**	**0.70**	**264**	**191,242**	**808**	**0.4 g/t AuEq**
	Inferred	**49.32**	**0.16**	**0.23**	**0.61**	**260**	**250,937**	**974**	
Hilltop	Indicated	26.83	0.16	0.24	0.63	138	141,352	540	
	Inferred	34.02	0.16	0.22	0.59	176	166,344	649	
Yumrudağ	Indicated	1.25	0.15	0.37	0.88	6	10,309	35	
	Inferred	10.37	0.11	0.28	0.66	36	64,260	218	
Valley	Indicated	7.77	0.48	0.23	0.93	120	39,582	232	
	Inferred	4.93	0.31	0.19	0.67	49	20,334	107	

Notes:

1) *The Qualified Person for the estimate is Mr. Mehmet Ali Akbaba, AIPG, P.Geo. of DAMA Mühendislik A.Ş.*
2) *The Effective Date of the mineral resource estimate is February 9, 2021.*
3) *The volume for each contiguous zone of above cut-off mineralization was defined by wireframing in 3D space and was used to constrain mineralization.*
4) *Metal assays were capped where appropriate using statistical methods.*
5) *Grade was interpolated by domain using Ordinary Kriging.*
6) *Density values were assigned by domain using density data derived from wax-dip immersion of core samples.*
7) *Mineral resources are reported within an optimized conceptual Micromine pit that uses the following input parameters: Au price: US$ 1600 /oz, Cu price: US$3.40 /lb; mining cost: US$1.00/t mined; processing cost: US$5.00/t ore processed by heap leach (including G&A) for oxide zone, US$12.35/t ore processed by flotation (including G&A); Recoveries are 91% Au for Yumrudağ-Hilltop oxide and 76% Au for Kayalı Oxide materials; 65% Au and 87%Cu for sulphide/supergene materials from the all prospects studied. The pit slope angle was 50°.*
8) *AuEq for sulphide/supergene ore types calculated using the following equation: Au (g/t) + Cu (%) / 0.6686 x 1.338. The gold equivalent formula was based on the following parameters: Cu price $3.40/lb, Au $1600/oz, Cu recovery: 87%, Au recovery:65%.*
9) *All figures rounded to reflect the relative accuracy of the estimate; this may result in apparent differences between tonnes, grade and contained metal content.*
10) *The Mineral Resources have been classified as Indicated and Inferred under the guidelines of the CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council, and procedures for classifying the reported Mineral Resources were undertaken within the context of the Canadian Securities Administration National Instrument 43-101.*

11) *No mining or metallurgical factors were applied to the block model grade estimates except gold and copper recovery used for cut-off determination.*
12) *Metal price forecasts used to constrain this estimate of Mineral Resources are subject to risk of actual prices that are higher or lower in the future.*
13) *Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resources estimated will be converted into Mineral Reserves.*
14) *The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues. As of the effective date of this report, no insurmountable issues of this nature have been identified, although all of these risks are vulnerable to change depending on the political climate at any given time in the future.*
15) *The quantity and grade of reported Inferred Mineral Resources in this estimation are uncertain in nature and there has been insufficient exploration to define these Inferred Mineral Resources as an Indicated Mineral Resource and it is uncertain if further exploration will result in upgrading them to an Indicated Mineral Resource category.*

14.2.14 Grade Sensitivity to Gold Cut-off

The mineral resources are sensitive to the selection of the reporting cut-off grade. The reader is cautioned that the information presented in Table 14.24 should not be misconstrued as a Mineral Resource Statement. Information is shown graphically in Figure 14.25.

Table 14.24: Open Pit-mineable Mineral Resource Sensitivity to Cut-off Grade

All South TV Tower Oxide Zones

Cut-off	INDICATED			INFERRED		
	Tonnes	Au	Au	Tonnes	Au	Au
g/t Au	$x10^6$	g/t	oz-t $x10^3$	$x10^6$	g/t	oz-t $x10^3$
0.4	8.58	0.61	168	12.82	0.56	231
0.3	13.28	0.52	220	23.91	0.46	354
0.2	**20.35**	**0.42**	**276**	**42.48**	**0.37**	**501**
0.1	27.82	0.35	314	58.36	0.31	583
0	28.12	0.35	315	58.96	0.31	585

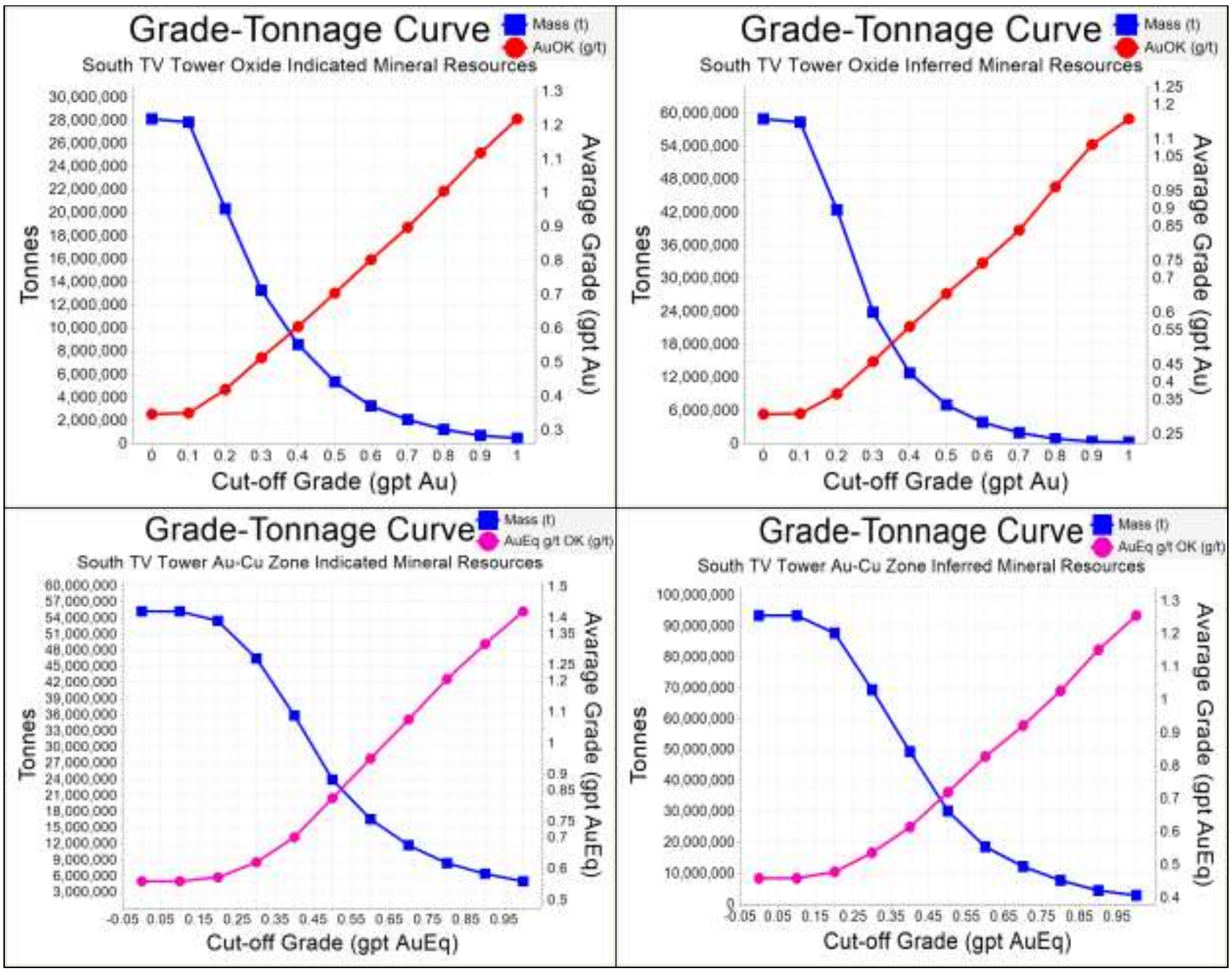
Kayalı Supergene Copper Zone

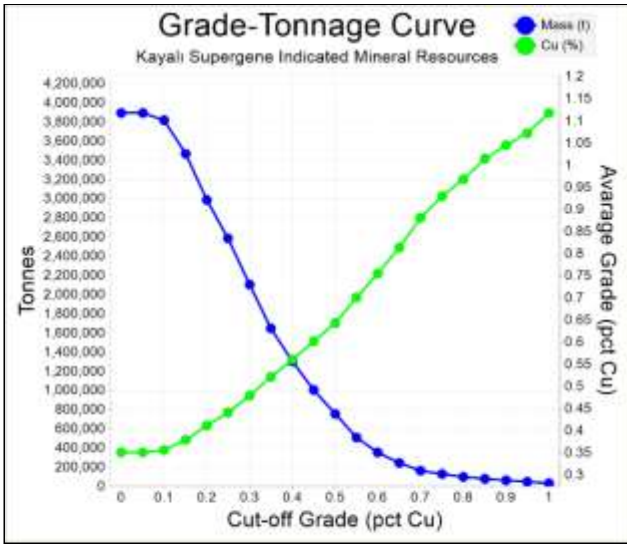
Cutoff	INDICATED			INFERRED		
Grade	TONNES	Cu	Cu	TONNES	Cu	Cu
Cu %	$x10^6$	pct	lb $x10^3$	$x10^6$	pct	lb $x10^3$
0.4	1.30	0.56	16,120	4.77	0.56	58,454
0.3	2.10	0.48	22,216	7.79	0.47	81,350
0.2	**2.99**	**0.41**	**27,151**	**12.65**	**0.39**	**108,652**
0.1	3.82	0.36	30,003	14.59	0.36	115,707
0	3.90	0.35	30,146	14.73	0.36	115,975

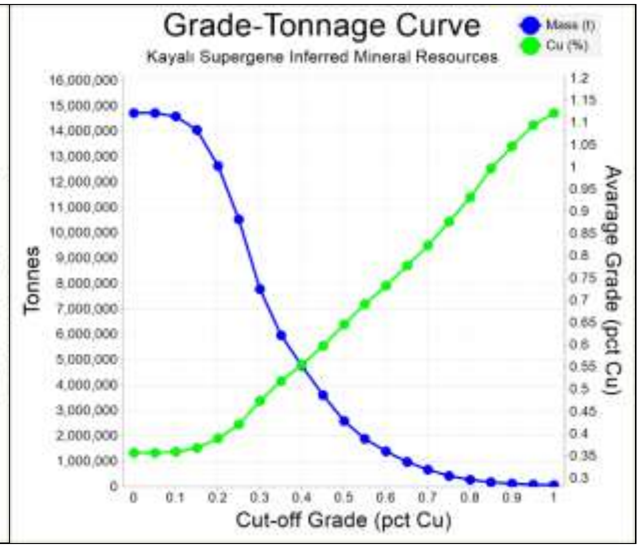
All South TV Tower Au-Cu Porphry Zones

Cutoff AuEq gpt	TONNES t x10^6	Au g/t	Cu pct	AuEq g/t	Au ozt x10^3	Cu lb x10^3	AuEq ozt x10^3	TONNES t x10^6	Au g/t	Cu pct	AuEq g/t	Au ozt x10^3	Cu lb x10^3	AuEq ozt x10^3
	Indicated							Inferred						
0.6	16.56	0.32	0.33	0.95	169	118,729	507	18.63	0.20	0.32	0.83	121	132,099	497
0.5	23.96	0.27	0.28	0.83	209	150,272	637	30.28	0.18	0.27	0.72	179	183,273	701
0.4	**35.85**	**0.23**	**0.24**	**0.70**	**264**	**191,242**	**808**	**49.32**	**0.16**	**0.23**	**0.61**	**260**	**250,937**	**974**
0.3	46.55	0.20	0.21	0.62	304	219,705	929	69.48	0.15	0.20	0.54	331	305,856	1,201
0.2	53.50	0.19	0.20	0.57	325	232,273	986	87.70	0.14	0.18	0.48	384	339,108	1,349

Figure 14.25 Grade-Tonnage Curves based on cut-off grade







14.2.15 Sensitivity to Metal Price

A price sensitivity analysis was prepared using a downside scenario gold price of US$1,000/oz as well as an upside scenario at US$2,200/oz. and downside scenario copper price of US$2.1/lb as well as an upside scenario at US$4.7/lb. Micromine pit optimization was completed using the same optimization parameters as for the current Mineral Resource Estimate except for changing the gold and copper price. The results of the sensitivity analysis are presented in **Table 14.25, Table 14.26** and **Table 14.28** demonstrate that the Resource Estimates are sensitive to a ± US$150/oz change in gold price and a ± US$0.3/lb change in copper.

Table 14.25: In-Pit mineral endowment sensitivity to gold price for South TV Tower oxide resource (base case at 0.2 g/t Au shown in red)

Metal Price	INDICATED			INFERRED		
Au	TONNES	Au	Au	TONNES	Au	Au
$/oz	X10^6	g/t	oz-t x10^3	X10^6	g/t	oz-t x10^3
1,000	18.75	0.44	263	33.96	0.39	425
1,150	19.47	0.43	269	39.25	0.37	472
1,300	20.24	0.42	275	41.77	0.37	494
1,450	20.33	0.42	276	42.26	0.37	499
1,600	**20.35**	**0.42**	**276**	**42.48**	**0.37**	**501**
1,750	20.44	0.42	277	42.74	0.37	503
1,900	20.44	0.42	277	42.82	0.37	504
2,050	7.81	0.43	107	42.88	0.37	504
2,200	7.81	0.43	107	42.89	0.37	504

Table 14.26: In-Pit mineral endowment sensitivity to copper price for South TV Tower supergene copper resource (base case at 0.2% Cu shown in red).

Metal Price	INDICATED			INFERRED		
Cu	TONNES	Cu	Cu	TONNES	Cu	Cu
$/lb	$X10^6$	pct	lb $x10^3$	$X10^6$	pct	lb $x10^3$
Kayalı Supergene, Cut-off: 0.2pct Cu						
2.1	1.49	0.49	15,904	2.11	0.51	23,659
2.4	2.39	0.44	23,128	4.66	0.44	44,781
2.8	2.90	0.42	26,614	9.07	0.41	82,728
3.1	2.98	0.41	27,131	12.06	0.39	104,506
3.4	**2.99**	**0.41**	**27,151**	**12.65**	**0.39**	**108,652**
3.7	2.99	0.41	27,151	13.17	0.39	112,215
4.0	2.99	0.41	27,151	13.40	0.39	113,857
4.4	2.99	0.41	27,151	13.54	0.38	114,870
4.7	2.99	0.41	27,151	13.65	0.38	115,597

Table 14.27: In-Pit mineral endowment sensitivity to gold and copper price for South TV Tower gold-copper porphyry zones (base case at 0.4 g/t Au Eq shown in red)

Metal Price		INDICATED							INFERRED						
		TONNES	GRADE			METAL CONTENT $x10^3$			TONNES	GRADE			METAL CONTENT $x10^3$		
Au	Cu		Au	Cu	AuEq	Au	Cu	AuEq		Au	Cu	AuEq	Au	Cu	AuEq
$/oz	$/lb	$X10^6$	g/t	pct	g/t	oz-t	lb	oz-t	$X10^6$	g/t	pct	g/t	oz-t	lb	oz-t
1,000	2.10	14.65	0.31	0.32	0.93	144	103,458	438	9.58	0.22	0.3	0.79	66	62,434	244
1,150	2.40	18.54	0.28	0.3	0.86	166	122,210	514	13.97	0.2	0.28	0.75	91	86,141	336
1,300	2.80	27.47	0.25	0.26	0.76	217	159,595	671	27.92	0.17	0.26	0.69	156	161,944	617
1,450	3.10	31.38	0.24	0.25	0.73	239	174,891	736	36.19	0.17	0.25	0.65	196	198,625	761
1,600	**3.40**	**35.85**	**0.23**	**0.24**	**0.7**	**264**	**191,242**	**808**	**49.32**	**0.16**	**0.23**	**0.61**	**260**	**250,937**	**974**
1,750	3.70	36.73	0.23	0.24	0.7	268	194,312	821	57.79	0.16	0.22	0.6	297	286,372	1,112
1,900	4.00	37.2	0.23	0.24	0.69	271	195,860	828	62.87	0.16	0.22	0.59	320	306,141	1,191
2,050	4.40	37.38	0.23	0.24	0.69	272	196,472	831	65.74	0.16	0.22	0.58	334	316,592	1,234
2,200	4.70	37.49	0.23	0.24	0.69	273	196,813	832	67.41	0.16	0.22	0.58	342	322,599	1,260

14.3 North TV Tower Columbaz Sector Resource Estimates

The mineral resource estimate presented herein is the first mineral resource estimate for the Columbaz prospect, reported in accordance with the NI 43-101 Code. The effective date of the Mineral Resource Estimate ("MRE") is February 9th, 2021, which was the date that the final database was received.

The following section describes the methodology, parameters and key assumptions regarding the preparation of the Mineral Resource Estimation for the Columbaz Project.

14.3.1 Drill Hole Database for the Resource

The drill hole database was provided to DAMA on February 9, 2021 by Liberty Gold Corporation. This database included all available drilling by Liberty Gold. The data used for the estimation are derived from diamond drill holes. Drill holes used for estimation are listed in Table 14.28. Drill collars are shown on Figure 14.26.

Drill hole data for Columbaz was prepared and delivered by Liberty Gold as a Microsoft Access database. The database contains collar locations, drill hole survey orientations, sample intervals with gold and copper assays, geologic intervals with rock types, alteration, and oxidation state, and specific gravity values. A database summary is presented in Table 14.29, showing the data provided for a range of items.

A Lidar topography surface data for Columbaz deposit was also provided to DAMA and integrated to the geological model in Micromine software.

DAMA has reviewed the database and is satisfied that the integrity of the drilling database is of an acceptable standard and can be used for resource estimation.

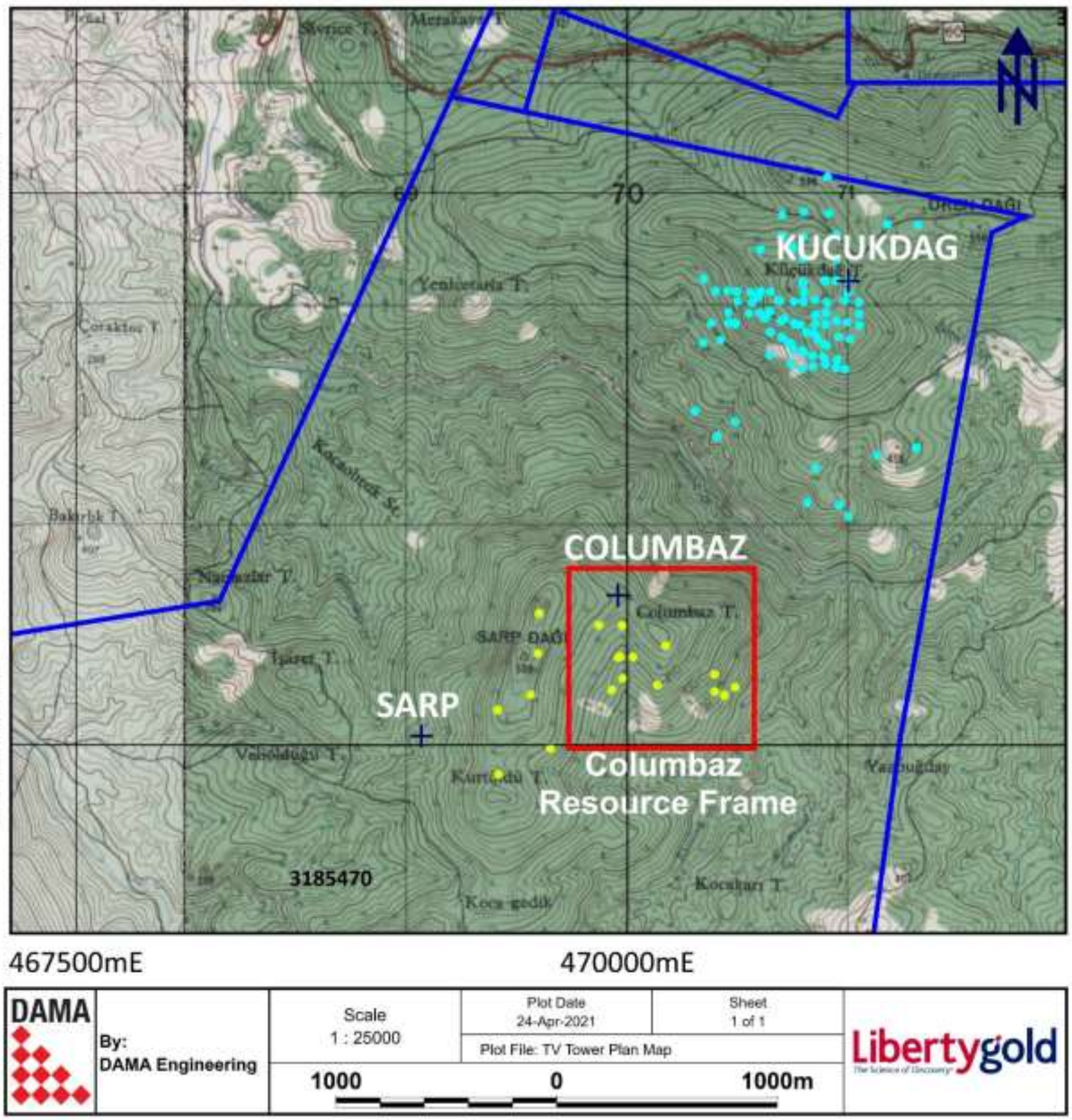
Table 14.28: The drill holes sed for the resource estimate of the Columbaz deposit.

Hole ID-Prefix	Company	Targets	# of holes	Total Depth
CD	Liberty	Sarp&Columbaz	17	6,410.95
SD	TMST	Sarp&Columbaz	10	2,112.10
Total			27	8,523.05

Table 14.29: Database Summary

Item	Records
Collar	29
Survey	177
Assay	5,999
Lithology	488
Geotech	1,373
Redox	202
Density	642

Figure 14.26: Map showing the drill hole collars in the Columbaz prospect.



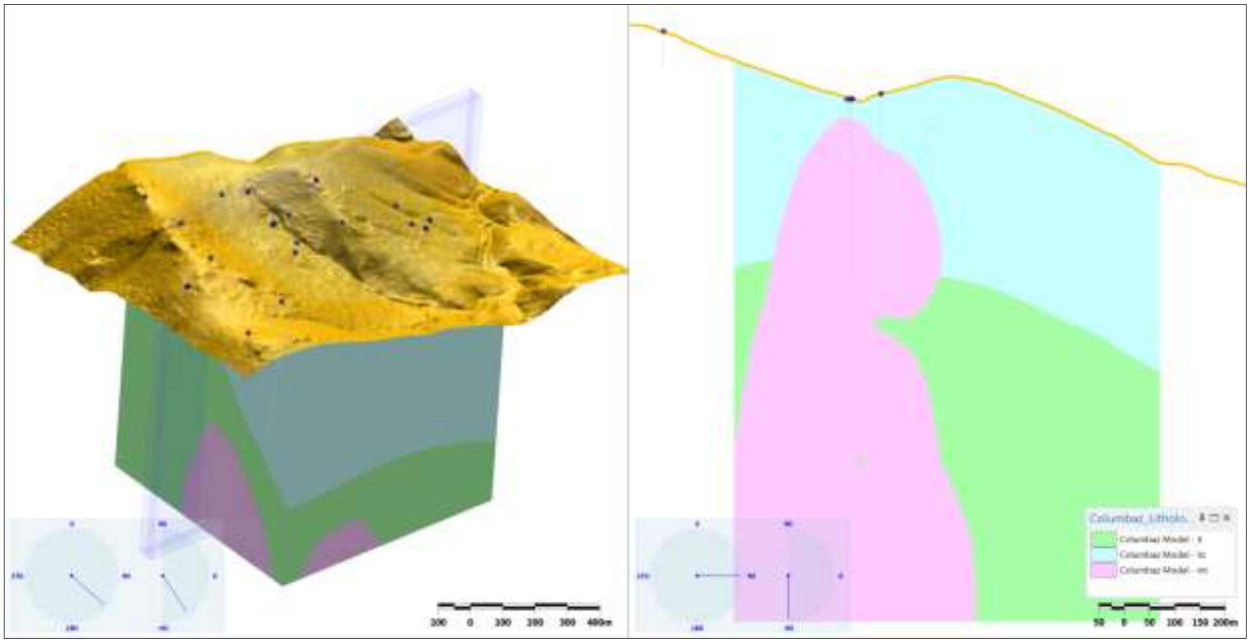
14.3.2 Geologic Modelling

The geological interpretation of Columbaz is based on the lithological units presented in the available geological logging and assays. Table 14.30 lists all the rock coding associated to domains developed and used in the block model. These were interpreted as a basement consisting of sedimentary and volcaniclastic rocks intruded by a polyphase quartz monzonite intrusive and a phreatic breccia (Figure 14.27).

Table 14.30: Codes for the lithological units in the Columbaz Prospect area

Domain Code	Description
S	Sedimentary rocks
Vc	Volcanoclastic rocks
Int	intrusive

Figure 14.27: 3D Geological model of the Columbaz prospect (right) and section view (left)



Columbaz mineralization is hosted primarily within the intrusive body, and was divided into three domains for data analysis and resource estimation:

1) Oxide zone
2) Primary hypogene sulphide zone within a phreatic chimney, including both intrusive rocks and breccia,
3) Wall rocks consisting of volcaniclastic sequence and sedimentary rock.

The zone of oxidation was classified on the basis of geological logging and depletion in sulphur and copper assays. It is interpreted that copper sulphide minerals were largely leached in this zone, leaving a small amount of copper sulphate (i.e., chalcanthite) and/or copper carbonate (i.e., malachite) and/or copper oxide (i.e., cuprite), while gold remained in the oxide zone.

14.3.3 Outlier Analysis and Assay Capping

The raw sample gold assay data was statistically examined by each domain for the presence of extreme high-grade outliers which can bias block grade estimates. DAMA evaluated the grade distributions for outliers using decile and percentile analyses of the domained samples (**Figure 14.28**). The capping thresholds were initially selected by the statistical guidance given below, while paying attention to the coefficient of variation (CV) and the effect on the metal content:

- The last decile (upper 10% of samples) contains more than 40% of the metal; or
- The last decile contains more than 2.3 times the metal of the previous decile; or
- The last centile (upper 1%) contains more than 10% of the metal; or
- The last centile contains more than 1.75 times the next highest centile.

Based on this assessment, the capping threshold of 3 g/t Au was selected (**Tables 14.31, 14.32)**, and 14 of 2804 samples were capped. No grade cutting was applied for copper values because no extreme values were identified.

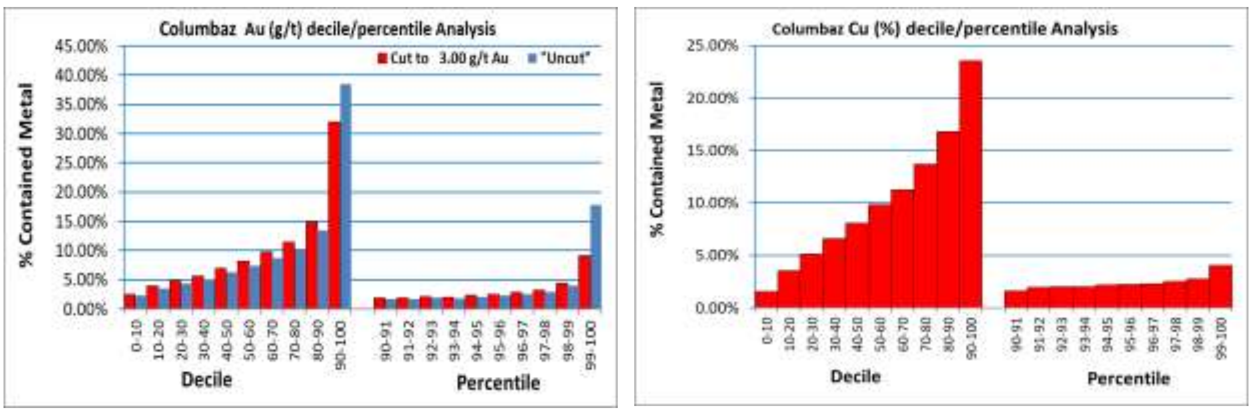
Table 14.31: Summary of capping used per Estimation domain for gold and copper

No	Code	Au			Cu		
		Count	#Capped Sample	Capping Value (g/t)	Count	#Sample	Value %
1	Columbaz	2771	14	3	2771	-	-

Table 14.32: Comparison raw copper data statistics with capped and Composited copper data statistics.

Variable	Count	Raw Data			Capping			Capped Data	
		Max	Mean	COV	Value	#Count	Percent	Mean	COV
Au	2771	27.9	0.30	2.73	3	14	%0.51	0.27	1.07
Cu	2771	0.74	0.10	0.67	-	-	-	-0.10	0.67

Figure 14.28: Plots for capping analysis for Au & Cu data within Columbaz sector



14.3.4 Sample Compositing

Sample Length A histogram of sample length (Figure 39) shows that the predominant (98%) sample length is 2m (**Table 14.33 and Figure 14.29)** , so a composite length of 2m is considered appropriate given the model block size and the scale of the deposit. Samples were composited to nominal 2m intervals for analysis and estimation, within the primary and oxide domains.

The summary statistics of the composites for gold and copper data from the Columbaz deposit are shown in **Table 14.34** respectively.

Table 14.33: summary statistics of the composites for gold and copper data from the Columbaz deposits

FROM	TO	NUMBER	FREQUENCY	CUM_NUMBER	CUM_FREQUENCY
0.4	0.5	0	0.0%	0	0.0%
0.5	0.6	8	0.3%	8	0.3%
0.6	0.7	13	0.5%	21	0.8%
0.7	0.8	21	0.8%	42	1.5%
0.8	0.9	25	0.9%	67	2.4%
0.9	1	39	1.4%	106	3.8%

FROM	TO	NUMBER	FREQUENCY	CUM_NUMBER	CUM_FREQUENCY
1	1.1	190	6.9%	296	10.7%
1.1	1.2	172	6.2%	468	16.9%
1.2	1.3	154	5.6%	622	22.4%
1.3	1.4	322	11.6%	944	34.1%
1.4	1.5	175	6.3%	1119	40.4%
1.5	1.6	1240	44.7%	2359	85.1%
1.6	1.7	240	8.7%	2599	93.8%
1.7	1.8	74	2.7%	2673	96.5%
1.8	1.9	61	2.2%	2734	98.7%
1.9	2	10	0.4%	2744	99.0%
2	2.1	20	0.7%	2764	99.7%
2.1	2.2	2	0.1%	2766	99.8%
2.2	2.3	0	0.0%	2766	99.8%
2.3	2.4	3	0.1%	2769	99.9%
2.4	2.5	0	0.0%	2769	99.9%
2.5	2.6	1	0.0%	2770	100.0%
2.6	2.7	0	0.0%	2770	100.0%
2.7	2.8	1	0.0%	2771	100.0%

Figure 14.29: Histogram for the Sample Interval Lengths

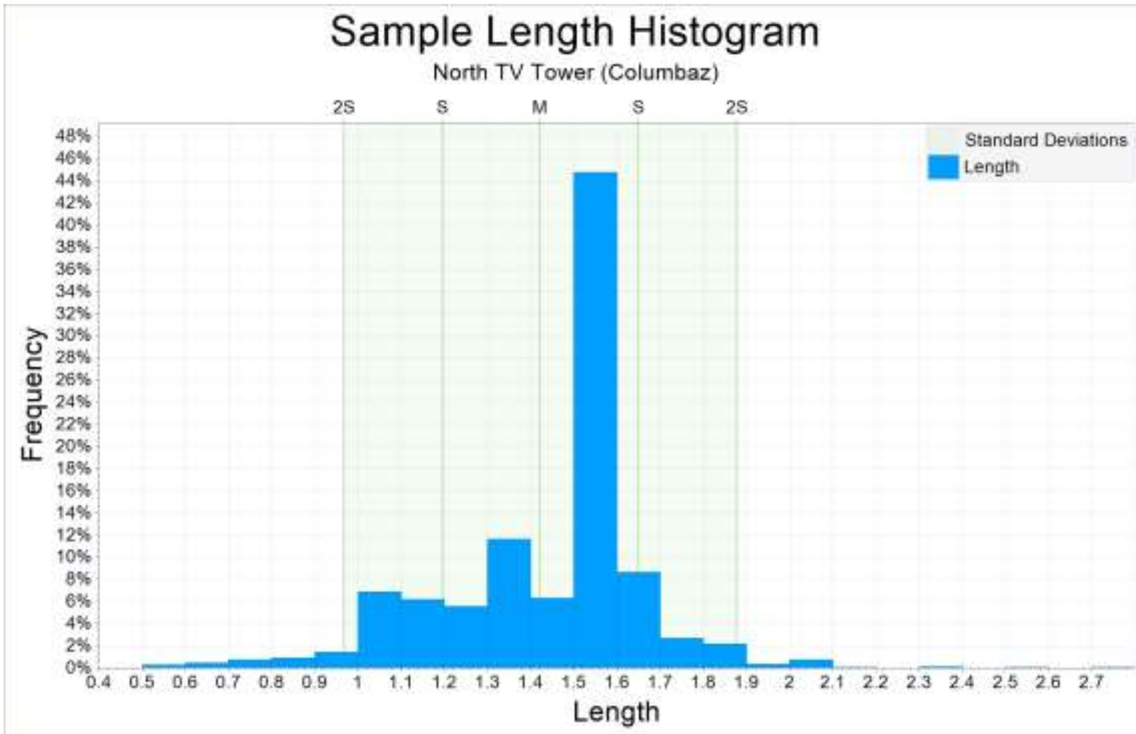


Table 14.34: Raw and Composited data statistics

Variable	Count	Min	Max	Mean	Variance	Std. Dev.	COV
Au g/t Raw Data	2,771	0.01	27.90	0.30	0.61	0.78	2.73
Au g/t Raw Data Capped	2,771	0.01	3.00	0.27	0.08	0.28	1.07
Au g/t Composite Capped	1,978	0.02	3.00	0.27	0.06	0.24	0.88
Cu % Raw Data	2,771	0.00	0.74	0.10	0.00	0.07	0.67
Cu % Raw Data Capped	2,771	0.00	0.74	0.10	0.00	0.07	0.67
Cu % Composite Capped	1,978	0.00	0.61	0.10	0.00	0.07	0.63

14.3.5 Variography

Variograms were generated for the elements of interest Cu and Au, using the capped 2.0 m composite dataset. In completing variogram analysis, the down-hole variogram was first calculated and modeled to characterize the nugget effect. Then, omnidirectional variograms were generated to define the appropriate lag distances. Afterwards the directional variograms were modelled in the three principal directions, the along strike, cross strike and down-dip directions. In all cases a spherical variogram model has been fitted to the experimental variograms, as illustrated in **Figure 14.30.** The resultant variogram parameters are given in **Tables 14.35**. The orientations and ranges for the along strike, cross strike and down-dip directions for each domain were used as the basis of kriging search criteria.

Figure 14.30: Graphs of Semi-Variograms

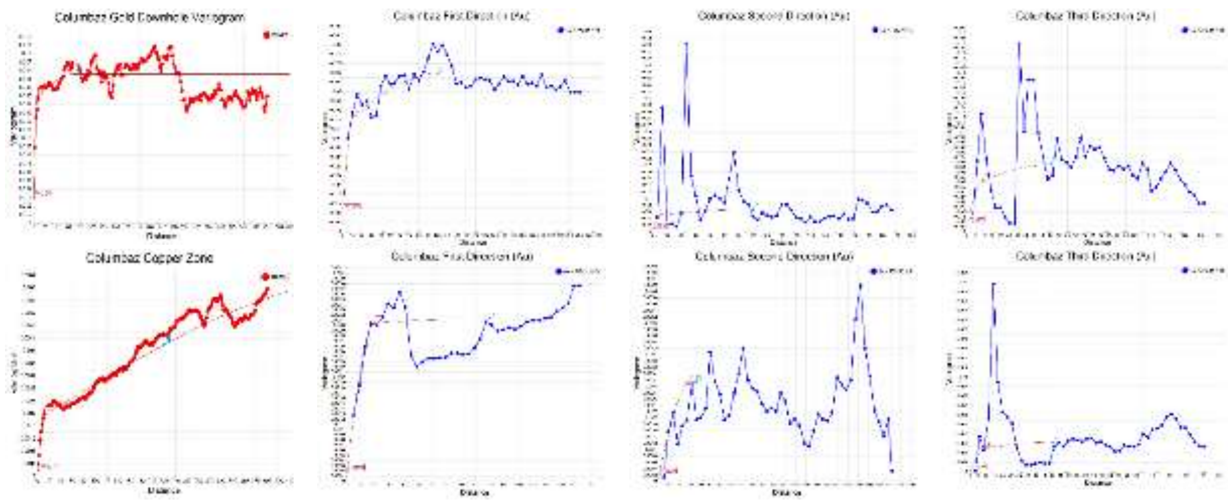


Table 14.35: Variogram Models for the Columbaz Deposit by Element and Estimation Domain

Variable	Direction (Azimuth/Dip)	Nugget Effect	Spherical Component 1		Spherical Component 2	
			Sill	Range(m)	Sill	Range(m)
Gold	105/75	0.009	0.0365	9	0.022	100
	195/0			5		70
	285/15			9		50
Copper	105/75	0.0001	0.0021	19	0.0008	100
	195/0			56		70
	285/15			10		50

14.3.6 Cross-validation

Cross-validation was performed to evaluate the "predictive" abilities of the variogram models. The results show that the means of the standardized residuals squared are close to zero, the standard deviations of the kriging prediction error are more than 1, and the standard deviation of the kriging prediction errors are also low, and were, therefore, deemed acceptable.

14.3.7 Block Model

A three-dimensional block model was established using Micromine version 2021 for the purpose of the current resource estimate. The selected block size was based on the geometry of the domain interpretation, the data configuration and plausible mining methods. A parent block size of 20mE by 20mN by 10mRL was selected for all domains at the deposits. Sub-blocking to a 5mE by 5mN by 2mRL cell size was applied to improve volume representation of the interpreted wireframe models. The volumes of the mineralized domains in the block model were compared to the volumes from the mineralization wireframes and were within ±0.01 % (**Table 14.36**).

Table 14.36: Comparison of Wireframe Volume and Block Model Volume

Domain	Wireframe	Block Model	Dif %
Mineralized Area	58,261,371	58,283,328	0.04%

Gold grades are estimated for the primary parent blocks, and all categorical data such as estimation domains, oxidation, resource class, or optimized pits are evaluated into the sub-blocks. The block model parameters and attribute table for the deposits studied are presented in **Table**

14-37 and **Table 14-38.**

Table 14.37: Columbaz Sector Block Model Parameters

Block	X	Y	Z
Min Origin Center	469750	470550	-540
Max Origin Center	4430010	4430790	590
Size	20	20	10
Min Block Size	5	5	2
No. of Block	41	40	114

Table 14.38: Columbaz Block Model Attribute Table

Attribute Name	Type	Decimals	Description
EAST	DOUBLE	6	Easting coordinate
_EAST	FLOAT	6	Block size (Easting)
NORTH	DOUBLE	6	Northing coordinate
_NORTH	FLOAT	4	Block size (Northing)
RL	DOUBLE	4	Z coordinate
_RL	FLOAT	4	Block size (Z)
Domain	CHARACTER	-	Mineralisation Domain
Rock	CHARACTER	-	S: Sedimantery Vc: Volcaniclastic Int: Intrusive
REDOX	CHARACTER	-	S: Sulphide Rock, OX: Oxidised Rock
AuOK	DOUBLE	3	gold ordinary krige estimate
AuIDW	DOUBLE	3	gold inverse distance estimate
AuNN	DOUBLE	3	gold nearest neighbour attribute
CuOK	DOUBLE	3	copper ordinary krige estimate
CuIDW	DOUBLE	3	copper inverse distance estimate
CuNN	DOUBLE	3	copper nearest neighbour attribute
SG	DOUBLE	3	Bulk density - assigned
KR_VAR	DOUBLE	3	Kriging variance
KR_STDERR	DOUBLE	3	Standard error
KR_EFF	DOUBLE	3	Kriging efficiency
SLOPE	DOUBLE	3	Slope of regressions
Run	CHARACTER	-	First pass: Run-1, Second pass: Run-2
POINTS	SHORT	-	Number of points
Cf	SHORT	-	Count field
AVERAGE DISTANCE	FLOAT	3	Average distance
CLOSEST DISTANCE	FLOAT	3	Closest distance
NUMSECT	SHORT	-	Number of sectors
SECTOR1	SHORT	-	Sector-1
SECTOR2	SHORT	-	Sector-2
SECTOR3	SHORT	-	Sector-3
SECTOR4	SHORT	-	Sector-4
SECTOR5	SHORT	-	Sector-5
SECTOR6	SHORT	-	Sector-6
SECTOR7	SHORT	-	Sector-7
SECTOR8	SHORT	-	Sector-8
Res-cat	CHARACTER	-	Resource Classification, Inf: Inferred, UN-C: Un-classified
Res-Pit	CHARACTER	-	1: Inside, 0:Outside resource pits hell

14.3.8 Grade Estimation

The primary interpolation technique selected to estimate the Columbaz deposit block model is the OK method with 2 m composited copper and capped gold grades using a two-pass interpolation strategy. DAMA also used an IDW2 estimate for comparative purposes only. Micromine 2021 software was used for the estimate.

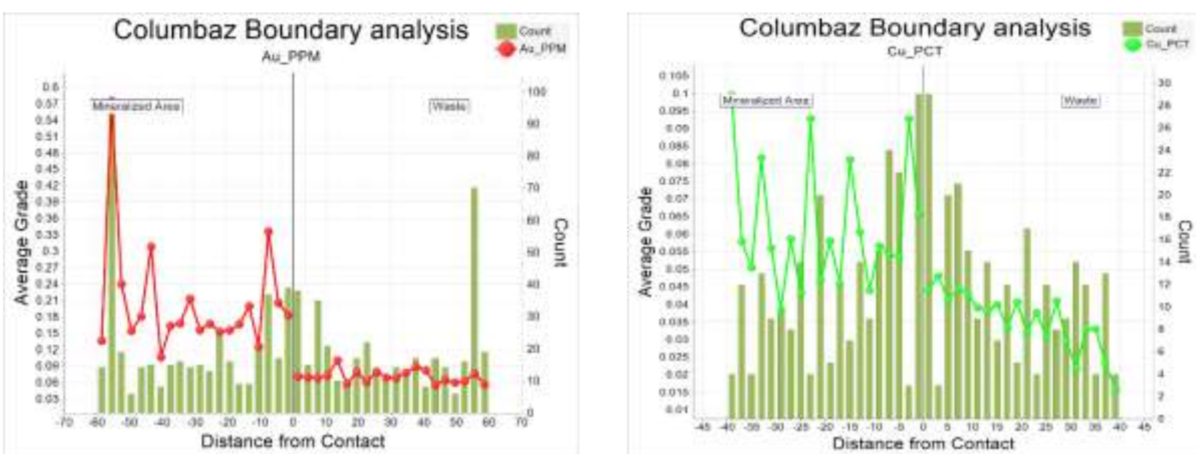
The primary and oxide domains were estimated separately for Cu (domains were considered as hard boundary for Cu), but together for Au (domains were considered as soft boundary for Au) because the latter element appears unaffected by oxidation (**Figure 14.31**). The domain 3 (the wall rocks) was not estimated. No assumptions were made regarding the correlation of variables during estimation as each element is estimated independently.

Three interpolation passes were used iteratively to estimate the blocks for Columbaz deposit. The search ellipsoids built from the results of the variography study on the gold or copper data from the each wireframed mineralized zones. The search ellipse distances progressively increase from 77 m x 49 m x 3 m in the first interpolation pass towards longer distances up to 220 m by 140 m x 100 m in the third pass. The search orientation, distances and sample selection methodology for each pass is summarized in the **Table 14.39.**

Table 14.39: Search Ellipsoid Parameters by domain (for gold&copper)

Search Orientation			Pass	Search	Min Point	Max Point Per Sector	Max comp Per Hole	Search Distances		
Azim.	Plunge-1	Rot.						Major*	Semi-Major*	Minor*
105	75	0	1	Octants	6	3	5	77	49	35
			2		5	4	5	110	70	50
			3		3	4	5	220	140	100

Figure 14.31: Boundary analysis for Columbaz mineralized domains

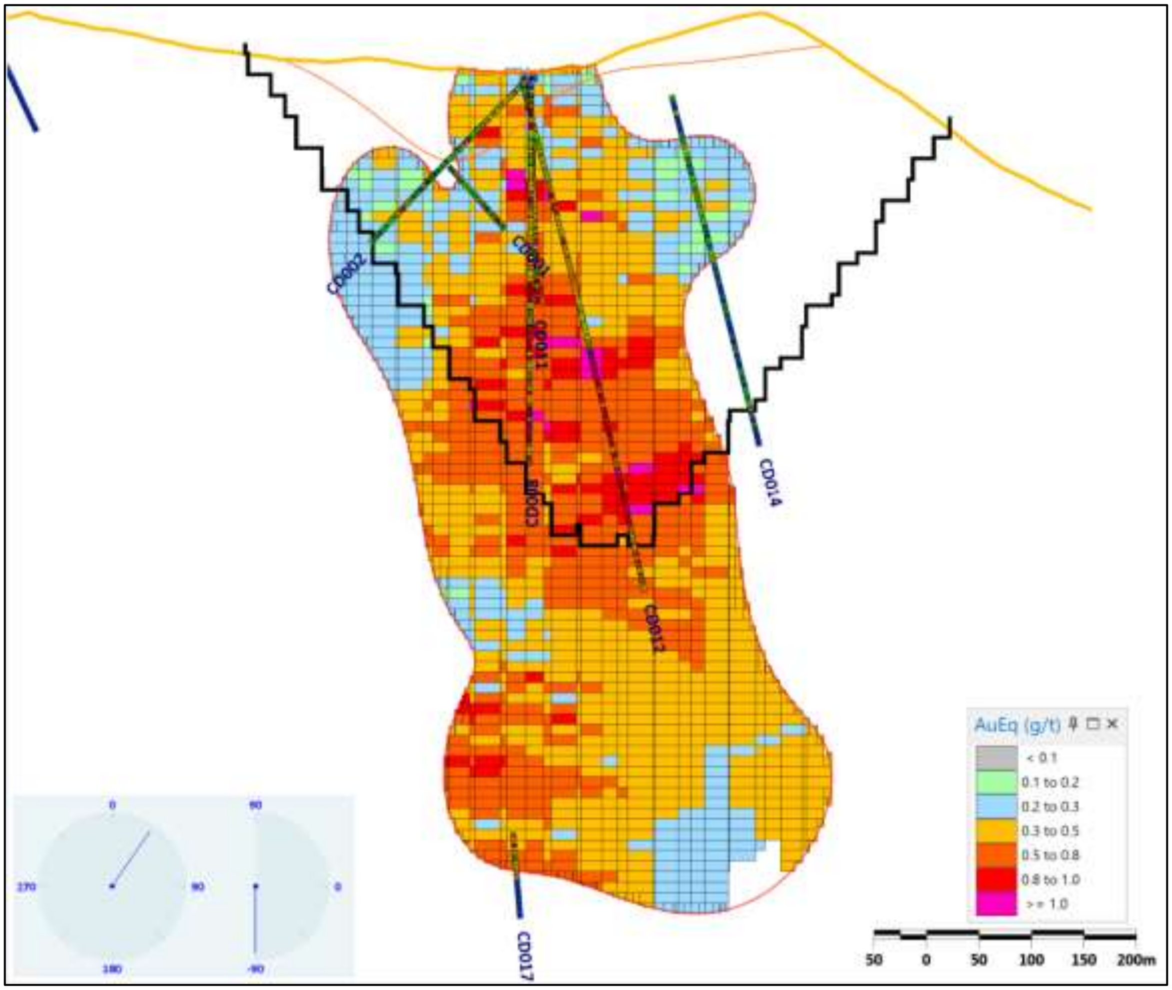


14.3.9 Block Model Validation

The block model was validated using visual validation, global comparative statistics by domain and swath plots.

Visual Validation: Estimated block Au and Cu grades were visually inspected in a series of detailed vertical sections across the deposit. This review confirmed that the supporting composite sample grades closely match the estimated block values. **Figure 14.32** shows an example section through the block model comparing block gold equivalent grades with the composite gold equivalent grades.

Figure 14.32: Example of Visual Validation of Grade Distribution for Gold, Vertical Cross Section.



Global Statistical Validation: Comparative statistics were generated for the composites and the block estimates (NN, OK and IDW) for each domain at Columbaz. The results are presented in **Table 14.40 and 14.41 and Figure 14.33**. As expected, the block grade variances are smaller than the composited sample data, and typically the mean block model grades compare reasonably well with the corresponding mean capped composite grades, within satisfactory levels of errors (mostly ±15 %).

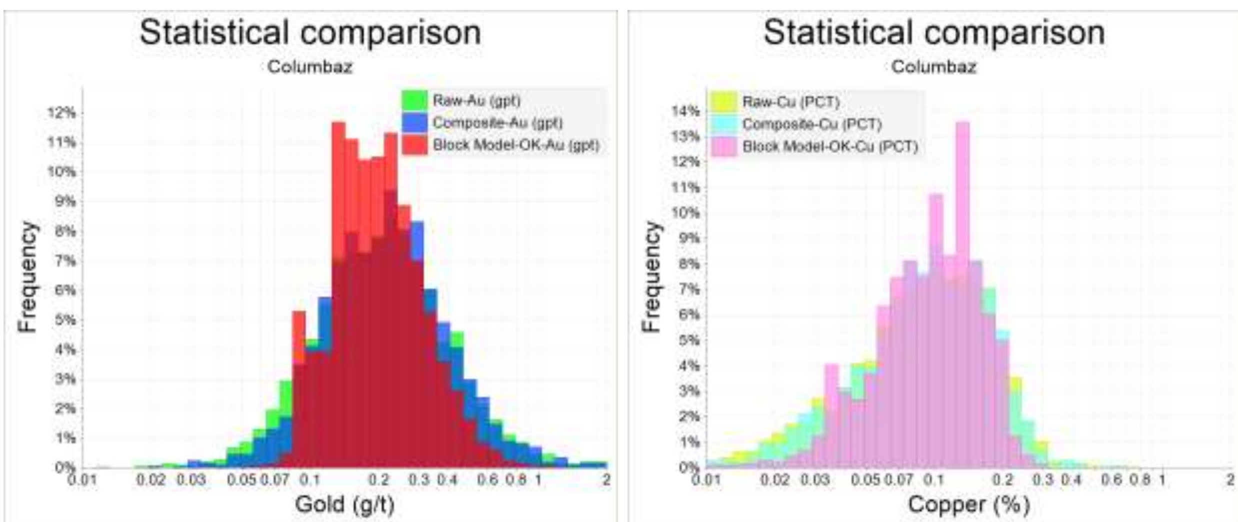
Table 14.40: Comparison of Composited Au Grades to Block Model Au Grades Statistics by Domain

Variable	Count	Min	Max	Mean	Variance	Std. Dev.	COV
Au g/t Composite Capped	1,978	0.02	3.00	0.27	0.06	0.24	0.88
Block Model Au g/t-OK	30,825	0.03	1.39	0.24	0.01	0.12	0.52
Block Model Au g/t-IDW	30,825	0.04	1.52	0.24	0.02	0.13	0.54
Block Model Au g/t-NN	30,825	0.02	3.00	0.24	0.03	0.18	0.79
Cu % Composite Capped	1,978	0.00	0.61	0.10	0.00	0.07	0.63
Block Model Cu %-OK	29,306	0.00	0.31	0.12	0.00	0.05	0.45
Block Model Cu %-IDW	29,306	0.00	0.31	0.12	0.00	0.05	0.47
Block Model Cu %-NN	29,306	0.00	0.54	0.12	0.00	0.06	0.56

Table 14.41: Comparative Global Statistics by Domain – Composites vs. Blocks

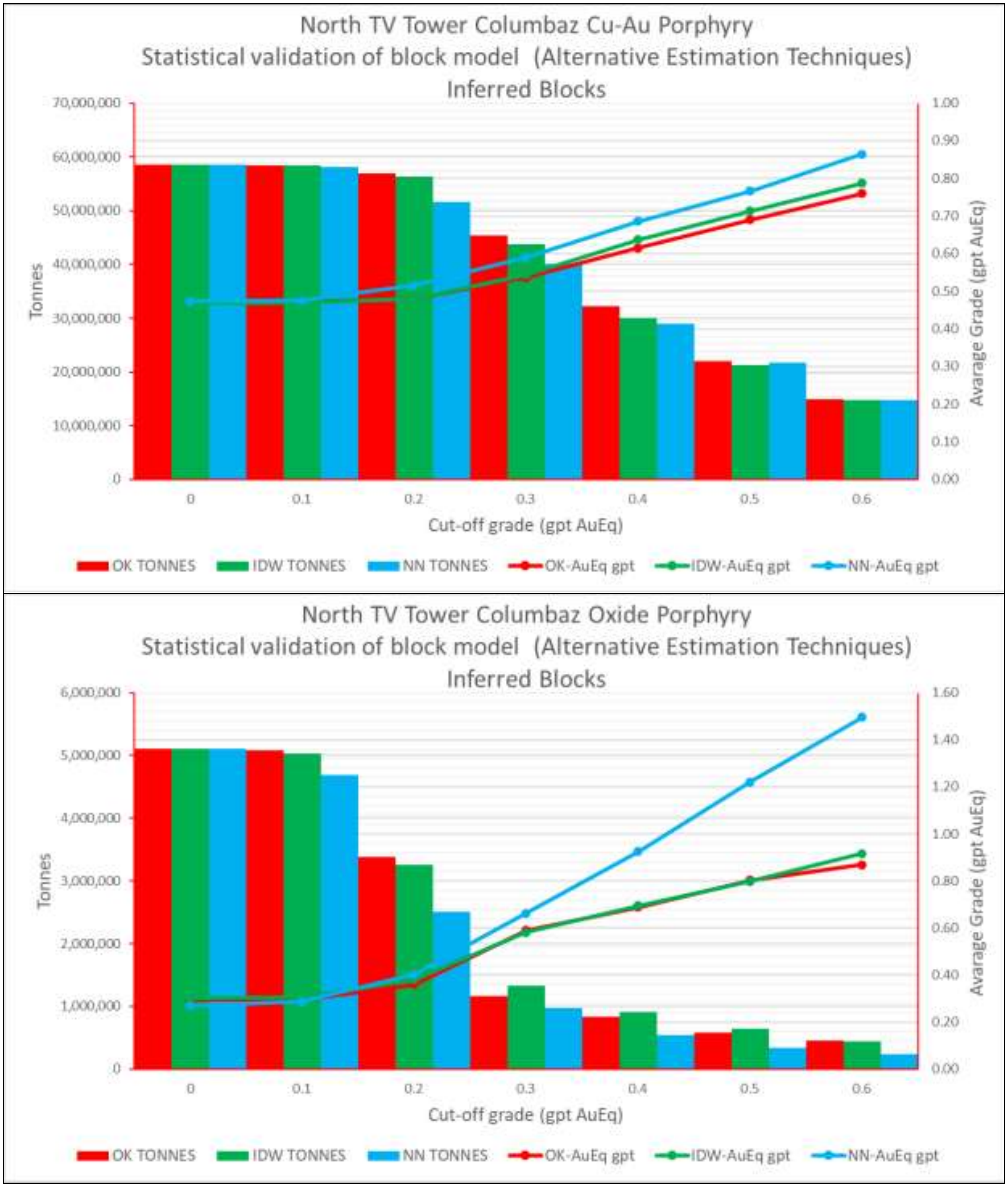
Domain	Composite	Block Model		
	Au Comp	Au OK	Au IDW	Au NN
Mean	0.27	0.24	0.24	0.24
Diff (%)	-	-12.8%	2.0%	-1.9%
Domain	**Au Comp**	**Cu OK**	**Cu IDW**	**Cu NN**
Mean	0.10	0.12	0.12	0.12
Diff (%)	-	11.1%	0.2%	1.8%

Figure 14.33: Comparison of copper and gold statistics on histograms for the raw data, composite and block grades.



Validation by Alternative Estimation Methods: The block grades were also estimated by alternative estimation methods of IDW^2 and nearest neighbor to ensure the krige estimate was not reporting a global bias (Figure 14.34). The alternate estimates show expected correlations. Nearest neighbor shows less tonnes and higher grade (less contained metal) as it does not employ averaging techniques to estimate the block grade. The IDW^2 estimate is closer to kriging as it does use averaging weighted by distance. But it is not able to consider anisotropy, nor nugget effect. Also, IDW^2 cannot de-cluster the input data. Using the kriging algorithm provides a reliable estimate due to the ability of kriging to de-cluster data and weight the samples based on a variogram (Figure 14.34).

Figure 14.34: Alternative Estimation Techniques

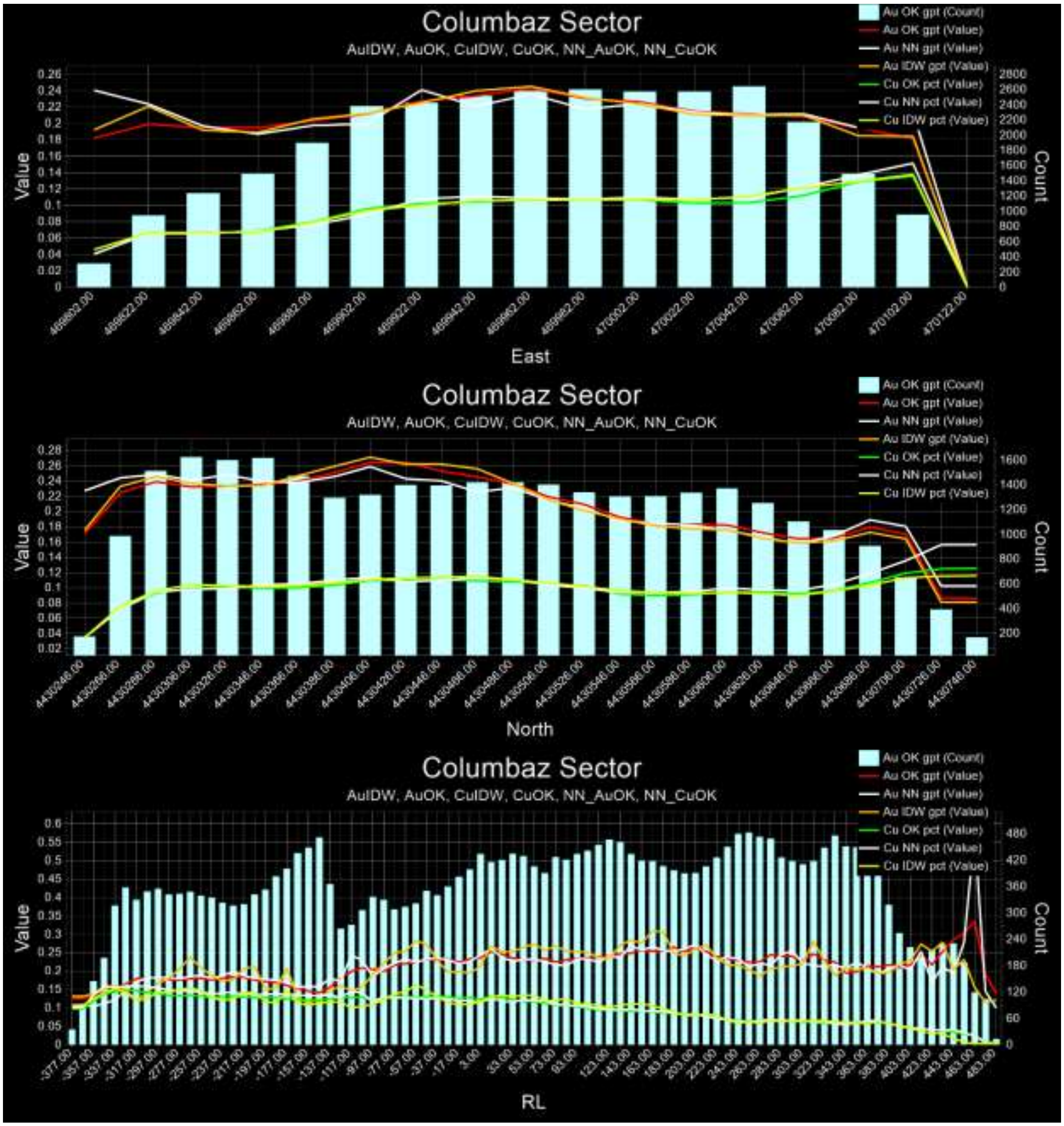


Swath Plots: The swath plot method is considered a local validation, which works as a visual mean to compare estimated block grades against composite grades within a 3D moving window. In addition, it can identify possible bias in the interpolation (i.e., over/under estimation of grades).

Swath plots for gold and copper in the Columbaz deposit are presented in **Figure 14.35** by

Easting, Northing and elevation. The sample and blocks grades show similar spatial trends and average values are comparable. No grade bias in the form of biased high (primary swath line with consistently above the validation swath line) or biased low (the primary swath line is consistently below the validation swath line) is identified. DAMA is satisfied that the block model is a good representation of the drill hole composites.

Figure 14.35: Swath Plots showing the local Au (g/t) and Cu (%) grade trends across the Columbaz Deposit



Top figure: Looking East, Middle figure: Looking West, Bottom figure: Elevation (down to up)

14.3.10 Specific Gravity

Bulk density was determined by wax dip immersion on the 642 core samples from the five representative drill holes. The samples represents all significant rock and alteration types present at the studied deposit at the time of this resource estimation. Bulk density values range from 2.38 to 3.02 t/m^3 depending on the rock types, alteration and oxidation state. Accordingly, the host rock types at Columbaz were sub-divided by modeled oxide and sulfide zones, resulting in 5 SG sub-domains that best outline the density variation at TV Tower North (Columbaz sector). Average rock type density values for the combined domains are displayed in **Table 14.42.**

Table 14.42: Average density values of the main rock types.

Domain	Oxide Zone		Sulphide Zone	
Rock	**Count**	**Mean**	**Count**	**Mean**
Int	7	2.54	303	2.56
Vc	26	2.38	210	2.55
S			96	2.68

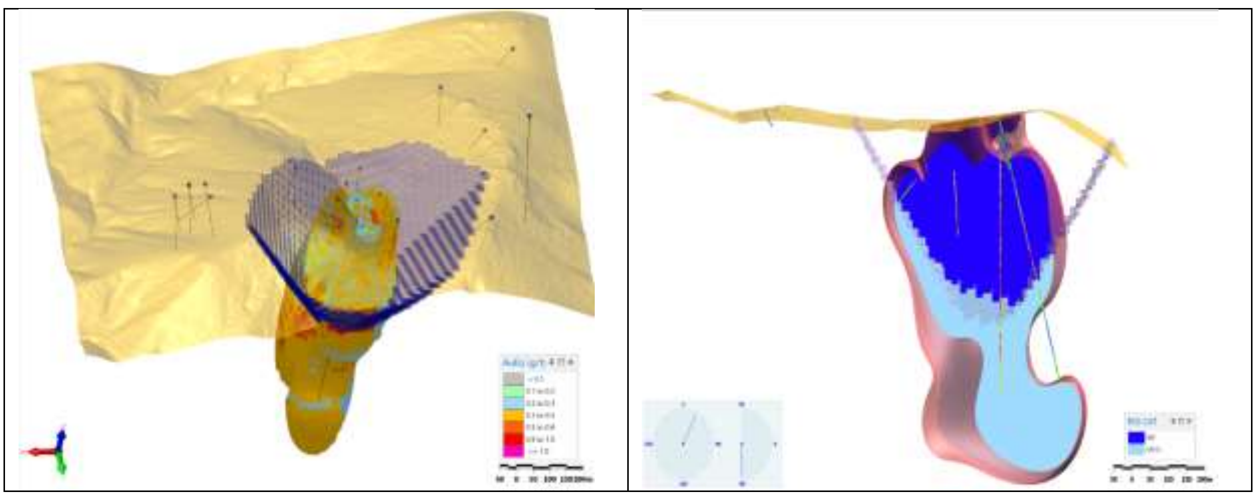
14.3.11 Mineral Resource Classification

The entire MRE within the Whittle optimized pit shell is classified as Inferred, based on the Qualified Person's experience with similar deposits elsewhere. This scheme takes account a number of factors, including data distribution and the continuity of geology and grades. The MRE stated in this Technical Report have been estimated and reported in accordance with the 2014 CIM Definition Standards for Mineral Resources & Mineral Reserves.

Figure 14.36 shows the portion of the deposit classified as Inferred.

It should be noted that the confidence of the Inferred resources are insufficient to allow for the meaningful application of technical and economic parameters or to enable an evaluation of economic viability.

Figure 14.36: Resources Classified at Columbaz deposit.



14.3.12 Mineral Resource Statement

Reasonable price, cost and recovery assumptions presented in **Table 14.43** were applied to determine the portions of the block model satisfying the requirement of "reasonable prospects for eventual economic extraction" by an open pit mining and an appropriate processing scenario (i.e., heap leach for the oxide materials, flotation for the primary zone materials).

DAMA constructed an open pit scenario developed from the resource block model estimate, using Micromine's Lerchs Grossman "Pit Optimizer" software. The optimization parameters presented in Table 14-19 were selected based on experience and benchmarking against similar projects. The results were used as a guide to assist in the preparation of a mineral resource statement and to select an appropriate resource reporting cut-off grade. DAMA considers that the blocks located within the resulting conceptual pit envelope show "reasonable prospects for economic extraction" and can be reported as a mineral resource. No part of the block model out of the pit shell is included in the resources, since they are considered not having the potential for eventual economic extraction.

The Mineral Resource Estimates are reported at 0.2 g/t Au cut-off grade for oxide zone and 0.4 g/t **AuEq** cut-off grade for sulfide zone respectively (Table 14.2). The gold equivalent is based on metal prices and process recoveries given in the Table14-19, and is calculated using the equation; Au (g/t) + Cu(%) / 0.6686 x 1.338, The gold equivalent formula was based on the following parameters: Cu price $3.40/lb,Au $1600/oz, Cu recovery: 87%, Au recovery:65%, where the letters of p, s and y are price, sales and marketing cost and metallurgical recovery of each metal, and the subscript 1 and 2 denote the primary and secondary metal respectively (**Nieto and Zhang, 2013**). Metal equivalents are reported for the Columbaz sulfide resources to give a better indication of potential project value.

The reader is cautioned that the results from the pit optimization are used solely for testing the "reasonable prospects for eventual economic extraction" by an open pit and do not represent an attempt to estimate mineral reserves. There are presently no mineral reserves on the project.

The Columbaz mineral resource within the pit is shown in **Figure 14.37** and the mineral resources for the Columbaz deposit are reported in **Table 14.44**.

Table 14.43: Assumptions for the Columbaz Cut-off Grade and Conceptual Open Pit Optimization

Parameter	Unit Values
Gold Price $/oz	1600 $/oz
Copper Price $/t	3.4 $/lb
Pit slope angle	50˚
Mining Cost	1$/ton
G&A Cost (including other costs)	1.0 $/ton
Process Cost (heap leach)	$/ton
Process Cost (flotation)	11.35$/ton
Au Recovery (heap leach) %	91 %
Au Recovery (flotation) %	65%
Cu Recovery (flotation) %	87%

Note: 1) The gold and copper prices used for the estimate are based forecast prices*. The cost parameters were assumed based on experience and benchmarking against similar projects. 3) The heap leach and flotation process recoveries were based on results of the initial metallurgical tests and experiences with similar projects in the region.*

The Qualified Person is not aware of any environmental, permitting, legal, title, taxation, socioeconomic, marketing, political, or other relevant factors that could materially affect the potential development of the Mineral Resource Estimate.

Table 14.44: Mineral Resource Statement for the Columbaz Deposit as of February 09, 2021

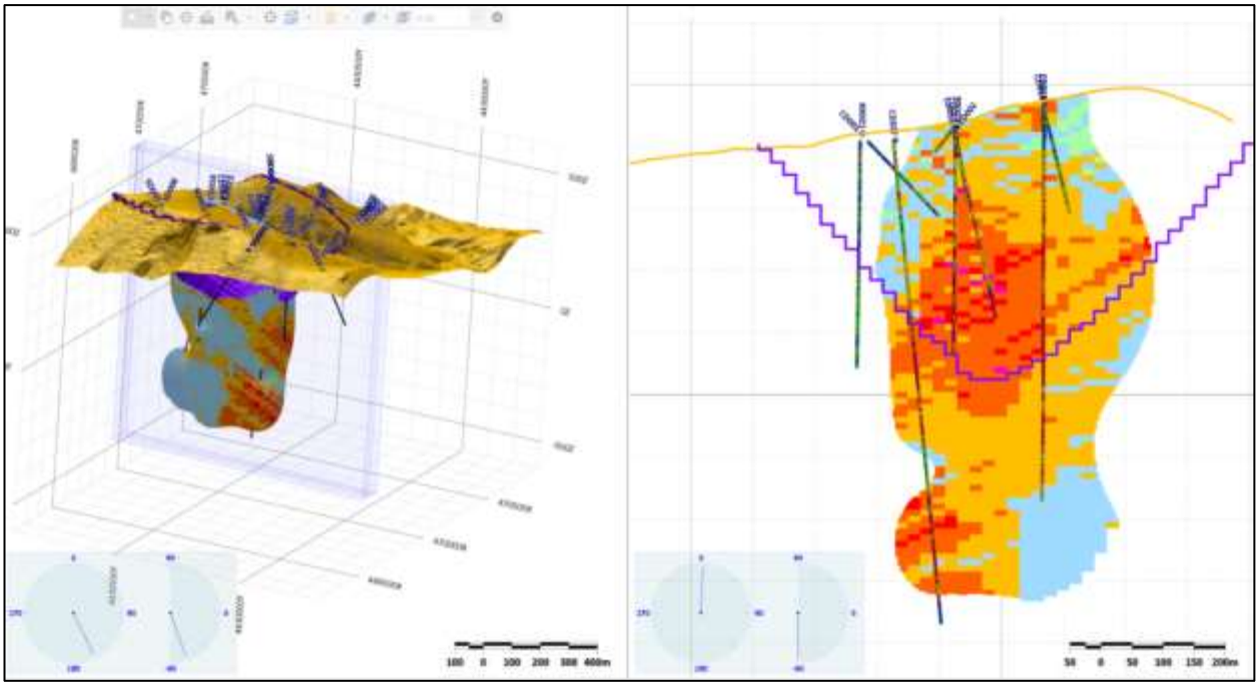
Resource Subset	North TVT (Columbaz) Au-Cu Porphyry Deposit Inferred Resource							Cut-off
	TONNES	GRADE			METAL CONTENT x10^3			
		Au	Cu	AuEq	Au	Cu	AuEq	
	X10^6	g/t	%	g/t	oz	lb	oz	
ALL INFERRED RESOURCE	35.53	0.36	0.12	0.59	409	93,153	674	
Columbaz Oxidized Porphyry	3.38	0.36		0.36	39		39	0.2 g/t Au
Columbaz Cu-Au Porphyry	32.15	0.36	0.13	0.62	370	93,153	635	0.4 g/t AuEq

Notes:

1) *The Qualified Person for the estimate is Mr. Mehmet Ali Akbaba, AIPG, P.Geo. of DAMA Mühendislik A.Ş.*
2) *The Effective Date of the mineral resource estimate is February 9, 2021.*
3) *The volume for each contiguous zone of above cut-off mineralization was defined by wireframing in 3D space and was used to constrain mineralization.*
4) *Metal assays were capped where appropriate using statistical methods.*
5) *Grade was interpolated by domain using Ordinary Kriging.*
6) *Density values were assigned by domain using density data derived from wax-dip immersion of core samples.*
7) *Mineral resources are reported within an optimized conceptual Micromine pit that uses the following input parameters: Au price: US$ 1600 /oz, Cu price: US$3.40 /lb; mining cost: US$1.00/t mined; processing cost: US$5.00/t ore processed by heap leach (including G&A) for oxide zone, US$12.35/t ore processed by flotation (including G&A); Recoveries are 91% Au for Yumrudağ-Hilltop oxide and 76% Au for Kayalı Oxide materials; 65% Au and 87%Cu for sulphide/supergene materials from the all prospects studied. The pit slope angle was 50°.*
8) *AuEq for sulphide/supergene ore types calculated using the following equation: Au (g/t) + Cu (%) / 0.6686 x 1.338. The gold equivalent formula was based on the following parameters: Cu price $3.40/lb, Au $1600/oz, Cu recovery: 87%, Au recovery:65%.*
9) *All figures rounded to reflect the relative accuracy of the estimate; this may result in apparent differences between tonnes, grade and contained metal content.*
10) *The Mineral Resources have been classified as Indicated and Inferred under the guidelines of the CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council, and procedures for classifying the reported Mineral Resources were undertaken within the context of the Canadian Securities Administration National Instrument 43-101.*
11) *No mining or metallurgical factors were applied to the block model grade estimates except gold and copper recovery used for cut-off determination.*
12) *Metal price forecasts used to constrain this estimate of Mineral Resources are subject to risk of actual prices that are higher or lower in the future.*
13) *Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resources estimated will be converted into Mineral Reserves.*
14) *The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues. As of the effective date of this report, no insurmountable issues of this nature have been identified, although all of these risks are vulnerable to change depending on the political climate at any given time in the future.*
15) *The quantity and grade of reported Inferred Mineral Resources in this estimation are uncertain in nature and there has been insufficient exploration to define these Inferred Mineral Resources as*

an Indicated Mineral Resource and it is uncertain if further exploration will result in upgrading them to an Indicated Mineral Resource category.

Figure 14.37: 3D Oblique View of Pit Design and Representative Vertical Section Displaying AuEq Block Model



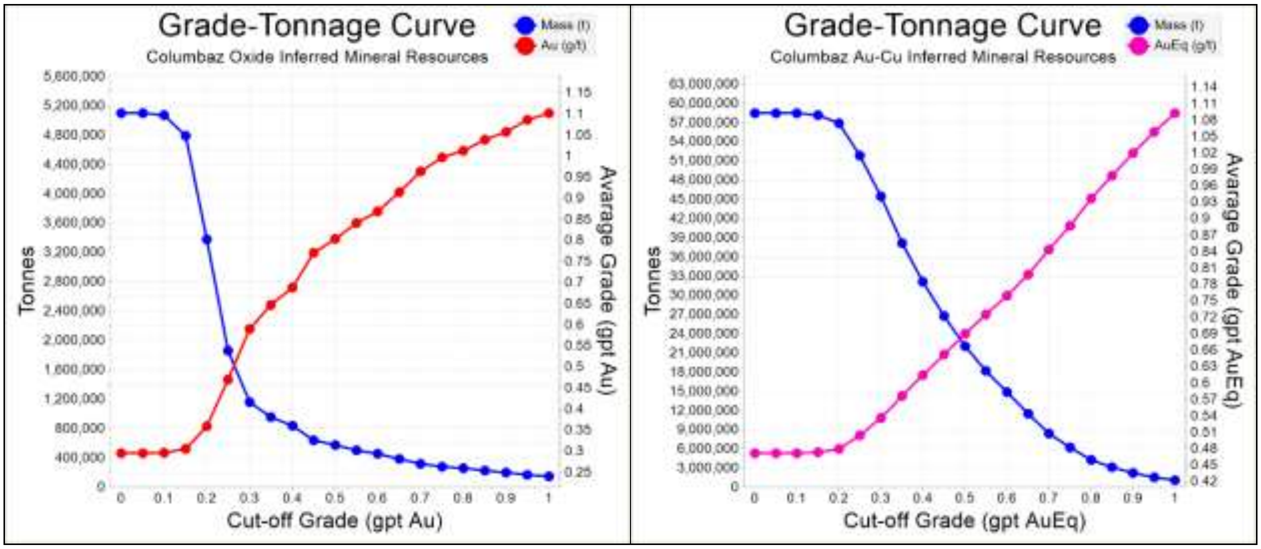
14.3.13 Grade Sensitivity to Gold Cut-off

The mineral resources are sensitive to the selection of the reporting cut-off grade (Table 14.45 and Figure 14.38). The reader is cautioned that the information presented in the table should not be misconstrued as a Mineral Resource Statement.

Table 14.45: Columbaz sensitivity to cut-off grade (base case shown in red)

OXIDE							
Cutoff	TONNES	GRADE			METAL CONTENT x10³		
Au		Au	Cu	AuEq	Au	Cu	AuEq
g/t	X10⁶	g/t	pct	g/t	oz-t	lb	oz-t
0.8	0.26	1.01			8		
0.4	0.84	0.69			19		
0.3	1.16	0.59			22		
0.2	**3.38**	**0.36**			**39**		
0.15	4.79	0.31			47		
SULPHIDE							
Cutoff	TONNES	GRADE			METAL CONTENT x10³		
AuEq		Au	Cu	AuEq	Au	Cu	AuEq
g/t	X10⁶	g/t	pct	g/t	oz-t	lb	oz-t
0.8	4.32	0.57	0.19	0.94	79	17,875	130
0.4	**32.15**	**0.36**	**0.13**	**0.62**	**370**	**93,153**	**635**
0.3	45.45	0.31	0.11	0.54	458	114,436	784
0.2	56.93	0.28	0.10	0.48	516	127,430	879

Figure 14.38: Grade-Tonnage Curve



14.3.14 Sensitivity to Metal Price

A price sensitivity analysis was prepared using a downside scenario gold price of US$1000/oz as well as an upside scenario at US$2,2000/oz. and downside scenario copper price of US$2.1/lb as well as an upside scenario at US$4.7/lb. Micromine pit optimization was completed using the same optimization parameters as for the current Mineral Resource Estimate except for changing the gold and copper price. The results of the sensitivity analysis are presented in **Table 14.46** demonstrate that the Mineral Resource Estimate is sensitive to a ± US$150/oz change in gold price and a ± US$0.30/lb change in copper.

Table 14.46: In-pit mineralization by metal price at 0.4 g/t AuEq cut-off grade. Base case in red.

Metal Price		INFERRED						
		TONNES	GRADE			METAL CONTENT x10^3		
Au	Cu		Au	Cu	AuEq	Au	Cu	AuEq
$/oz	$/lb	X10^6 t	g/t	pct	g/t	oz-t	lb	oz-t
1,000	2.1	0.78	0.72	0.01	0.73	18	101	18
1,150	2.4	0.86	0.73	0.01	0.74	20	126	21
1,300	2.8	0.95	0.71	0.01	0.73	22	213	22
1,450	3.1	0.99	0.70	0.01	0.73	22	242	23
1,600	**3.4**	**32.99**	**0.37**	**0.13**	**0.62**	**389**	**93,153**	**654**
1,750	3.7	45.74	0.35	0.14	0.62	516	136,395	904
1,900	4.0	49.00	0.35	0.14	0.61	546	147,064	964
2,050	4.4	52.20	0.34	0.14	0.61	572	157,355	1,020
2,200	4.7	54.74	0.34	0.14	0.60	592	165,511	1,063

Note: All oxide and sulphide material is included.

14.4 KCD Resource Estimate

The Küçükdağ (KCD) mineral resource estimate was originally reported in an NI 43-101 Technical Report dated February, 2014; that report remains current and will be summarized here. The reader is referred to the earlier report for complete documentation of the KCD resource estimate.

14.4.1 Drill Data and Model Setup

The KCD estimate is based on results from 37,860 m of drilling in 160 core and nine RC holes. Ninety-two percent of samples were either 1.0 or 1.5 m in length; sample data was composited to a down-hole length of 3.0 m for use in resource estimation.

The estimation block model grid was rotated 60° counter-clockwise and extended 870 m NNE, 770 m WNW and 450 m vertically; block dimensions are 5 x 5 x 2.5 m in X'/Y'/Z. A coarser block model, with 10 x 10 x 5 m blocks, enveloped the estimation model extending 1.29 km NNE by 1.49 km WNW by the same 450 m vertical height. Estimated blocks were averaged (8:1) into this larger framework for pit optimization and reporting.

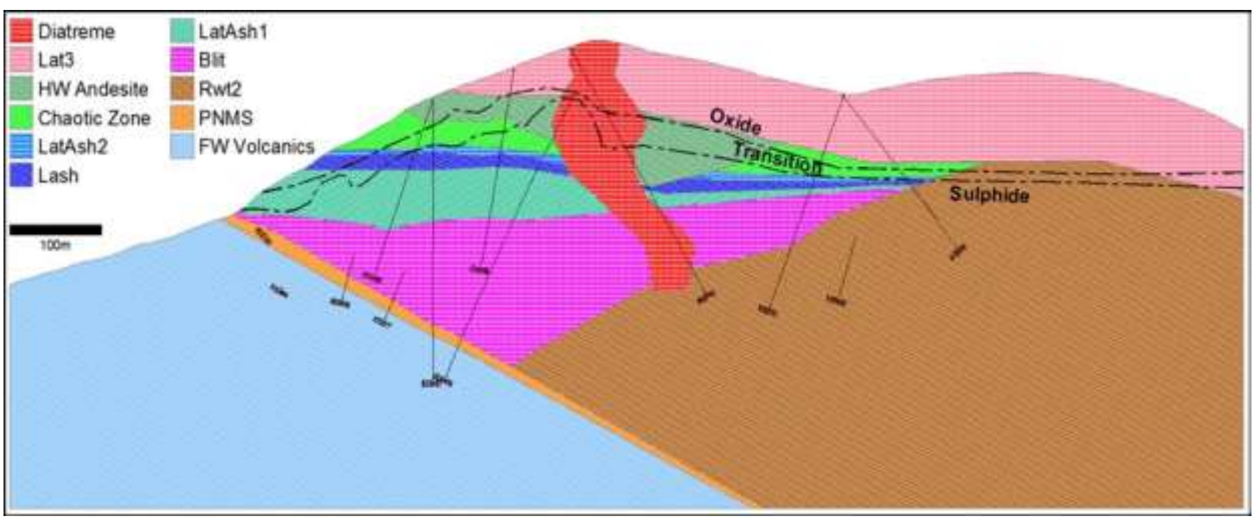
14.4.2 Geologic Modelling for Estimation Control

Sectional interpretation of surfaces separating stratified units and two wireframed diatreme bodies were received from Liberty Gold geology staff. Their interpretation was compiled on northwest-looking sections spaced at 25 m intervals across the deposit. These eleven lithologic units were used as control in the stratigraphic estimation of grade (Figure 14.39).

Interpreted 'structural control surfaces', representing corridors of jointing, shearing and brecciation, were developed by Liberty Gold staff as drilling, and the state of geologic understanding, was advanced. These corridors were also used to control grade interpolation.

Surfaces representing redox boundaries were generated by Liberty Gold staff based on logged observations and % sulphur from ICP analyses. These were used to generate surfaces separating oxide, transition and sulphide material. Based on review of assays contact plots for all metals across these redox boundaries, it was determined that the redox state would not impact grade interpolation.

Figure 14.39: Geological interpretation, section 425NE (view to NW)



14.4.3 Exploratory Data Analysis

Statistical examination of Au, Ag and Cu assays was carried out by lithologic domain. This process led to the determination of assay capping levels above which values trended above the general population per rock type. Capped assays were then composited to 3.0 m intervals and back-tagged with rock type. (Table 14.47); note CV=coefficient of variation (standard deviation ÷ mean).

Assay contact plots among all rock type combinations were analyzed for all metals to determine the appropriate cross-contact sample sharing strategy for use in grade estimation. These hard/soft boundaries were applied in the structural and stratigraphic grade estimation, as described below.

Trends in metal grades versus proximity to the structural control surfaces were analyzed and used as the basis for establishing structural corridors centred on those surfaces and along plunging zones of surface intersections.

Spatial continuity of capped composite data was analyzed for gold, silver and copper data subdivided by rock type and within structural zones to establish suitable variogram model parameters for use in estimation by ordinary kriging (OK). Directions of continuity were determined from variograms maps. The nugget effect and sill contributions were generally derived from down-hole experimental variograms followed by final model fitting on directional variogram plots.

Table 14.47: Composite Statistics by Rock Type

Rock Type		3m Au Composites (g/t)				AuCap (g/t)		
		count	mean	max	CV	mean	max	CV
1	Diatreme	399	0.01	0.13	1.6	0.01	0.08	1.4
2	Lat3	696	0.03	1.23	4.1	0.03	0.90	3.7
3	HW Andesite	1,026	0.01	0.72	4.1	0.01	0.23	2.1
4	Chaotic Zone	770	0.03	1.22	3.8	0.02	0.60	2.9
5	LatAsh2	442	0.05	1.92	3.8	0.03	0.81	2.8
6	Lash	780	0.20	9.64	3.7	0.20	8.32	3.5
7	LatAsh1	2,052	0.33	34.78	5.7	0.31	25.94	5.2
8	Blit	3,923	0.81	477.53	12.3	0.71	241.08	9.0
9	Rwt2	1,063	0.01	1.22	5.0	0.01	0.89	3.9
10	PNMS	401	0.55	25.41	3.8	0.49	13.56	3.3
11	FW Volcanics	1,429	0.03	5.94	6.0	0.02	0.78	3.0
Total		**12,981**						
Rock Type		**3m Ag Composites (g/t)**				**AgCap (g/t)**		
		count	**mean**	**max**	**CV**	**mean**	**max**	**CV**
1	Diatreme	399	6.2	814.4	8.0	2.9	50.0	2.2
2	Lat3	696	3.1	132.3	2.6	3.1	98.7	2.4
3	HW Andesite	1,026	10.1	879.0	4.4	8.9	510.7	3.1
4	Chaotic Zone	770	48.2	1717.7	2.0	46.4	692.8	1.7
5	LatAsh2	442	21.7	586.2	1.7	20.5	173.7	1.2
6	Lash	780	18.7	884.6	2.4	16.6	235.9	1.2
7	LatAsh1	2,052	15.2	217.7	1.5	15.2	216.9	1.5
8	Blit	3,923	5.8	388.0	2.4	5.8	285.2	2.3
9	Rwt2	1,063	0.8	68.7	3.2	0.7	11.9	2.0
10	PNMS	401	8.1	2227.0	14.1	1.2	14.0	1.4
11	FW Volcanics	1,429	0.3	34.5	4.7	0.2	10.0	3.0
Total		**12,981**						
Rock Type		**3m Cu Composites (%)**				**CuCap (%)**		
		count	**mean**	**max**	**CV**	**mean**	**max**	**CV**
1	Diatreme	399	0.01	0.11	1.3	0.01	0.11	1.3
2	Lat3	696	0.01	0.08	1.1	0.01	0.08	1.1
3	HW Andesite	1,026	0.01	0.10	0.8	0.01	0.10	0.8
4	Chaotic Zone	770	0.01	0.30	1.5	0.01	0.15	1.4
5	LatAsh2	442	0.04	0.76	1.8	0.04	0.48	1.6
6	Lash	780	0.08	2.34	2.3	0.07	1.31	1.9
7	LatAsh1	2,052	0.13	14.16	4.0	0.11	4.33	2.5
8	Blit	3,923	0.11	7.58	3.0	0.10	4.87	2.8
9	Rwt2	1,063	0.01	0.21	2.7	0.01	0.21	2.7
10	PNMS	401	0.08	1.84	2.1	0.07	0.74	1.6
11	FW Volcanics	1,429	0.01	1.00	5.5	0.01	0.69	4.5
Total		**12,981**						

14.4.4 Estimation Methodology

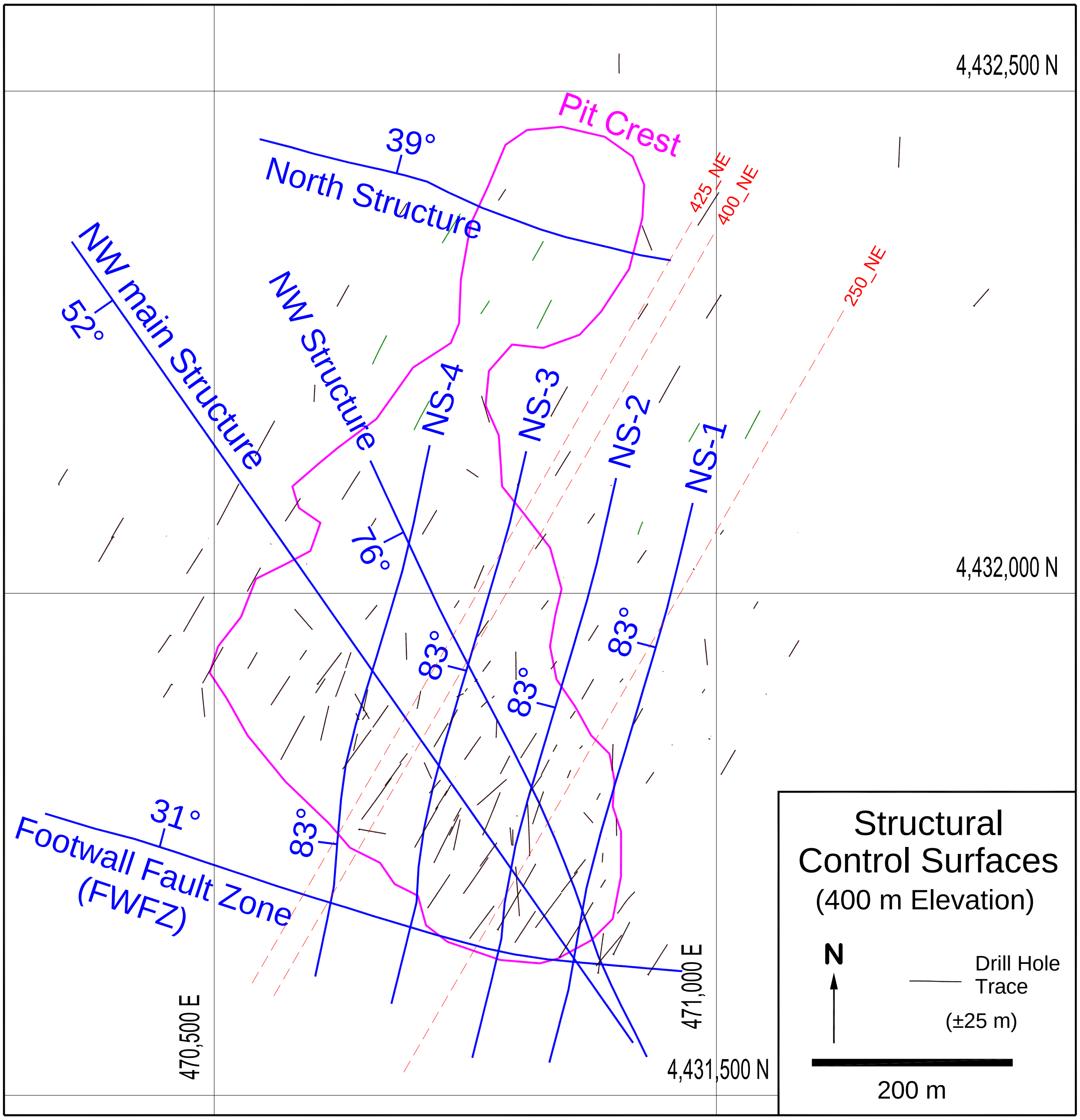
Based on the above EDA, the approach to grade estimation was by two main search strategies: structural and stratigraphic. An initial search was applied to blocks within the structural zones in the order, and within the corridor dimensions, as presented in Table 14.48 and Figure 14.40.

For both the structural and stratigraphic estimation passes, hard/soft boundaries were applied among lithologies as determined from assay contact plots.

Table 14.48: Definition of structural interpolation zones

Structural Zone	Gold Interpolation	Silver and Copper Interpolation
1	Intersection of: ±20 m NS structures with ±25 m NW main and/or ±20 m NW structure	Intersection of: ±20 m NS structures with ±25 m NW main structure
5	±40 m to Footwall Fault Zone	
3	±25 m to NW main surface	±25 m to NW main surface
4	±20 m to NW surface	
2	±20 m to NS surfaces	
6	±10 m to North structure	

Figure 14.40: Interpolation control surfaces



The stratigraphic estimation pass was oriented parallel to the generally flat-lying layered rock units. Search anisotropy and orientation were based on the geometry of the zones or lithologic units being estimated and on the iterative interrogation of results as parameters were being established.

A method of high-grade restriction was required for the estimation of gold grades in some domains. The process of capping high grade assays and compositing to a 3.0 m length had the desired effect of lowering overall variability (CV) to levels acceptable to geostatistical (OK) grade estimation. However, capping alone did not sufficiently reduce composited gold grade variability for several lithologies. A high-grade gold transition (HGT) was imposed on maximum search distances for nine of the eleven lithologic units during the estimation of gold grade (Table 14.49).

Grades above the listed thresholds are not used in grade estimation beyond the listed maximum distances. The high-grade transition distances were applied as maximums, proportionately honouring the search anisotropy for each structural or stratigraphic interpolation.

Table 14.49: High-grade distance restriction parameters - gold estimation

Code	Unit	High-Grade Transition	
		Threshold (g/t)	Max.Dist. (m)
1	Diatreme	--*none*--	
2	Lat3	0.60	11.0
3	HW Andesite	0.06	10.0
4	Chaotic Zone	0.30	21.0
5	LatAsh2	0.50	5.0
6	Lash	5.00	19.0
7	LatAsh1	13.00	12.0
8	Blit	25.00	32.0
9	Rwt2	--*none*--	
10	PNMS	4.00	3.0
11	FW Volcanics	0.30	50.0

Grades were estimated by OK with search anisotropy based on average structural and stratigraphic orientation in the various domains. Long axes are generally 75 m in structural domains and 100 m in stratigraphic domains. Gold search parameters are provided in Table 14.50, as an example. Grades were estimated in all domains using a minimum of two samples, a maximum of 12 and a maximum of five samples per hole.

14.4.5 Density Assignment

In total, 6,025 wax-dip water immersion density measurements were used for the KCD resource estimate. Average densities were assigned by rock type and redox state.

14.4.6 Model Validation

The OK estimates were validated visually by manually comparing composite metal grades against block estimates in plan and cross-section. An example section through the gold estimate is presented in Figure 14.41. The visual interrogation showed good correspondence between composite and estimated grades.

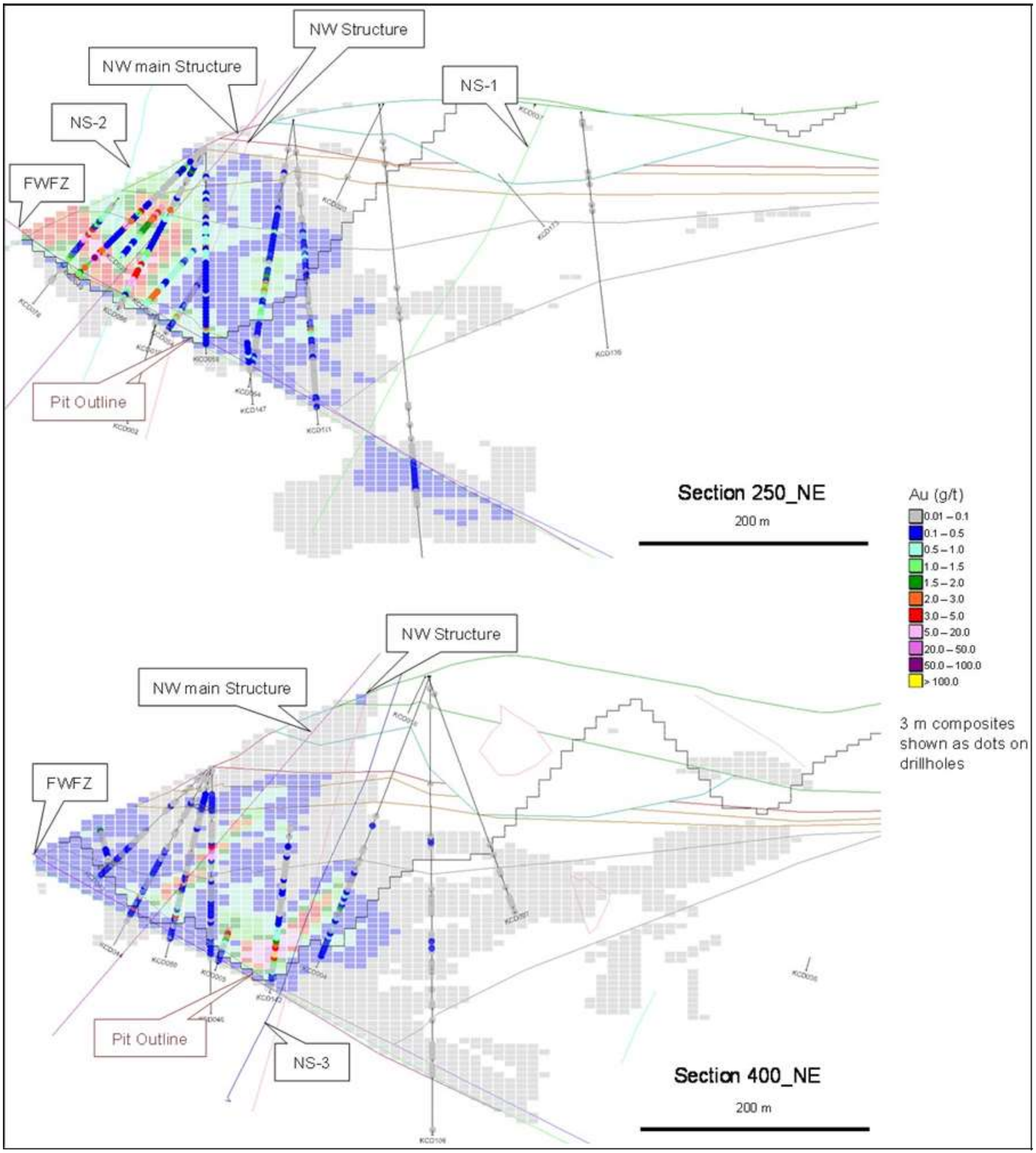
Nearest neighbour and inverse distance estimates were generated using controls based on those for OK. These were compared spatially to the OK estimate using X, Y, Z swath plots. These plots show a reasonable degree of smoothing and no bias in the grade estimates.

The high-grade transition technique was validated separately. An exercise was undertaken in the Blit Unit (8) – the unit of highest overall gold grade in the deposit, to determine a reasonable mean grade inside the structural corridors. A process of successive capping of composite data, followed by inverse distance cubed (ID^3) interpolation was utilized. Composites were capped until the CV of gold grade was reduced to a level of acceptability for estimation – a value of approximately 3. This resulted in estimation with composites capped at 16 g/t within the BLIT unit and yielded a mean estimated grade of 0.40 g/t within the structural corridors. OK using HGT parameters listed in Table 14.49, resulted in an average gold grade of 0.42 g/t in the same corridors, indicating that the technique has provided reasonable results recognizing the general validity of the very high gold assay values and appropriately limiting their range of influence, instead of capping to a lower value and spreading more moderate grades over a larger resource volume.

Table 14.50: Grade estimation search parameters – Gold

Au Domain		Search (m)	Dip / Dip Direction		
		X / Y / Z	X	Y	Z
Structural Interpolation					
Zone1	(intersection of NS & NW)	25 / 25 / 100	0 / 290	-40 / 20	50 / 20
Zone2	(NS structures)	75 / 75 / 25	0 / 014	-83 / 284	7 / 284
Zone3	(NW main structure)	75 / 75 / 25	0 / 145	-52 / 235	38 / 235
Zone4	(NW structure)	50 / 50 / 25	0 / 155	-76 / 245	14 / 245
Zone5	(FWFZ)	75 / 75 / 25	0 / 105	-31 / 015	59 / 015
Zone6	(North structure)	75 / 75 / 25	0 / 101	-39 / 011	51 / 011
Stratigraphic Interpolation					
1	Diatreme	50 / 50 / 100	0 / 30	0 / 300	90 / 300
2	Lat3	100 / 100 / 50	0 / 30	10 / 300	-80 / 300
3	HW Andesite	100 / 100 / 50	0 / 30	10 / 300	-80 / 300
4	Chaotic Zone	100 / 100 / 50	0 / 30	3 / 300	-87 / 300
5	LatAsh2	100 / 100 / 50	0 / 30	5 / 300	-85 / 300
6	Lash	100 / 100 / 50	0 / 30	5 / 300	-85 / 300
7	LatAsh1	100 / 100 / 50	0 / 30	5 / 300	-85 / 300
8	Blit	100 / 100 / 50	0 / 30	-7 / 300	83 / 300
9	Rwt2	100 / 100 / 75	0 / 30	0 / 300	90 / 300
10	PNMS	100 / 100 / 50	0 / 105	-31 / 015	59 / 015
11	FW Volcanics	100 / 100 / 75	0 / 30	0 / 300	90 / 300

Figure 14.41: Example Sections through resource model – Gold



14.4.7 Reasonable Prospects of Economic Extraction

Measures were taken to ensure the resource meets the condition of reasonable prospects of eventual economic extraction. An optimized pit shell was generated by SRK for the purpose of resource tabulation; the 5 x 5 x 2.5 m estimation blocks were reblocked to 10 x 10 x 5 m for pit optimization and subsequent reporting. This pit volume was generated using Whittle® software and the parameters listed in 14.51. Only blocks within the pit shell are included in this resource estimate.

Table 14.51: Pit optimization parameters

Metal	Price	Recovery
Au	$ 1335 / oz	75%
Ag	$ 22 / oz	75%
Cu	$ 3.60 / lb	70%
	Overall Pit Slope:	50°
	Mining Cost:	$ 2.00 / tonne
	Milling, G&A, sustaining capital:	$ 15.00 / t milled

14.4.8 Resource Classification

The resource estimate was classified based on spatial parameters related to drill density and configuration and the generation of an optimized pit. The classification criteria applied to the KCD resource are listed in Table 14.52.

KCD is naturally zoned between upper silver-rich and lower gold-rich regions allowing the deposit to be divided by a surface based on the economic value attributable to gold versus silver. It was recognized that tighter drilling was required to estimate gold mineralization as it is more associated with structural controls as opposed to the generally stratigraphic style of silver mineralization. Separate classification criteria were therefore applied based on this gold/silver zone designation.

Table 14.52: Resource classification criteria

Zone	Category	No. Holes	Max. Distance to: (metres)	
		min.	2nd closest hole	3rd closest hole
Gold	Indicated	2	25	
		3		36
	Inferred	all above-cut off, within pit shell, not classified as Indicated		
Silver	Indicated	2	35	
		3		50
	Inferred	all above-cut off, within pit shell, not classified as Indicated		

14.4.9 Tabulation

The KCD Mineral Resource Estimate is tabled on a metal equivalence basis. The gold equivalent grade (AuEq) was calculated based on block estimated grades using parameters listed in Table 14.53.

Table 14.53: Gold equivalence parameters

Metal	Price	Recovery
Au	$ 1200 / oz	75%
Ag	$ 20 / oz	75%
Cu	$ 3 / lb	70%

The resource at a 0.5 g/t AuEq cut-off is presented in Table 14.5454 and at a range of AuEq cut-offs in Table 14.55. The 0.5 g/t AuEq cut-off ($19/t at assumed gold price) has been used as a reasonable economic cut-off grade for an open pit operation feeding a conventional flotation plant.

At this cut-off grade, the strip ratio is 1.47:1.

Table 14.54: KCD estimated mineral resource at a 0.5 g/t gold equivalent cut-off

Zone	Resource Class	Tonnes	Au	Ag	Cu	AuEq	Metal (x10^3)	
		(x10^6)	(g/t)	(g/t)	(%)	(g/t)	Au(oz)	Ag(oz)
Total	Indicated	23.06	0.63	27.6	0.16	1.34	470	20,479
	Inferred	10.77	0.15	45.7	0.06	1.01	53	15,831
Gold Zone	Indicated	11.62	1.22	8.8	0.23	1.74	456	3,298
	Inferred	1.70	0.85	8.5	0.15	1.23	46	464
Silver Zone	Indicated	11.44	0.04	46.7	0.08	0.94	14	17,182
	Inferred	9.08	0.02	52.7	0.05	0.97	6	15,367

Notes:

1) *The Qualified Person for the estimate is Mr. James Gray, P.Geo. of Advantage Geoservices Ltd.*
2) *The Effective Date of the KCD mineral resource estimate is January 21, 2014.*
3) *Geologic control for estimation was interpreted by Liberty Gold personnel. This consisted of wireframed lithologic units and surfaces of structural control.*
4) *Metal assays were capped where appropriate using statistical methods.*
5) *High-grade interpolation distance restrictions were imposed for several lithologic units.*
6) *Grade was interpolated by domain using Ordinary Kriging.*
7) *Density values were assigned by domain using density data derived from wax-dip immersion of core samples.*
8) *Mineral resources are reported within an optimized Whittle pit that uses the following input parameters: Au price: US$ 1355/oz, Ag price: US$22/oz, Cu price: US$3.60 /lb; mining cost: US$2.00/t mined; milling G&A and sustaining capital cost: US$15.00/t; Recoveries are 75% Au, 75% Ag and 70%Cu. The overall pit slope angle was 50°.*
9) *AuEq was calculated using the following equation: Au (g/t) + Cu(%) x 1.6 + Ag (g/t) x 0.0167. The gold equivalent formula was based on the following parameters: Au price US$1200/oz, Cu US$3/lb, Ag price US$20/oz, Au recovery:75%; Cu recovery: 70%, Ag recovery:75%.*
10) *All figures rounded to reflect the relative accuracy of the estimate; this may result in apparent differences between tonnes, grade and contained metal content.*
11) *The Mineral Resources have been classified as Indicated and Inferred under the guidelines of the CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council, and procedures for classifying the reported Mineral Resources were undertaken within the context of the Canadian Securities Administration National Instrument 43-101.*
12) *Metal price forecasts used to constrain this estimate of Mineral Resources are subject to risk of actual prices that are higher or lower in the future.*
13) *Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resources estimated will be converted into Mineral Reserves.*
14) *The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues. As of the effective date of this report, no insurmountable issues of this nature have been identified, although all of these risks are vulnerable to change depending on the political climate at any given time in the future.*
15) *The quantity and grade of reported Inferred Mineral Resources in this estimation are uncertain in nature and there has been insufficient exploration to define these Inferred Mineral Resources as an Indicated Mineral Resource and it is uncertain if further exploration will result in upgrading them to an Indicated Mineral Resource category.*

Table 14.55: KCD Resource by AuEq cut-off

TOTAL RESOURCE																
Cut-off	INDICATED								INFERRED							
(g/t AuEq)	Tonnes	Au	Ag	Cu	AuEq	Metal (x10^3)			Tonnes	Au	Ag	Cu	AuEq	Metal (x10^3)		
	(x10^6)	(g/t)	(g/t)	(%)	(g/t)	Au(oz)	Ag(oz)	Cu(lb)	(x10^6)	(g/t)	(g/t)	(%)	(g/t)	Au(oz)	Ag(oz)	Cu(lb)
0.3	30.48	0.5	23.9	0.13	1.11	491	23,459	88,911	14.18	0.13	38.9	0.05	0.86	58	17,762	17,110
0.4	26.62	0.56	25.8	0.14	1.22	482	22,103	84,255	12.37	0.14	42.4	0.06	0.94	55	16,868	16,095
0.5	23.06	0.63	27.6	0.16	1.34	470	20,479	78,859	10.77	0.15	45.7	0.06	1.01	53	15,831	14,883
0.6	19.5	0.73	29.4	0.17	1.49	456	18,448	72,624	9.07	0.17	49.5	0.07	1.1	49	14,441	13,432
0.7	16.21	0.85	31.1	0.18	1.66	441	16,214	65,964	7.53	0.19	53.6	0.07	1.2	46	12,981	11,792
0.8	13.48	0.98	32.5	0.2	1.85	427	14,085	59,513	6.18	0.21	57.7	0.07	1.29	42	11,462	10,129
0.9	11.26	1.14	33.5	0.22	2.04	412	12,137	53,909	5.01	0.24	61.6	0.08	1.4	39	9,913	8,805
1	9.5	1.31	34.1	0.23	2.25	399	10,416	49,045	3.97	0.29	65.7	0.09	1.52	37	8,387	7,458
1.5	4.93	2.17	33	0.32	3.22	343	5,227	34,519	1.38	0.6	82.7	0.1	2.14	27	3,654	3,026
2	3.11	2.96	30.3	0.4	4.1	296	3,032	27,344	0.58	1.09	87.1	0.11	2.72	20	1,633	1,443
GOLD ZONE																
Cut-off	INDICATED								INFERRED							
(g/t AuEq)	Tonnes	Au	Ag	Cu	AuEq	Metal (x10^3)			Tonnes	Au	Ag	Cu	AuEq	Metal (x10^3)		
	(x10^6)	(g/t)	(g/t)	(%)	(g/t)	Au(oz)	Ag(oz)	Cu(lb)	(x10^6)	(g/t)	(g/t)	(%)	(g/t)	Au(oz)	Ag(oz)	Cu(lb)
0.3	15.19	0.97	8.1	0.2	1.42	474	3,956	66,532	2.17	0.7	8.1	0.13	1.05	49	565	6,396
0.4	13.29	1.09	8.5	0.22	1.58	466	3,621	63,207	1.94	0.77	8.3	0.14	1.13	48	518	6,045
0.5	11.62	1.22	8.8	0.23	1.74	456	3,298	59,470	1.7	0.85	8.5	0.15	1.23	46	464	5,591
0.6	10.1	1.37	9.2	0.25	1.92	444	2,987	55,536	1.46	0.95	8.7	0.16	1.34	44	406	5,105
0.7	8.77	1.53	9.6	0.27	2.11	430	2,694	51,587	1.21	1.07	8.8	0.17	1.49	42	342	4,508
0.8	7.67	1.69	9.8	0.28	2.31	418	2,413	47,909	1.01	1.21	8.7	0.18	1.64	39	282	3,915
0.9	6.75	1.86	10	0.3	2.51	405	2,161	44,657	0.87	1.32	8.9	0.18	1.76	37	249	3,541
1	6.02	2.03	10	0.32	2.7	393	1,936	41,806	0.74	1.45	8.7	0.19	1.9	35	207	3,118
1.5	3.84	2.75	10.3	0.39	3.54	340	1,270	32,716	0.39	2.07	7.1	0.22	2.53	26	89	1,882
2	2.68	3.42	11.2	0.45	4.33	295	962	26,736	0.25	2.57	6.6	0.22	3.03	20	52	1,195
SILVER ZONE																
Cut-off	INDICATED								INFERRED							
(g/t AuEq)	Tonnes	Au	Ag	Cu	AuEq	Metal (x10^3)			Tonnes	Au	Ag	Cu	AuEq	Metal (x10^3)		
	(x10^6)	(g/t)	(g/t)	(%)	(g/t)	Au(oz)	Ag(oz)	Cu(lb)	(x10^6)	(g/t)	(g/t)	(%)	(g/t)	Au(oz)	Ag(oz)	Cu(lb)
0.3	15.29	0.04	39.7	0.07	0.8	17	19,503	22,379	12.01	0.02	44.5	0.04	0.83	9	17,197	10,714
0.4	13.34	0.04	43.1	0.07	0.87	16	18,482	21,048	10.43	0.02	48.8	0.04	0.9	7	16,350	10,050
0.5	11.44	0.04	46.7	0.08	0.94	14	17,182	19,388	9.08	0.02	52.7	0.05	0.97	6	15,367	9,292
0.6	9.4	0.04	51.2	0.08	1.03	12	15,461	17,088	7.61	0.02	57.4	0.05	1.06	5	14,035	8,327
0.7	7.44	0.04	56.5	0.09	1.13	11	13,520	14,377	6.32	0.02	62.2	0.05	1.14	4	12,639	7,283
0.8	5.81	0.05	62.5	0.09	1.23	9	11,672	11,604	5.17	0.02	67.2	0.05	1.23	3	11,180	6,214
0.9	4.5	0.05	68.9	0.09	1.35	7	9,977	9,252	4.13	0.02	72.7	0.06	1.32	2	9,664	5,264
1	3.48	0.05	75.7	0.09	1.47	6	8,480	7,239	3.23	0.02	78.9	0.06	1.43	2	8,180	4,340
1.5	1.08	0.08	113.6	0.08	2.09	3	3,957	1,802	0.98	0.01	112.9	0.05	1.98	0	3,565	1,144
2	0.44	0.11	147.8	0.06	2.68	2	2,070	608	0.34	0.01	145.4	0.03	2.49	0	1,580	248

The resource is tabled by redox state in Table 14.56. Greater than 90% of the total KCD resource tonnage is sulphide or transitional material.

Table 14.56: KCD resource by redox state at 0.5 g/t AuEq cut-off

Redox State	Resource Class	Tonnes ($x10^6$)	Au (g/t)	Ag (g/t)	Cu (%)	AuEq (g/t)	Metal ($x10^3$)		
							Au(oz)	Ag(oz)	Cu(lb)
Total	Indicated	23.06	0.63	27.6	0.16	1.34	470	20,479	78,859
	Inferred	10.77	0.15	45.7	0.06	1.01	53	15,831	14,883
Oxide	Indicated	2.3	0.1	60	0.01	1.12	7	4,447	692
	Inferred	0.78	0.13	41.2	0.02	0.85	3	1,028	379
Transition	Indicated	3.37	0.26	41.3	0.06	1.04	28	4,470	4,288
	Inferred	1.31	0.39	36.1	0.05	1.06	16	1,520	1,324
Sulphide	Indicated	17.38	0.78	20.7	0.19	1.43	435	11,563	73,878
	Inferred	8.69	0.12	47.6	0.07	1.02	33	13,283	13,179

15. MINERAL RESERVE ESTIMATES

No mineral reserve estimates have been completed at this early stage in the project.

16. ADJACENT PROPERTIES

Four adjacent properties contain significant mineralization of a similar style to that observed at targets within the TV Tower property.

The information below was publically disclosed by the owner or operator of each adjacent property, and the sources of the information are disclosed below. However, the author and qualified person for this technical report has been unable to verify the information regarding the adjacent properties. The information below, and the mineral resources reported for the Ağı Dağı, Kirazli and Halilağa properties are not necessarily indicative of the mineralization on the TV Tower Property that is the subject of this Technical Report.

16.1 Agi Daği and Kirazli

The Kirazlı Property, owned by Alamos Gold Inc. ("Alamos") is located to the immediate northeast of the TV Tower property, and consists of high sulphidation epithermal gold and silver mineralization. Alamos also controls the similar Ağı Dağı Property, located 25 km southeast of the TV Tower property. Resources for these properties are given below in Table 16.1. Kirazlı is presently the subject of permitting and development work.

Table 16.1: Resources at the Ağı Dağı and Kirazlı properties

Project	Measured and Indicated Resources			Inferred Resources		
	Tonnes (000s)	Au (g/t)	Ag (g/t)	Tonnes (000s)	Au (g/t)	Ag (g/t)
Ağı Dağı	66,323	0.61	3.59	22,341	0.53	2.71
Kirazlı	27,060	0.76	8.92	4,108	0.56	11.21
Total	93,383	0.65	5.13	26,449	0.53	4.03

Source: Alamos website, accessed February 2014 (http://www.alamosgold.com/our-mines-projects/agi-Daği-Kirazlı-project/reserves-and-resources refers.)

16.2 Kartaldağ

The Kartaldağ Mine and Property, owned by Esan A.Ş, a subsidiary of Eczacibasi Holdings Co., is located central to the TV Tower licenses, and was, in 2014 and 2015, the subject of active drilling. Details of this tenure can be found on-line at the Turkish Government Bureau of Mining and Petroleum website at: https://www.turkiye.gov.tr/migem-ruhsat-yururluk-tarihi-sorgulama.

The principle Kartaldağ license is in an inlier within the TV Tower tenure package. Initial discovery and mining of the Kartaldağ deposit was undertaken by Roman or pre-Roman cultures. Modern mining was carried out by Astyra Gold Mining from 1914 through1918. Total historic gold production is unknown. The epithermal system and related alteration are hosted by hornblende-bearing dacite porphyry. The deposit is a quartz vein associated with four main alteration types: 1) propylitic; 2) quartz-kaolin; 3) quartz-alunite-pyrophyllite; and 4) silicification, the latter being characterized by two distinct quartz generations as early (vuggy) and late (banded, comb, coliform). Primary sulphide minerals are pyrite, covellite and sphalerite. On this basis, the deposit has been described as an "intermediate" sulphidation epithermal deposit, with characteristics of both high and low sulphidation deposits. Gold and silver assays are reported as "multi-ounce" with bonanza grades typical of this deposit type. Alteration and mineralization extend westward from the mine onto the TV Tower property.

16.3 Halilağa

The Halilağa Cu-Au porphyry deposit, formerly held in a Joint Venture between Liberty Gold (40%) and TMST (60%), is located approximately 15 km SE of TV Tower. An initial resource was estimated to host an indicated 168 million tonnes averaging 0.30% copper and 0.31g/t gold, an inferred resource of 199 million tonnes averaging 0.23% Cu and 0.26 g/t Au, and an inferred oxide gold resource of 4.9 million tonnes averaging 0.60 g/t Au (Scott et al, 2012). This initial estimate was done by inverse distance interpolation (Doerksen et al, 2015). In 2014, an update was estimated geostatistically by ordinary kriging. The impact of drilling since the initial resource has been to increase confidence as reflected by the increase in Indicated Mineral Resource as a portion of the total resource. Table 16.2 compares the 2014 updated sulphide resource with the initially reported numbers; the 0.43 g/t AuEq cut-off approximately corresponds to the 0.2% CuEq cut-off used in the 2012 disclosure.

Table 16.2: Comparison to initial estimate at 0.43 g/t AuEq cut-off

Resource Model	Indicated					Inferred				
	Tonnes (1,000s)	Cu (%)	Au (g/t)	Mo (%)	AuEq (g/t)*	Tonnes (1,000s)	Cu (%)	Au (g/t)	Mo (%)	AuEq (g/t)*
Updated	182,713	0.27	0.3	0.0057	0.9	178,739	0.23	0.24	0.0087	0.77
Initial	168,755	0.3	0.31	0.0054	0.97	199,641	0.23	0.26	0.0067	0.78
Difference	8%	-10%	-4%	6%	-8%	-10%	-1%	-7%	30%	-2%

**Gold equivalent (AuEq) grades were calculated using the folloing parameters:*

- Cu price and recovery of $2.90/lb and 90%
- Au price and recovery of $1200/oz and 70%
- Mo price and recovery of &12.50/lb and 50%

Source: Gray (2014)

Mineralization is hosted primarily within the Kestane stock, a porphyritic shallow intrusive body. Alteration consists of dense quartz stockwork in phyllic altered rocks at the top of the deposit, giving way to pervasive weak potassic alteration and sparse quartz stockwork veins with phyllic altered margins at depth. Sulphide minerals include disseminated, vein and fracture-controlled pyrite and chalcopyrite, with a thin supergene zone consisting of disseminated chalcocite at shallow depth. The Halilağa Property also hosts gold and copper skarn showings and a number of high sulphidation epithermal gold targets, two of which (Pirentepe and Künkdağ) have been tested by drilling.

An updated PEA (Doerksen, 2015) demonstrates the inherent advantages presented by the distribution of gold and copper within the Halilağa resource. The high grade gold and copper zone present at surface presents the opportunity for rapid payback of capital in a mining scenario, while the existing infrastructure present in Çanakkale State mitigates the need for extensive infrastructure development in the form of roads, power generation and ports.

The results of the updated PEA show an after-tax IRR of 43.1% and an $NPV^{7\%}$ of US$474 million using metal prices of $1,200/oz gold and $2.90/lb copper. Under a 25,000 TPD mine plan over 13.6 years, it realizes a strip ratio of 1.3:1 and a 1.3 year payback period. The LOM payable production is 780 Mlbs. of copper and 924 koz. of gold. Total CAPEX is estimated to be $558.5MUSD Pre-production capital costs are $346MUSD (including a 25% contingency of $65.4MUSD).

16.4 Park Holdings

Several tenures covering approximately 50 km^2 to the east and south of the TV Tower property and surrounding three sides of the Karaayı license are held by Park Holdings, a Turkish holding company. Details of this tenure can be found on-line at the Turkish Government Bureau of Mining and Petroleum website at: https://www.turkiye.gov.tr/migem-ruhsat-yururluk-tarihi-sorgulama.

Three areas of the property have been evaluated using soil sampling, IP and drilling, including a northern porphyry target (Camelback), a west-central high sulphidation gold target, and a southern porphyry target.

17. OTHER RELEVANT DATA AND INFORMATION

The authors are not aware of any additional information that is necessary to make the Technical Report more understandable, nor are they aware of any omissions or inclusions that could be misleading.

18. INTERPRETATION AND CONCLUSIONS

The TV Tower Property is located in Çanakkale Province on the Biga Peninsula of Northwestern Turkey and consists of 9,065.14 hectares of mineral tenure in nine contiguous licenses. Historic exploration work completed by TMST from 2008 through 2011 resulted in the discovery of at least two significant high sulphidation epithermal gold systems on the TV Tower Property at Küçükdağ and Kayalı Target areas. Additional work by Liberty Gold resulted in additional discoveries, aided by the addition of the Karaayı tenure in 2013.

Historical data collected in 2008 through 2011 has been independently verified by SRK as part of the previous MRE study to ensure its integrity. DAMA also conducted its own independent data verification work. Mehmet Ali Akbaba and Mustafa Atalay, reviewed the protocols followed by Liberty Gold to collect sample data and related documents such as drill geological logs and assay certificates. DAMA found the drilling methods and sample recoveries are following industry standards. Sampling has been undertaken based on geological logging and is adequate for the mineralization style and size of the deposit. All analyses were undertaken independently and off-site at ALS and ACME Laboratories. QA/QC samples submitted as part of the drilling campaigns have been returned values within expectations. DAMA also undertook a check assaying study, and its results confirmed that the historical values are valid, and no major bias exists. Based on this review and the inspections during the site visit on January 16th, 2021, DAMA considers all matters relating to drilling, sampling, sample preparation, assaying, sample security and QA/QC for the Project are in-line with NI 43-101 requirements.

Based upon the review of the overall geology, exploration, diamond drilling and sampling at the TV Tower Project, DAMA has prepared the mineral resource estimation following the standard industry procedures and is effective February 09th 2021.

The geological model was undertaken in Micromine 2021, where 3D wireframe solids of lithology domains and weathering profiles were produced and are representative of the styles of deposits observed at the property. Mineral Resources were estimated within the lithology domains using Micromine 2021from capped 2 m long composites using two interpolation passes of OK. Each search ellipse was incrementally larger than the previous, and dimensions were based on variogram ranges separately derived from the gold grades within each domain. The block model was validated against the drill hole composites through global and local validation methods, including visual comparisons, comparative statistics and swath plots. No production data was available to validate the accuracy of the model to true known grade. Block grades were found to reproduce composite grades sufficiently in the block model. The Mineral Resources are reported within a Lerchs-Grossman open pit shell (based on Indicated and Inferred Mineral Resources) and are February 09th, 2021. Mineral Resources were classified into Indicated and Inferred categories according to the CIM Definition Standards on Mineral Resources and Mineral Reserves as adopted by NI 43-101.

The open pit constrained Mineral Resource for the TV Tower Project is summarized by the prospects below.

18.1 Epithermal deposits and targets

18.1.1 Küçükdağ

The outcome of the field exploration and drill programs carried out by Liberty Gold in 2012 and 2013 resulted in the first resource estimates of gold and silver mineralization at the Küçükdağ Target. The resource estimate at a 0.5 g/t AuEq cut-off are presented in the table below. The 0.5 g/t AuEq cut-off ($19/t at assumed gold price) has been used as a reasonable economic cut-off grade for an open pit operation feeding a conventional flotation plant. At this cut-off grade, the strip ratio is 1.47:1.

Table 18.1: Küçükdağ estimated mineral resource at a 0.5 g/t gold equivalent cut-off

Zone	Resource Class	Tonnes	Au	Ag	Cu	AuEq	Metal ($x10^3$)		
		($x10^6$)	(g/t)	(g/t)	(%)	(g/t)	Au(oz)	Ag(oz)	Cu(lb)
Total	Indicated	23.06	0.63	27.6	0.16	1.34	470	20,479	78,859
	Inferred	10.77	0.15	45.7	0.06	1.01	53	15,831	14,883
Gold Zone	Indicated	11.62	1.22	8.8	0.23	1.74	456	3,298	59,470
	Inferred	1.70	0.85	8.5	0.15	1.23	46	464	5,591
Silver Zone	Indicated	11.44	0.04	46.7	0.08	0.94	14	17,182	19,388
	Inferred	9.08	0.02	52.7	0.05	0.97	6	15,367	9,292

It is important to appreciate that structural analysis, successfully employed during the resource estimation process, indicates that within the Küçükdağ area there is good potential for the resources to be increased, especially within the silver zone that remains open to the north and west of the current resource, so the resource statement presented may be considered as a starting point.

18.1.2 Kayalı

They Kayalı HSE target was tested by TMST in 2010 and 2011. Liberty developed a structural model based on previous drilling and field analysis and validated it with a further 15 holes in 2013. Gold at Kayalı is hosted primarily in WNW-striking, steeply-dipping breccia zones hosted in tuffaceous strata, and underlain by a blanket of supergene copper mineralization. The gold zones area open to the ESE and WNW, and it is possible that other, parallel zones are present in this area. The Kayalı zone strikes WSW and is geographically restricted by terrain and the Park Holdings license to the south. However, the zone is still open to the SE to the license boundary and to the NW to the main access road. The resource estimate at a 0.20 g/t Au cut-off grade for oxide zone and 0.2% Cu cut-off grade for supergene zone are presented in **Table 18.2**. An additional 12-20 short holes are recommended in order to obtain a drill density sufficient for upgrade to Indicated and to better understand the distribution of the underlying copper mineralization and whether it is of economic significance.

Table 18.2: Kayalı estimated mineral resource table

Res Cat	Zone	Cut-off	Tonnes $x10^6$	Au g/t	Cu %	Au 10^3 oz-t	Cu $x10^3$ lb
IND	Oxide	Au:0.2 g/t	4.26	0.48	-	65	-
	Supergene	Cu:0.2 %	2.99	-	0.41	-	27,151
INF	Oxide	Au:0.2 g/t	7.33	0.39	-	92	
	Supergene	Cu:0.2 %	12.65	-	0.39	-	108,652

18.1.3 Yumrudağ

The Yumrudağ area at the west end of the K2 trend is identical in many respects to Kayalı, consisting of a hilltop area underlain by an oxidized, residual quartz ledge and cut by gold-bearing, WNW-striking steep breccia zones. Proof of concept is offered by drill hole KRD003, which returned gold values higher than holes drilled by previous operators. The resource estimate at a 0.2 g/t Au cut-off grade for oxide zone and 0.4% AuEq cut-off grade Au-Cu zone are presented in **Table 18.3**. Total size of the zone will be restricted by terrain, which drops off in all directions, but it is still worthy of additional infill and step-out drilling, which may enlarge the deposit. Holes can also be utilized test the extent of supergene copper mineralization beneath the ledge.

Table 18.3: Yumrudağ estimated mineral resource table

Res Cat	Zone	Cut-off	Tonnes x10^6	Au g/t	Cu %	Au 10^3 oz-t	Cu x10^3 lb
IND	Yumrudağ Oxide	Au:0.2 g/t	12.54	0.42		169	
	Yumru Au-Cu	[1]AuEq:0.4 g/t	1.25	0.15	0.37	6	10,309
INF	Yumrudağ Oxide	Au:0.2 g/t	25.18	0.39		312	
	Yumru Au-Cu	[1]AuEq:0.4 g/t	10.37	0.11	0.28	36	64,260

[1]AuEq for sulphide/supergene ore types calculated using the following equation: Au (g/t) + Cu(%) / 0.6686 x 1.338. The gold equivalent formula was based on the following parameters: Cu price $3.40/lb, Au $1600/oz, Cu recovery: 87%, Au recovery:65%.

18.1.4 Other epithermal targets

Liberty Gold completed its assessment of several other epithermal targets, including West Kartaldağ, Columbaz, Nacak Epithermal, Kestanecik and Küçükdağ SE targets.

At West Kartaldağ, mapping has extended alteration and gold mineralization west from Esan's Kartaldağ mine along a HSE rib, consisting of brecciated, quartz-alunite altered volcanic rocks with discreet shears with low sulphidation quartz-vein fragments. The Kartaldağ Mine area has seen significant drilling in 2012-2014 up to the tenure boundary. This target is considered a high priority, and an application for a forestry permit for drilling of this target has been submitted.

At Columbaz, a total of 12 holes were drilled in 2014 in part to test the down-dip extent of low sulphidation epithermal veins mapped intermittently over a strike length of approximately 1 km in a WSW-ENE direction. Five holes drilled along the eastern portion of the target hit the quartz vein target and low-grade gold mineralization, but did not return encouraging results. The remaining seven holes were drilled in the western portion of the target. All holes intercepted epithermal quartz veins, which were extensively faulted and clay altered. Several holes returned high-grade gold and silver intercepts. However, of more importance was the discovery of gold-copper mineralized and porphyry-style alteration in these holes. This discovery is discussed below. No further drilling of the low sulphidation target is recommended at this time.

In 2010 and 2011, Teck drilled several holes into the Nacak epithermal target, consisting of a residual quartz ledge with local areas of brecciation. No further drilling of this target is recommended until detailed mapping and identification of higher-grade ribs can be carried out.

The Kestanecik target was mapped and sampled in detail by Liberty Gold, and consists of WNW and N-striking, high angle, low sulphidation quartz veins. While the vein system is extensive, it lacks high Au and Ag values in sampled quartz veins. While a drill test may be attempted in the future, other targets are more compelling targets and are thus higher priorities. No drilling is recommended at this time.

The KCD SE target was tested by Teck in 2010 and 2011. Many of the drill holes contained gold, but the intercepts were scattered. Subsequently, this area was the subject of intensive field mapping, identifying a volcanic complex cored by a diatreme body and floored by arkosic sandstone overlying metamorphic basement rocks. A cohesive target for further drilling was not identified, and no drilling is recommended at this time.

18.2 Porphyry targets

18.2.1 Hilltop

The Hilltop porphyry target at Ardiç hill, subject to past drilling efforts by Tüprag and Chesser, was tested with two confirmation holes in 2013 and additional holes in 2014 and 2015. Drilling of angled holes across near-vertical sheeted vein zones appeared to improve the overall grade slightly. The total areas tested to date measures approximately 300 x 500 m. Most of the Hilltop porphyry system tested to date is hosted in strongly QSP altered crowded porphyry, giving way to strongly biotite-K feldspar- altered rocks at depth. In the context of efforts to understand the Valley porphyry system it is believed that the Valley porphyry intrusive may be one of the older intrusive units involved in porphyry mineralization. Copper mineralization consists primarily of very fine-grained, disseminated chalcocite, giving way to pyrite at depth. Over all gold and copper grades are fairly low, with gold typically in the 0.2 to 0.3 g/t range and copper in the range of 0.1 to 0.2%. However, late in 2014, a supergene chalcocite blanket with moderate copper grades was identified at shallow depth in KRD031C. The resource estimate at a 0.15 g/t Au cut-off grade for oxide zone and 0.4% AuEq cut-off grade Au-Cu zone are presented in **Table 18.4**. The Hilltop deposit is still open to the north, east, south and southwest. Infill and step out drilling to better define and enlarge the deposit are recommended, as well as further metallurgical work.

Table 18.4: Hilltop estimated mineral resource table

Res Cat	Zone	Cut-off	Tonnes x10^6	Au g/t	Cu %	Au 10^3 oz-t	Cu x10^3 lb
IND	Hiltop Oxide	Au:0.2 g/t	3.55	0.36	-	41	-
	Hilltop Au-Cu	[1]AuEq:0.4 g/t	26.83	0.16	0.24	138	141,352
INF	Hiltop Oxide	Au:0.2 g/t	9.97	0.30	-	97	-
	Hilltop Au-Cu	[1]AuEq:0.4 g/t	34.02	0.16	0.22	176	166,344

[1]AuEq for sulphide/supergene ore types calculated using the following equation: Au (g/t) + Cu(%) / 0.6686 x 1.338. The gold equivalent formula was based on the following parameters: Cu price $3.40/lb, Au $1600/oz, Cu recovery: 87%, Au recovery:65%.

18.2.2 Valley

The Valley porphyry was discovered through extension of soil sampling from Yumrudağ into the valley to the south, yielding a large, northwest-trending Cu and Au in soil anomaly. Prospecting and mapping showed the presence of potassic altered porphyritic intrusive rocks with quartz and magnetite stockwork, overprinted by zones of QSP alteration. The discovery hole, drilled in May, 2014, returned 0.99 g/t Au and 0.39% Cu over 153.1 metres in KRD010, including 1.57 g/t Au and 0.56% Cu over 66.2 metres, with good results in a number of follow-up holes. At the same time, a concerted effort to map and characterize the various intrusive phases was undertaken, resulting in descriptions of a large number of pre- syn- and post-mineral phases. Pre-mineral intrusive phases include the Kuscayir batholith, a holocrystalline, porphyritic granodiorite. Syn-mineral phases consist of biotite-hornblende-feldspar +/- quartz crowded monzonite porphyries with disseminated magnetite, pervasive groundmass K feldspar, and local areas of quartz-, quartz-magnetite and magnetite veining. Post-mineral phases strongly resemble pre-mineral phases. The identification of the various phases led to rapid identification of other areas of interest within the lowland areas in the Karaayı tenure.

The Valley Porphyry resource estimate is presented below in Table 18.5. Infill and step out drilling pursuant to growing the size of the deposit are recommended.

Table 18.5: Valley estimated mineral resource at a 0.4 g/t gold equivalent cut-off

Res Cat	Zone	Cut-off	Tonnes x10^6	Au g/t	Cu %	Au 10^3 oz-t	Cu x10^3 lb
IND	Valley Au-Cu	[1]AuEq:0.4 g/t	7.77	0.48	0.23	120	39,582
INF			4.93	0.31	0.19	49	20,334

[1]AuEq for sulphide/supergene ore types calculated using the following equation: Au (g/t) + Cu(%) / 0.6686 x 1.338. The gold equivalent formula was based on the following parameters: Cu price $3.40/lb, Au $1600/oz, Cu recovery: 87%, Au recovery:65%.

18.2.3 Columbaz

As discussed above, Columbaz was principally a low sulphidation vein target until porphyry-style alteration and low-grade gold and copper mineralization were recognized in CD002C. The follow-up hole into the target, CD008C, returned 0.60 g/t Au and 0.11% Cu over 357.7 metres, consisting of higher-grade low sulphidation veins in a lower-grade matrix of gold-copper porphyry mineralization. Subsequent holes (CD009C – CD012C) fanned from this site contained similar alteration and mineralization. Host rocks consist of porphyritic volcanic and volcaniclastic rocks as well as porphyritic intrusive rocks, which are progressively more crowded and coarser-grained with depth. Alteration in higher-grade intervals consists of a dense stockwork of quartz-and quartz-magnetite veins in a matrix of strongly sericitized rock that may overprint patchy K-feldspar alteration. An additional 5 drill holes totaling 3,020.7m were completed in 2020, Inlcuding 2242 core samples.

Of concern at Columbaz is the relative depth of the porphyry alteration and mineralization, as well as terrain features (Sarp and Columbaz hills) that would adversely impact strip ratio in any envisioned open pit mining operations. However, mineralization started approximately from surface in CD012C, which is open to the north. Other factors that may upgrade the target include the presence of high-grade epithermal Au-Ag veins. Additional drilling is recommended at this target. A forestry permit will have to be obtained in order to drill.

The geological interpretation for the Columbaz deposit is based primarily on diamond drilling data and geological interpretations by Liberty Geologists. The current Mineral Resource Estimate is primarily found mainly in association with a phreatic chimney. A weak porphyry mineralization also presents within the surrounding altered intrusives, but some uncertainty remains regarding its extents and grades, mainly due to the lack of close-spaced information and lithological complexities. A close space drill program could help in defining more accurately the transitional and sulfide material that could be mined.

Table 18.6: Columbaz Resource Estimate

Res Cat	Zone	Cut-off	Tonnes x10^6	Au g/t	Cu %	Au x10^3 oz-t	Cu x10^3 lb
INF	Columbaz Oxide	Au:0.2 g/t	3.38	0.36	-	39	-
INF	Columbaz Cu-Au	[1]AuEq:0.4 g/t	32.15	0.36	0.13	370	93,153

[1]AuEq for sulphide ore types calculated using the following equation: Au (g/t) + Cu(%) / 0.6686 x 1.338. The gold equivalent formula was based on the following parameters: Cu price $3.40/lb, Au $1600/oz, Cu recovery: 87%, Au recovery:65%.

18.2.4 Other Porphyry Targets

The Nacak porphyry target was the subject of mapping and sampling in 2013, confirming the presence QSP alteration at relatively low elevations in the valley and indicative of the high levels of a porphyry system. Three widely-spaced holes drilled in 2013 captured the transition from an epithermal, high-sulphidation environment to a porphyry environment at depth. Alteration at the bottom of the holes is gradational into weak biotite alteration. Quartz stockwork was only weakly developed, and none of the holes contained economic mineralization. The drilling demonstrated that a porphyry system is present in this area, however no further drilling is recommended at this time, as other targets are more compelling.

Drill testing of porphyry targets in 2013 and 2015 clearly demonstrates the potential for deposits of this type at TV Tower. Porphyry targets can be defined by the presence of 1) a bull's eye magnetic anomaly; 2) Cu and Au in soils and rocks and/or 3) surface evidence of sericite and quartz stockwork and/or magnetite and K-feldspar alteration. On this basis, a number of other targets have been defined, including:

- Vineyard zone: magnetite and K-feldspar altered intrusive rocks and intrusive breccia, located immediately southwest of the Valley Porphyry zone; associated mag anomaly; Cu and Au in rocks and soils.
- Skarn Zone: intrusive rocks and skarn near the west margin of the Kuscayir batholith; associated mag anomaly; Cu and Au in rocks and soils.
- Root Zone: magnetite and K-feldspar altered intrusive rocks and intrusive breccia, located immediately south of the Valley Porphyry zone; associated mag anomaly; Cu and Au in rocks and soils.
- Tesbihçukuru South: Quartz stockwork with Au, mag anomaly.
- Kiraz: north of Yumrudağ; pronounced mag anomaly.

A number of other magnetic and Cu-Au anomalies are present on the property, but have not been investigated to any significant degree.

18.3 Listwaenite lode-gold target

The Gümüşlük targets was investigated in 2013 using detailed mapping and soil sampling, the latter producing a 1200 metre-long soil anomaly with samples up to 6000 ppm Au. Alteration consists of rusty-weathering, gossanous soils with areas of silicification and quartz veining, hosted in quartz-mica+/-chlorite schist in the immediate footwall of a sheared serpentinite body. Drill-testing is highly recommended, but awaits receipt of a forestry permit.

18.4 Summary

With the establishment of the resource at Küçükdağ, a foundation of significant gold and silver mineralization was established for the TV Tower Exploration Property. There is room for additional mineralization to be discovered around Küçükdağ as additional drilling is undertaken; specifically within the silver zone that remains open to the north and west of the current resource. The Küçükdağ deposit is metallurgically complex. Relatively high recovery of gold and silver to a concentrate was achieved during metallurgical testing.

The Valley Porphyry was discovered through soil sampling, mapping, prospecting, magnetics and drill testing. This discovery, along with the enlargement of the Hilltop porphyry target through drilling, identification of other, as yet undrilled, porphyry targets, and ongoing investigation of shallow oxide gold targets and supergene copper blankets at Yumrudağ and Kayalı, shifted the focus at TV Tower to the south side of the property. The proximity of these gold-copper porphyry targets to Halilağa, located approximately 18 km to the southeast, has the potential to favourably impact the economics of both projects.

The Columbaz low sulphidation vein target was tested in 2014 with 12 holes. High gold and silver grades were realized in veins on the west side of the target area, where they overprinted gold-copper porphyry mineralization. The extent of this mineralization is as yet unknown. However, the results of the deep IP study conducted in 2015 suggest deeper IP highs which might indicate that disseminated sulphide consistent with gold-copper porphyry mineralization extends in all directions, particularly to the north.

19. RECOMMENDATIONS

Exploration at TV Tower over the last 3.5 years has significantly upgraded the prospectivity of the property. Of the three main, previously tested targets, one (KCD) was upgraded to a gold-silver-copper resource, one was reinterpreted as a structurally-controlled gold system (Kayalı), resulting in higher gold grades obtained in drilling, and one (Columbaz) produced a discovery of a Au-Cu porphyry system. Additional targets were identified and upgraded to drill targets, and await forestry permits in order to drill (Gümüşlük and Kartaldağ West). Comprehensive data sets, including airborne geophysics, grid soil samples and geological maps will aid in target identification in the future.

The addition of the Karaayı property to TV Tower in 2013 dramatically changed the direction of the project. The property was acquired primarily because high sulphidation epithermal gold mineralization similar to that observed at the Kayalı target could be inferred to extend up to three kilometres to the west onto the Karaayı Property. Surface exploration and drill testing of the Valley and Hilltop porphyry targets demonstrated the potential for this license to host significant gold-copper mineralization, and the location of these targets, approximately 15 km west of the Halilağa porphyry Au-Cu deposit, suggests incremental benefits to both projects. At present, the presence of shallow gold oxide mineralization overlying a supergene chalcocite blanket, in turn overlying at least two centres of porphyry Au-Cu mineralization, forms the most compelling cluster of targets on the TV Tower property.

As summarized above, results of exploration to date at the TV Tower property have been overwhelmingly positive, and an aggressive program of resource drilling and metallurgical testing, in order to advance targets on the Karaayı license, as well as continued development and drill testing of other targets, is recommended. DAMA considers that the conversion of Inferred Mineral Resources to Indicated Category, and the drill testing of the identified other targets in the TV Tower property should be the priority and focus of near-term endeavors. It is recommended that the conversion of Indicated Mineral Resources to Measured Category is postponed before the start of mining activities.

The overarching goals of the program should be to

- demonstrate potential for significant resource growth in developed and early-stage targets
- continue comprehensive CSR and permitting work.

With respect to growing resources and identifying potential resources, and in order of importance, the following should be carried out:

- Step-out drilling at the Columbaz Au-Cu Porphyry target, followed by an updated resource estimate.
- Infill and step-out drilling at the Yumrudağ HSE deposit and underlying supergene copper blanket, followed by an updated resource estimate.
- Step-out drilling at satellite targets around the Valley Porphyry deposit
- Step-out drilling at the Hilltop Porphyry deposit and updated resource estimate.
- Continued metallurgical testing at the Valley and Hilltop deposits, and initial metallurgical testing at Columbaz, focusing on amenability to producing a flotation concentrate.
- Step-out drilling at the Kayalı HSE gold deposit and underlying supergene copper blanket, followed by an updated resource estimate.
- Continued testing of other porphyry, HSE and supergene copper targets on the Karaayı license
- Initial drill test of the Gümüşlük listwaenite lode-gold target.
- Initial drill test of the Kartaldağ West HSE target.

- Field investigation and drilling of all other potential porphyry targets on the property (Tesbihçukuru South, Kiraz, etc.)

A recommended budget and workplan are presented in Tables 19.1 and 19.2.

Table 19.1: Recommended Exploration Budget for TV Tower

Activity	US$	%
Labor	720,000.00	3.6
Environment	200,000.00	1
Metallurgy	120,000.00	0.6
Drilling	14,800,000.00	74
Survey	98,000.00	0.5
Field Support	720,000.00	3.6
Property	700,000.00	3.5
Geochemistry	2,400,000.00	12
Administrative	242,000.00	1.2
Total	**20,000,000.00**	**100**

Table 19.2: Recommended allocation of drilling (drilling cost all-in, including G & A, etc.)

Target Name	Stage of Work	Deposit Type	Work Completed	Work Plan	Budget ($USD)
Columbaz	Resource Definition and Resource Expansion	Au-Cu Porphyry	12 holes / 5,698.55 m drilling	25,000 m drilling	**$6.0M**
Hilltop Porphyry	Resource Definition and Resource Expansion	Au-Cu Porphyry	28 holes / 8,362 m drilling	10,000 m drilling	**$2.4M**
Valley Porphyry	Resource Definition and Resource Expansion	Au-Cu Porphyry	27 holes / 5,861.7 m drilling	10,000 m drilling	**$2.4M**
Tesbihçukuru	Target Testing/Target Development	Au-Cu Porphyry	Surface geochemical sampling, mapping, IP-Amag Survey	4,000 m drilling	**$960K**
Nacak	Target Testing	Au-Cu Porphyry + HSE	10 holes / 2,516.7 m drilling	400 m drilling	**$100K**
Gümüşlük	Target Testing/Target Development, Resource Definition	Listwaenite Lode Au	surface geochemical sampling, mapping, IP-Amag Survey	10,000 m drilling	**$2.4M**
Kayali	Resource Definition and Resource Expansion	HSE Au Oxide, Supergene Cu	45 holes / 10,359.8 m drilling	4,000 m drilling	**$960K**
Yumru	Resource Definition and Resource Expansion	HSE Au Oxide, Supergene Cu, Au-Cu Porphyry	23 holes / 5,858.7 m drilling	7,500 m drilling	**$1.8M**
Küçükdağ	Resource Definition and Resource Expansion	HSE Au+Ag+Cu	Resource Defined (43-101); 179 holes / 40,383 meters drilled (inc. abandoned)	7,000 m drilling	**$1,68M**
Kartaldağ West	Target Testing	Intermediate Epithermal Au+Ag	surface geochemical sampling, IP-Amag Survey	2,500 m drilling	**$600K**
Kestanecik	Target Testing/Target Development	LSE Au+Cu	surface geochemical sampling, IP-Amag Survey	2,500 m drilling	**$600K**
Kiraz	Target Development	HSE? Au	surface geochemical sampling, IP-Amag Survey	-	**$100K**
Pink Flower	Target Development	LSE? Au	surface geochemical sampling, IP-Amag Survey	-	**$100K**
Total				**82,900 m drilling**	**$20.0M**

20. REFERENCES

Abzalov, M.Z. (2008). Quality control of assay data: a review of procedures for measuring and monitoring precision and accuracy. Exploration and Mining Geology, Vol.17, No 3-4, p.131-144.

ALS Metallurgy, 2012, Flotation test work conducted upon samples from the Karaayı gold project for Ausenco Ltd/Chesser Resources Ltd: Report No. A14269.

Arancibia, O.N. and Clark, A.H., 1996, Early magnetite-amphibolite-plagioclase alteration-mineralization in the Island Copper porphyry copper-gold-molybdenum deposit, British Columbia: Economic Geology, v. 91, p. 402-438.

Ausenco, 2012, Chesser Resources Karaayı Copper Project Initial Metallurgical Testing: Report No. 225-RPT-0003, Revision Number C, 26 p.

Ash, C.H. and Arksey, R.L., 1990, The Listwaenite-Lode Gold association in British Columbia: British Columbia Geological Survey, Geological Fieldwork 1989, Paper 1990-1, p. 359-364.

Ausenco Minerals and Metals, 2012, Chesser Resources Karaayı copper project initial metallurgical testing July 2012: 2225-RPT-003 Revision C.

Bagcivan, G., Gurler, Z. and Yucel, T., Teck Madencilik San.Tic.A.Ş., 2012, TV Tower Property, Exploration 2011 year-end report, 112 p with appendices.

Buchanan, L.J., 1981, Precious metal deposits associated with volcanic environments in the southwest: in Relations of Tectonics to Ore Deposits in the Southern Cordillera: Arizona Geological Society Digest, v. 14, p. 237-262.

Campbell, K., 2012, Geophysical Consulting Services, Turkey; Çanakkale HeliTEM Electromagnetic and Magnetometer Survey: Unpublished report for Pilot Gold by Intrepid Geophysics Ltd., 14 p.

Chesser Resources Limited, 2012, Quarterly report for the period ending June 2012, 23 p.

Corbett, G.J., 2005, Epithermal and porphyry gold – geological models: in Pacrim Congress 2004, Adelaide, The Australian Institute of Mining and Metallurgy, p. 15-23.

Cox, K.G., Bell, J.D. and Pankhurst, R.J. (1979) The interpretation of igneous rocks, Allen and Unwin, London, 450 p..

Cunningham-Dunlop, I.R., 2011; -101 Technical Report on the TV Tower Exploration Property, Çanakkale, Western Turkey, June 2011.

Doerksen, G., Freudigmann, S., Pilotto, D., Rykaart, M., Abrahams, G., Simmons, G., Kirkham, G and Gray, J., 2015, Revised Preliminary Economic Assessment Technical Report Halilaga Project, Turkey: Canadian National Instrument 43-101 Technical Report prepared by JDS Engineering for Liberty Gold Corp.

G&T Metallurgical Services Ltd., Preliminary Metallurgical Assessment of Samples from the TV Tower Project, 2011.

Gathje, J., 2013, Preliminary Investigation for Flotation of Rock Type Composites from the KCD Project, October 2013, 52 p.

Gathje, J., 2014, TV Tower - KCD Project – Summary Report Flotation of Sulfide Ag-Composite for Recovery of Silver. Presented to Angola Madencilik Ltd. Sti. John Gathje Consulting, LLC - August 2014.

Gathje, J., 2015, TV Tower – Valley Porphyry Project - A Preliminary Investigation of Flotation for Copper and Gold Recovery for Valley Porphyry Project. Prepared for Agola Madencilik Ltd. Sti., John Gathje Consulting, LLC, Longmont, Colorado, July 2015.

Gray, J.N., 2015, Current viability of resource estimation, K2 area of TV Tower Project, western Turkey: unpublished report prepared for Pilot Gold Inc., January 15, 2015, 8 p.

Gray, J.N. and Kirkham, G., 2012, Resource estimate for the Halilağa copper-gold porphyry property: NI 43-101 Technical Report, March 2012, 113 p.

Gribble, P., 2012, Updated Technical Report on the TV Tower exploration property, Çanakkale, western Turkey, 114 p.

Grieve, P.L., 2007; NI 43-101 Technical Report on the Pirentepe and Halilağa Properties, Çanakkale, Western Anatolia, Turkey, March 2007.

Grieve, P.L., 2009; NI 43-101 Technical Report on the Halilağa Exploration Property, Çanakkale, Western Turkey, March 2009.

Gustafson, L.B. and Hunt, J.P., 1975, The porphyry copper deposit at El Salvador, Chile: Economic Geology, v. 70, p. 857-912.

Hazen, 2013a, Cyanide Leaching, Data Report 1 - Baseline Cyanide Leaching of Master Composite Samples from Agola Madencilik’s Küçükdağ Target Property in Turkey. (Project 11720, November 24, 2013).

Hazen, 2013b, Cyanide Leaching of Flotation Products from the Küçükdağ Target Project in Turkey, Data Report 2. Report and Appendices A–B. (Project 11720, December 20, 2013).

Hazen, 2013c, unpublished report of Mineralogical Examination of Pilot Gold Samples -Valley Porphyry Project, Project 11720, 13 p.

Hazen, 2013d, unblished letter report, Pretreatment and Aggressive Gold and Silver Leaching of Composite Samples and Flotation Products from the Küçükdağ Target Property in TurkeyHazen Project 11720-02 Report 4.

Hazen, 2013e, unpublished letter report, Comminution Testing Report and Indicies, Project 11720, May 24, 2013, 115 p

Hedenquist, J.W., Izawa, E., Arribas, A., Jr., and White, N.C., 1996, Epithermal gold deposits: Styles, characteristics and exploration: Society of Resource Geology, Tokyo, Special Publication 1.

Hetman, C., Gray, J.N., and Simmons, G., 2014, Independent Technical Report for the TV Tower Exploration Property, Canakkale, Western Turkey: Canadian National Instrument 43-101 Technical Report prepared by SRK Consulting Canada for Liberty Gold Corp., 272 p.

McClelland Project, 2016, MLI: 4028, Report on Preliminary Heap Leach Amenability Study, Four Core Composites from the Kayalı Project, MLI Job No. 4028, February 12, 2016

Middlemost, E.A.K., 1994, Naming materials in the magma/igneous rock system: Earth-Science Reviews, v. 37, p. 215–224.

Nieto, A. and Zhang, K. Y., 2013, Cutoff grade economic strategy for byproduct mineral commodity operation: rare earth case study: Mining Technology, 122/3, 166-171.

Özkan, A., 2007 Turkish Mining Law.

Ross, K., 2013a, Petrographic report on the TV Tower project, Turkey: Unpublished report for Pilot Gold, Inc., 87 p.

Ross, K., 2013b, Petrographic report on samples from the TV Tower project, Biga Peninsula, Turkey: Unpublished report for Pilot Gold, Inc., 84 p.

Ross, K., 2014 Petrographic report on Karaayı prospect samples, from the TV Tower Project, Turkey: Unpublished report for Pilot gold Inc., 84p.

Schandl, E., 2012, Petrographic and mineralogical study of the TV Tower project: Unpublished report for Teck Resources, 102 p.

Scott, K, Doerksen, G., Gray, J., Pilotto, D., Kirkham, G. and Rykaart, M., 2012, Preliminary Economic Assessment Technical Report for the Halilağa Project, Turkey: 43-101 Technical Report, 249 p.

Sillitoe, R.H., 1991, Gold rich porphyry systems in the Maricunga Belt, northern Chile: Economic Geology, v. 86, p. 1238-1260.

Sillitoe, R.H., 2010, Porphyry copper systems: Economic Geology, v. 105, p. 3-41.

Simmons, G.L., 2014a, TV Tower - KCD Project - Silver Oxidation Leach Testing Summary Report "KCD Project". Presented to Agola Madencilik Ltd. Sti. GL Simmons Consulting, LLC - July 2, 2014.

Simmons, G.L., 2014b, TVT year-end report: November 24, 2014 unpublished internal report to Pilot Gold Inc., 24 p.

Smith, M.T., Lepore, W.A., Incekaraoglu, T., Boran, H., Barrios, A., Leroux, G., Ross, K., Buyuksolak, A., Sevimli, A., and Raabe, K., 2016, High Sulphidation Epithermal Au and Porphyry Cu-Au Mineralization at the Karaayı Target, Biga Peninsula, Northwestern Turkey: Society of Economic Geologists Special Publication 19, p. 85-112.

Stanley, C.R. & Lawie, D. (2007). Average relative error in geochemical determinations: clarification, calculation and a plea for consistency. Exploration and Mining Geology, Vol.16, No.3-4, p.265-274.

Sun and McDonough, 1989, in Rollinson (1993), Using Geochemical Data, 1993, p.143.

Teck Madencilik San.Tic.A.Ş., 2010 PowerPoint presentations, Excel files, E-mail and Personal Correspondence with Pilot Gold.

Unal, E., (2010); High Sulphidation Epithermal Deposits: A case study from NW Turkey, Biga Peninsula.

White, N.C., 1991, High sulphidation epithermal gold deposits: characteristics and a model for their origin. Geological Survey of Japan Report, No. 277, p. 9-20.

White, N.C. and Hedenquist, J.W., 1995, Epithermal gold deposits: styles, characteristics and exploration: SEG Newsletter, no. 23, p. 1, 9-13.

Wright, J., 2010, Chesser Resources ground magnetic and induced polarization report: unpublished report for Chesser Resources, 16 p.

Wright, J. 2015, TV Tower Property ground magnetic and induced polarization surveys and GIS database: unpublished report for Pilot Gold Inc., 98 p.

Wright, J. 2015, TV Tower Property induced polarization surveys Tesbihçukuru phase 2 & deep Sarp GIS database: unpublished report for Pilot Gold Inc., 83 p.

Yiğit, O., 2012, A prospective sector in the Tethyan Metallogenic Belt: Geology and geochronology of mineral deposits in the Biga Peninsula, NW Turkey: Ore Geology Reviews, p.118-148.

Yilmaz, H., 2003, Exploration at the Kuşçayırı Au (Cu) prospect and its implications for porphyry-related mineralization in western Turkey: Journal of Geochemical Exploration, v. 77, p. 133-150.

21. DATE AND SIGNATURE PAGE

Effective Date of Report: February 9, 2021

Completion Date of Report: May 18, 2021

______________________	May 18, 2021
Mehmet Ali Akbaba	Date signed
______________________	May 18, 2021
Mustafa Atalay	Date signed
______________________	May 18, 2021
Fatih Uysal	Date signed
______________________	May 18, 2021
Gary L. Simmons	Date signed
______________________	May 18, 2021
James N. Gray	Date signed

Date and Signature Page

Effective Date of Report:	February 9, 2021
Completion Date of Report:	May 18, 2021

____
Mehmet Ali Akbaba — May 18, 2021, Date signed

____
Mustafa Atalay — May 18, 2021, Date signed

____
Fatih Uysal — May 18, 2021, Date signed

____
Gary L. Simmons — May 18, 2021, Date signed

____
James N. Gray — May 18, 2021, Date signed

Date and Signature Page

Effective Date of Report: February 9, 2021

Completion Date of Report: May 18, 2021

____
Mehmet Ali Akbaba — May 18, 2021
Date signed

____
Mustafa Atalay — May 18, 2021
Date signed

____
Fatih Uysal — May 18, 2021
Date signed

G L Simmons
Gary L. Simmons — May 18, 2021
Date signed

Gary L Simmons
01013QP
Mining & Metallurgical
Society of America

____
James N. Gray — May 18, 2021
Date signed

22. CERTIFICATE OF QUALIFICATIONS

Author's Certificate - Mehmet Ali Akbaba

To accompany the report entitled: "Independent Updated Technical Report and Resource Estimate TV Tower Property Çanakkale, Western Turkey", effective February 09, 2021 and dated May 18, 2021, (the "Technical Report")

I, Mehmet Ali Akbaba, CPG. Residing in Ankara, Turkey do hereby certify that:

1) I am a Deputy General Manager (technical) with the firm of DAMA Mühendislik A.Ş ("DAMA") with an office at Ankaralılar Cad, Azatbey Sitesi, No:17, 06810, Çayyolu, Ankara, Turkey;
2) I graduated from the Hacettepe University, Department of Geology, Turkey, (B.Sc., 2006). I have practiced my professional continuously since my graduation. I have enough experience in computer-based resource estimation. In addition, I have some additional experience in geological mapping, geological data capturing and handling, planning and supervision of drilling program, and reporting as well. Also I have enough experience in a variety of computer programs;
3) I am a member of the The American Institute of Professional Geologists (AIPG) (CPG#11853).
4) I have personally inspected the subject project on August 20-21, 2020 for South TV Tower sectors, and on January 13, 2021 for Columbaz sector;
5) I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of National Instrument 43-101.
6) As a qualified person, I am independent of Liberty Gold as defined in Section 1.5 of National Instrument 43-101.
7) I am the co-author of this Technical Report and am responsible for Sections 1-5, 12, 14.1-14.3, and 15-22 and accept professional responsibility for these sections of this Technical Report;
8) I have had prior involvement with the subject property.
9) I have read this Technical Report and National Instrument 43-101 and confirm that this Technical Report has been prepared in compliance therewith.
10) DAMA Mühendislik A.Ş was retained by Liberty Gold to prepare a technical report of the TV Tower Project. In conducting our audit, analysis of the project technical data was completed using CIM"Best practices" and Canadian Securities Administrators National Instrument 43-101 guidelines. The Technical Report is based on a site visit, a review of project files and discussions with Liberty Gold personnel.
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the TV Tower Project or securities of Liberty Gold.
12) At the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Ankara, Turkey,
May 18, 2021

Mehmet Ali Akbaba ["signed and sealed"]
Mehmet Ali Akbaba, CPG
Senior Resource Geologist

AMERICAN INSTITUTE OF PROFESSIONAL GEOLOGISTS
CERTIFICATE NUMBER 11853
AIPG
MEHMET ALI AKBABA
CERTIFIED PROFESSIONAL GEOLOGIST

Author's Certificate - Mustafa Atalay

To accompany the report entitled: "Independent Updated Technical Report and Resource Estimate TV Tower Property Çanakkale, Western Turkey", effective February 09, 2021 and dated May 18, 2021, (the "Technical Report")

I, Mustafa Atalay, CPG. residing Ankara, Turkey do hereby certify that:

1) I am an Exploration Manager with the firm of DAMA Mühendislik A.Ş ("DAMA") with an office at Ankaralılar Cad, Azatbey Sitesi, No:17, 06810, Çayyolu, Ankara, Turkey;
2) I graduated from the Hacettepe University, Department of Geology, Turkey, (M.Sc., 2006 and B.Sc., 2003). I have practiced my professional continuously since my graduation. I have worked as a exploration geologist continuously since my graduation. I have experience in geological mapping, geological data capturing and handling, planning and supervision of drilling program, and reporting as well. I have held positions ranging from Exploration Geologist to Exploration Manager throughout my 15 years of industry experience.
3) I am a member of the The American Institute of Professional Geologists (AIPG) (CPG#11874).
4) I have personally inspected the subject project on August 20-21, 2020 for South TV Tower sectors.
5) I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of National Instrument 43-101.
6) As a qualified person, I am independent of Liberty Gold as defined in Section 1.5 of National Instrument 43-101.
7) I am the co-author of this Technical Report and am responsible for Sections 6-9, 12 and 18-20, and accept professional responsibility for these sections of this Technical Report;
8) I have had prior involvement with the subject property.
9) I have read this Technical Report and National Instrument 43-101 and confirm that this Technical Report has been prepared in compliance therewith.
10) DAMA Mühendislik A.Ş was retained by Liberty Gold to prepare a technical report of the TV Tower Project. In conducting our audit, analysis of the project technical data was completed using CIM"Best practices" and Canadian Securities Administrators National Instrument 43-101 guidelines. The Technical Report is based on a site visit, a review of project files and discussions with Liberty Gold personnel.
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the TV Tower Project or securities of Liberty Gold.
12) At the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Ankara, Turkey,
May 18, 2021

Mustafa Atalay ["signed and sealed"]
Mustafa Atalay, M.Sc., CPG
Senior Geologist

Author's Certificate - Fatih Uysal

To accompany the report entitled: "Independent Updated Technical Report and Resource Estimate TV Tower Property Çanakkale, Western Turkey", effective February 09, 2021 and dated May 18, 2021, (the "Technical Report")

I, Fatih Uysal, CPG. residing Ankara, Turkey do hereby certify that:

1) I am a Senior Geologist with the firm of DAMA Mühendislik A.Ş ("DAMA") with an office at Ankaralılar Cad, Azatbey Sitesi, No:17, 06810, Çayyolu, Ankara, Turkey;
2) I graduated from the Ankara University, Department of Geology, Turkey, (M.Sc., 2009 and B.Sc., 2003). I have practiced my professional continuously since my graduation. I have worked as a geologist for a total of seventeen (17) years since graduating from university - as a project assistant at the university, and I have held positions ranging from Exploration Geologist to Exploration Manager in different exploration, mining, and consultant companies. I have been involved in gold and base metal projects, ranging from grassroots exploration to resource evaluation activities.
3) I am a member of the The American Institute of Professional Geologists (AIPG) (CPG#11997).
4) I have personally inspected the subject project on January 13, 2021 for Columbaz sector.
5) I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of National Instrument 43-101.
6) As a qualified person, I am independent of Liberty Gold as defined in Section 1.5 of National Instrument 43-101.
7) I am the co-author of this Technical Report and am responsible for Sections 10-12 and 18-20, and accept professional responsibility for these sections of this Technical Report;
8) I have had prior involvement with the subject property.
9) I have read this Technical Report and National Instrument 43-101 and confirm that this Technical Report has been prepared in compliance therewith.
10) DAMA Mühendislik A.Ş was retained by Liberty Gold to prepare a technical report of the TV Tower Project. In conducting our audit, analysis of the project technical data was completed using CIM"Best practices" and Canadian Securities Administrators National Instrument 43-101 guidelines. The Technical Report is based on a site visit, a review of project files and discussions with Liberty Gold personnel.
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the TV Tower Project or securities of Liberty Gold.
12) At the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Ankara, Turkey,
May 18, 2021

<u>*Fatih Uysal ["signed and sealed"]*</u>
Fatih Uysal, M.Sc., CPG
Senior Geologist

Author's Certificate – Gary L. Simmons

To accompany the report entitled: Updated Technical Report and Resource Estimate, TV Tower Property, Canakkale, Western Turkey, prepared for Liberty Gold Corporation Orta Truva Madencilik Sanayi Ticaret A.Ş. with effective date 9 February 2021 and dated May 18, 2021.

I, Gary L Simmons, residing in Larkspur, Colorado, USA do hereby certify that:

1) I am the owner of GL Simmons Consulting, LLC, 15293 Shadow Mountain Ranch Road, Larkspur, Colorado, USA 80118;
2) I am a graduate of the Colorado School of Mines (1972), I obtained a Bachelor of Science Degree in Metallurgical Engineering, have practiced my profession continuously since December 22, 1972. My relevant experience includes corporate level process development, project engineering and operations supervision in the base metals and gold /silver mining business. Since 2008 I am the owner of GL Simmons Consulting, LLC providing metallurgical consulting services to domestic and international mining companies in the areas of metallurgical testing/analysis, flowsheet design, project reviews, due diligence activities, QP Report writing and miscellaneous.
3) I am a professional Metallurgical Engineer, registered with the Mining and Metallurgical Society of America, Qualified Professional (QP) Member in Metallurgy, Member Number - 01013QP;
4) I have personally inspected the subject project between April 23 and May 1, 2013;
5) I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a qualified person, am an independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for Section 13, as well as relevant parts of Section 1 (Summary) and accept professional responsibility for those sections of this technical report;
8) I have had no prior involvement with the subject property;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) That, as of the date of this certificate, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Signed and dated May 18, 2021 in Larkspur, Colorado, USA

G L Simmons

Gary L Simmons (MMSA – 01013QP)
Owner, GL Simmons Consulting, LLC

Gary L Simmons
01013QP
Mining & Metallurgical Society of America

Author's Certificate – James N. Gray

To accompany the report entitled: "Updated Technical Report and Resource Estimate TV Tower Property Çanakkale, Western Turkey", effective February 9, 2021 and dated 18 May, 2021, (the "Technical Report")

I, James N. Gray, residing at 1051 Bullmoose Trail, Osoyoos, BC, Canada do hereby certify that:

1) I am the Consulting Geologist with Advantage Geoservices Limited, with an office at Osoyoos, BC;

2) I graduated from the University of Waterloo in 1985 where I obtained a B.Sc in Geology. I have practiced my profession continuously since 1985. My experience includes resource estimation work at operating mines as well as base and precious metal projects in North and South America, Europe, Asia and Africa;

3) I am a Professional Geoscientist, registered and in good standing with the Engineers and Geoscientists British Columbia (#27022);

4) I have personally inspected the TV Tower project site from August 15 – 18, 2013;

5) I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of National Instrument 43-101;

6) As a qualified person, I am independent of Liberty Gold Inc. as defined in Section 1.5 of National Instrument 43-101;

7) I am a co-author of this Technical Report and am responsible for Section 14.4, as well as relevant parts of Section 1 (Summary) and accept professional responsibility for these sections of the Technical Report;

8) I have had prior involvement with the subject property, having completed the initial mineral resource estimate for the Küçükdağ portion of the TV Tower Property which had an effective date of January 21, 2014;

9) I have read this Technical Report and National Instrument 43-101 and confirm that this Technical Report has been prepared in compliance therewith;

10) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the TV Tower Project or securities of Liberty Gold Inc.; and

11) At the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

PROFESSIONAL GEOSCIENTIST
PROVINCE OF BRITISH COLUMBIA
J.N. GRAY
27022

Osoyoos, BC
May 18, 2021

James N. Gray, P.Geo
Advantage Geoservices Limited