

Location/Identification

MINFILE Number:	093N 159	National Mineral Inventory Number:	093N7 Cu4
Name(s):	<u>CHUCHI LAKE</u> PHIL 13-14, CHUCHI 1-2, KLAU, KLA, DINGLE, BP		
Status:	Developed Prospect	Mining Division:	Omineca
		Electoral District:	Nechako Lakes
Regions:	British Columbia	Resource District:	Mackenzie Natural Resource District
BCGS Map:	093N028		
NTS Map:	093N07E	UTM Zone:	10 (NAD 83)
Latitude:	55 15 38 N	Northing:	6124872
Longitude:	124 32 35 W	Easting:	401938
Elevation:	1495 metres		
Location Accuracy:	Within 500M		
Comments:	See location map of the main trenched area in Assessment Report 14381 and drill hole 89-07 in Assessment Report 20018.		

Mineral Occurrence

Commodities:	Copper, Gold		
Minerals	Significant:	Chalcopyrite, Pyrrhotite	
	Associated:	Magnetite, Pyrite, K-Feldspar	
	Alteration:	K-Feldspar, Magnetite, Biotite, Epidote	
	Alteration Type:	Potassic, Propylitic	
Deposit	Character:	Stockwork, Disseminated, Shear	
	Classification:	Porphyry, Hydrothermal, Epigenetic	
	Type:	L03: Alkalic porphyry Cu-Au	

Host Rock

Dominant Host Rock:	Plutonic		
Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Lower Jurassic	Takla	Chuchi Lake	-----
Lower Jurassic	-----	-----	Hogem Intrusive Complex
Isotopic Age	Dating Method	Material Dated	
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Lithology:	Plagioclase Porphyry Monzonite, Sandstone, Siltstone, Tuff, Lapilli Tuff, Agglomerate, Hornfels, Monzodiorite, Monzonitic Porphyry		
Comments:	Informally named Chuchi Lake Formation of the Takla Group.		

Geological Setting

Tectonic Belt:	Intermontane	Physiographic Area:	Manson Upland
Terrane:	Quesnel		
Metamorphic Type:	Regional, Contact		
Grade:	Greenschist, Hornfels		

Inventory

Ore Zone: MAIN
Category: Inferred
Quantity: 50,000,000 tonnes

Year: 1991
Report On: Y
NI 43-101: N

Commodity	Grade
Gold	0.2100 grams per tonne
Copper	0.2100 per cent

Comments: A rough estimate of the geological resource, grading between 0.21 and 0.40 per cent copper and 0.21 and 0.44 gram per tonne gold.

Reference: Press Release - Digger Resources Inc., October 17, 1991.

Capsule Geology

The Chuchi Lake occurrence is located south of Klawdetelle Creek, approximately 6 kilometres north of Chuchi Lake and 90 kilometres north of the community of Fort St. James.

The Chuchi Lake property lies within the Quesnel Terrane which is represented in the area by Early Mesozoic Takla Group volcanic and sedimentary rocks of island-arc affinity and related intrusions. In the region, four haloes of pervasive alteration and related porphyry copper-gold systems are associated with syn-Takla intrusions. The most prominent is the Chuchi/Klaw halo.

The Chuchi Lake showing is located at the approximate centre of an extensive zone (six square kilometres) of porphyry-style stockwork and disseminated mineralization. It includes both BP Resources Chuchi Lake property, the apparent centre of the porphyry system, and Rio Algom's Klaw property which occurs on the fringes of the alteration halo approximately 1.25 kilometres to the north.

The system is bounded to the east by a north-trending fault, and to the north by the fault in Klawdetelle Creek. Within it, crowded plagioclase porphyry monzonite stocks intrude the sedimentary horizon in the Lower Jurassic Chuchi Lake Formation (informal name) of the Middle Triassic to Lower Jurassic Takla Group, and blossom out into sill swarms. The sedimentary unit is of Pliensbachian age (Fieldwork 1991). In many instances in drill core, hornfelsed sedimentary rocks show soft-sediment deformation, and are intimately intercalated with monzonite. The fine-grained, well-bedded sandstones, siltstones and tuffs grade downwards into massive coarse lapilli tuffs and agglomerates. In many cases, intrusive clasts form a large percentage of the fragmental material. Crowded plagioclase porphyry clasts with small blocky plagioclase crystals less than 2 millimetres across are common, and identical to the later porphyries that intrude the sediments. Clasts with pink secondary potassium feldspar, magnetite and epidote are also present.

In light of the geological evidence that sedimentation, intrusion and porphyry-style copper-gold mineralization were roughly coeval, the Early Jurassic (Pliensbachian) fossil ages of the sedimentary horizon would also date the Chuchi porphyry system (Fieldwork 1991).

Both the monzonite and the sediments at Chuchi Lake are extensively altered. Secondary potassium feldspar occurs in pink veinlets in the monzonite with magnetite, pyrite, and chalcopyrite. The sedimentary rocks show a strong biotite hornfels overprint, with subsequent mottling by potassic and propylitic alteration. Hairline veinlets with bleached selvages and magnetite veinlets and disseminations are also characteristic of alteration.

Copper-gold mineralization is accompanied by pervasive potassic and propylitic alteration and abundant secondary magnetite. The best grades fall within a northeast-trending zone that crosses the monzonite stock. This system was drilled extensively by BP Resources in 1990-91. The gold mineralization appears to be shear-zone hosted and is associated with pyrrhotite rather than pyrite or chalcopyrite (Faulkner, 1991).

Drilling during 1989 through 1991 is reported to have identified a northeast-trending zone of mineralization, extending from drillhole 89-08 to 91-40, for a distance of approximately 1000 metres. To the south of this a 070-degree-striking fault zone, referred to as the 070 fault, cuts and juxtaposes different structural levels of the intrusive system and is dominated by sedimentary stratigraphy, whereas volcanic stratigraphy with intrusive dikes dominate to the north of the fault. Displacement along the fault, on the order of 200 to 400 metres, down-dropped the southern side of the fault and contains narrower mineralized intercepts. To the east a north-south-striking fault, referred to as the Valley fault, appears to have affected some control on fluid flow during mineralization with anomalous gold values associated with pyrrhotite-rich mineralization proximal to the fault such as in hole 91-42. The mineralized zone is reported to be open at depth and to the northeast.

A rough estimate of the geological resource at Chuchi Lake is 50 million tonnes with grades between 0.21 and 0.40 per cent copper and 0.21 and 0.44 gram per tonne gold (Press Release - Digger Resources Inc., October 17, 1991). This resource is not compliant with National Instrument (NI) 43-101 standards.

Work History

In 1972, Noranda Mines Ltd. staked the Dingle claims south of Klawdetelle Lake which covered some of the main ridge (mostly on the south) and established a soil geochemical grid which lays within the current claim boundaries. They collected 574 soil samples and did 19.16 line-kilometres of magnetometer surveying.

In 1983, the Phil 13 and 14 claims were staked by Selco Inc., later to become BP Resources Canada Limited (BP). In 1984, a property-wide geochemical survey was conducted using a 100 by 200 metres sampling grid and geological mapping was carried out. A 15-metre chip sample (822717) from a gossanous outcrop assayed 0.110 per cent copper and 2.06 grams per tonne gold (Assessment Report 13325).

In 1985, BP added the Chuchi 1 and 2 claims to the project area and continued work with a trenching, soil sampling and mapping program centred on the copper-gold geochemical anomaly as previously identified during the 1984 exploration program. Chip sampling of trenches yielded anomalous gold and copper values of an area extending for approximately 350 metres north-south and 200 metres east-west. Results included 0.264 gram per tonne gold and 0.076 per cent copper over 105 metres in a north-south direction and 0.103 gram per tonne gold with 0.107 per cent copper over 156 metres east-west (Assessment Report 14381).

In 1989, BP through a joint venture with Digger Resources Inc., conducted 150 line-kilometres of aeromagnetic survey, 41 line-kilometres of induced polarization survey, 30 line-kilometres of ground magnetometer survey, followed by six diamond-drill holes totalling 763.2 metres to test a multi-element soil geochemical and conductive induced polarization anomaly. Drilling intersected zones of significant copper and gold mineralization. Diamond drilling yielded intercepts of up to 0.28 per cent copper and 0.32 gram per tonne gold over 100 metres (38 to 138 metres down hole) in hole 89-07, whereas two drillholes (89-08 and 89-09), located approximately 200 to 400 metres to the west of the first hole, yielded 0.25 and 0.11 per cent copper with 0.24 and 0.20 gram per tonne gold over 48 and 16 metres (152 to 200 and 170 to 186 metres downhole), respectively (Assessment Report 20018).

In 1990, BP continued to drill completing an additional 5315.7 metres in 29 holes. Diamond drilling yielded intercepts of up to 0.21 per cent copper and 0.21 gram per tonne gold over 194 metres in hole 90-27; 0.22 per cent copper and 0.10 gram per tonne gold over 158 metres in hole 90-30; 0.20 per cent copper and 0.12 gram per tonne gold over 264.9 metres in hole 90-33; 0.16 per cent copper and 0.12 gram per tonne gold over 192.0 metres in hole 90-36 and 0.22 per cent copper with 0.12 gram per tonne gold over 207.8 metres in hole 90-37 (Assessment Report 21113). These drillholes were located approximately 200 metres north to 600 metres north-northeast of the previous drilled and trenched area and north of a 070-degree-striking fault zone. Drilling to the south of the fault zone yielded an average of 0.19 per cent copper and 0.18 gram per tonne gold over 16 metres true width, with up to 0.36 per cent copper and 0.58 gram per tonne gold over 16.0 metres in hole 90-23 (Assessment Report 21113).

In 1991, drilling extended the mineralized zone to the north-northeast with intersections including 0.22 per cent copper and 0.20 gram per tonne gold over 154.0 metres in hole 91-40 and 0.09 per cent copper with 2.03 grams per tonne gold over 54.6 metres in hole 91-42 (Assessment Report 35127).

In October 2004, High Ridge Resources Inc. acquired the rights to the Chuchi prospect by acquiring tenures 514590 and 514591 through an option agreement with Lorne B. Warren, John M. Mirko, and Donna Luck. In 2005, High Ridge Resources (a pre-cursor company to Newton Gold Corp.) staked 18 additional claims and undertook an exploration and physical development program involving line cutting, a ground magnetometer survey over the new grids, and rehabilitating the access road into the main drill area (Assessment Report 28010). In 2007, High Ridge Resources completed about 2000 metres of diamond drilling, trenching and an induced polarization survey.

In 2011, Newton Gold Corp. (now Chlormet Technologies Inc.) conducted a soil geochemistry program consisting of 802 soil samples covering an area measuring 2.2 by 3.8 kilometres. The sampling program was successful in joining two historic anomalies and confirming additional anomalies that remain open in multiple directions (Press Release - Newton Gold Corp., March 14, 2012).

In 2014, Kiska Metal Corp. entered into an option agreement with underlying vendors to earn interest into the Chuchi project. Work conducted by Kiska primarily consisted of geological review of drill core, lithochemical sampling, acquisition and analysis of satellite imagery, and prospecting. The following year, Kiska Metals Corp. completed a program of prospecting, rock sampling, historical drill log digitization, geological modelling, and a 10.2 line-kilometre induced polarization survey on the Chuchi property. This work is reported to have identified a near-surface, 2-kilometre wide chargeability high anomaly coincident with a moderately conductive anomaly centred on a magnetic high anomaly. The magnetic high anomaly is related to intrusions of monzonitic crowded porphyry and monzodiorite intrusions. This anomaly is coincident with drilled zones of copper-gold mineralization that contain localized zones of magnetite-chalcopryrite veining and magnetite-cemented breccia. A highly resistive feature coincident with a fault interpreted from historical drilling was identified at depth below the chargeability high anomaly and coincident with the magnetic high anomaly. This resistive feature may represent an intrusive body at depth or indicate further magnetite-bearing hydrothermal alteration at depth. The chargeability and resistivity data also shows an apparent 'down-dropped' offset along a north trending fault to the east of the Chuchi Lake zone. This feature may represent a faulted offset of the Chuchi Lake zone concealed by post-mineral cover and is currently untested by drilling.

In 2016, Kiska Metals Corp. completed a further program of geological mapping, re-logging and sampling of historical drillholes, petrographic analysis and detailed mineralogical and geochemical work including QEMSCAN and sulphur isotope analysis with the purpose of determining controls on high-grade mineralization. Analysis of QEMSCAN results define four alkalic-style alteration zones that generally prograde toward the east within the BP zone. Furthermore, sulphur-isotope results define a decrease in isotope-34 sulphur values with depth, suggesting that a magmatic centre exists below the Chuchi Lake zone.

The mineral rights for all the Chuchi claims were, at the time of the 2017 work, held by Kiska Metals Corp. (a wholly owned subsidiary of AuRico Metals Inc.). AuRico Metals has been purchased by Centerra Gold Inc. In 2017, Aurico Metals Inc. conducted limited work consisting of a two-day site visit to evaluate condition of the site access; evaluate the utility of different surface exploration techniques and potential sampling/mapping based on terrain and cover conditions; drill core review; and a pilot ASD study (69 samples). The ASD TerraSpec Halo mineral identifier is a system that provides field geologists with real time mineral information and enables quick identification of important deposit pathfinder minerals. The handheld near infrared (NIR) spectrometer can take non-destructive measurements in less than 20 seconds and provides on-screen mineral identification, using the latest mineral identification software. The bulk of the 2017 Chuchi program consisted of a review of selected drill core. Holes were chosen on the basis of having a reasonable intersection of mineralization and to represent a cross section across the drilled area (Assessment Report 37287).

In 2018, AuRico Metals Inc. completed a further program of historic drillcore re-logging. In 2019, four diamond drill holes, totalling 1755.0 metres, were completed on the Chuchi property. The drilling was performed to test and verify known zones of mineralization at depth and to test a previously untested geophysical target east of the 'Valley' fault.

Drilling on the main Chuchi Lake zone yielded anomalous copper intercepts in the upper half of hole CH-19-0001 including 0.20, 0.22 and 0.23 per cent copper over 21.85, 29.40 and 21.47 metres, respectively, from 57.15 to 170.0 metres down hole and a number of anomalous gold intercepts including 1.166 grams per tonne gold over 2.00 metres and 0.237 gram per tonne gold over 5.70 metres from 231.00 to 408.0 metres down hole, whereas drillhole CH-19-0002 yielded intercepts of up to 0.21 gram per tonne gold over 29.00 metres, including 0.20 per cent copper over 14.39 metres (355.00 to 384.00 metres down hole; Assessment Report 39061). Drillhole CH-19-0003 was designed to test the previous high-grade gold mineralization intersected in hole 91-42 and yielded intercepts including 0.23 per cent copper and 0.34 gram per tonne gold over 26.00 metres (144.00 to 170.00 metres down hole) and 0.24 per cent copper over 70.00 metres (341.00 to 411.00 metres down hole), including 0.24 gram per tonne gold over 64.00 metres (Assessment Report 39061). Drillhole CH-19-0004 tested a geophysical target on the east side of the Valley fault but failed to reach its target depth due to an unstable drill pad and yielded intercepts of up to 0.78 gram per tonne gold over 1.53 metres at 400.00 metres down hole (Assessment Report 39061).

Bibliography

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 EMPR OF 1992-1; 1992-3; 1992-4
 EMPR PF (Chuchi Cu-Au Porphyry Project description)
 EMPR PFD 903781, 904321, 904667, 904921, 905019, 905335, 905336, 905838, 906172, 907180, 881750, 881752, 881754, 672081, 830067, 830357, 675804
 GSC MAP 876A; 907A; 971A; 1424A
 GSC MEM 252
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 GCNL #206(Oct.26),#237(Dec.11), 1989; #141(Jul.23),#198(Oct.12),#219(Nov.13), 1990; #117(June 18),#148(Aug.1),#153(Aug.9), #181(Sept.19), 1991; #95(May 18), 1993
 N MINER Feb.5, 1990; Apr.1, Sept.16, 1991
 PR REL Digger Resources Inc. Oct.17, 1991; Newton Gold Corp. Mar.14, 2012; Kiska Metal Corp. *Dec.3, 2015
 WWW http://www.infomine.com/index/properties/CHUCHI_LAKE.html

Date Coded:	1985/07/24	Coded By:	BC Geological Survey (BCGS)	Field Check:	Y
Date Revised:	2021/04/02	Revised By:	Karl A. Flower (KAF)	Field Check:	Y