

Ministry of Energy, Mines & Petroleum ResourcesMining & Minerals Division

Mining & Minerals Division BC Geological Survey



TYPE OF REPORT [type of survey(s)]: 2017 Assessment Report on the Nub East Property

TOTAL COST: \$4,400.00

AUTHOR(C), Darry D. Ditabia, Q. Drad J. Datara		CICNATURE(C)	Rory	Digitally signed by Rory Ritchie DN: cn=Rory Ritchie, on=Pacific Empire Minerals Corp., ou, email=rory(generorp.ca, c=CA Date: 2017.12.27 17.13.51	Brad Digitally signed by Boad Peters bit co-bland Paters, co-Patellic Empire Minerals Corp., cu., Empire-braid@genop.cu, cr.CA
AUTHOR(S): Rory R. Ritchie, & Brad J. Peters		SIGNATURE(S):	Ritchie	Date: 2017.12.27 17:13:51 -08'00'	Peters Octob 2017/227 17/4-10
NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):				YE	EAR OF WORK: 2017
STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S):	SOW Eve	ent Number: 5	665996		
DDODEDTY NAME: Nivib Foot					
PROPERTY NAME: Nub East					
CLAIM NAME(S) (on which the work was done): Nub east					
COMMODITIES SOUGHT: Copper and gold					
MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: # 094E 249					
MINING DIVISION: Omineca Mining Division	NTS	/BCGS: <u>094E</u> / (07		
LATITUDE: 57.31 ° " LONGITUDE: -126.6	67 °		(at cent	re of work)	
OWNER(S): 1) Pacific Empire Minerals Corp.	_ 2)				
MAILING ADDRESS: 211 - 850 West Hastings Street					
Vancouver, BC V6C 1E1					
OPERATOR(S) [who paid for the work]: 1) Pacific Empire Minerals Corp.	_ 2)				
MAILING ADDRESS: 211 - 850 West Hastings Street					
Vancouver, BC V6C 1E1					
PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, Toodoggone, Stikine Terrane, Late Triassic to Early Jurassic, sto				ttitude):	
REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT RI	EPORT NU	MBERS: AR #'s	3: 27634		

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)	<u> </u>		
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
		_	
		_	
Induced Polarization		_	
Radiometric			
Seismic			
Other			
Airborne Airborne Magnetics	(62 line-km)	1042967	\$3000
GEOCHEMICAL (number of samples analysed for)			
		_	
Silt		_	
Rock		_	
Other			
DRILLING (total metres; number of holes, size)			
Core			
••			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/	rail		
Trench (metres)			
Other Report preparation			\$1,400
		TOTAL COST:	\$4,400

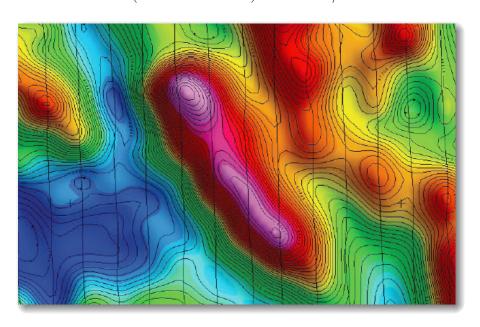
GEOPHYSICAL REPORT

on the

NUB EAST PROPERTY

BC Geological Survey Assessment Report 36835

OMINECA MINING DIVISION, BRITISH COLUMBIA, CANADA 640,300 E / 6,354,500 N LONGITUDE -126.67°/ LATITUDE 57.31° (NAD 83 - ZONE 9) NTS: 094E/07



MINERAL TENURES: NUB EAST CLAIM (1042967)

Prepared by
Brad Peters, B.Sc. (Geology)
Rory Ritchie, H.B.Sc.(Chem), P.Geo.



December 27, 2017

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1 Introduction

The Nub East Property is an exploration stage porphyry copper-gold prospect that is located 27 kilometers to the north of Aurico Metals Kemess Underground Development Project in north-central British Columbia, Canada. The property comprises 1 mineral claim covering 1,258 hectares and is owned 100% by Pacific Empire Minerals Corp.

The property is located within the Toodoggone District of the Stikine Terrane which lies on the eastern margin of the Intermontane Tectonic Belt. The Stikine Terrane consists of mainly island-arc volcanic, plutonic and sedimentary rocks of Late Triassic to Early Jurassic age with a Lower Permian aged basement of the Asitka Group. Intrusive rocks of the Jurassic Black Lake Intrusive suite have intruded Triassic and older rocks and are coeval with Jurassic volcanic rocks. Regional north-northwest trending high-angle normal and strike-slip faults cut through the Toodoggone area and conjugate high-angle faults cut and displace northwest trending structures, and may be related to intrusive and hydrothermal activity.

Elevation on the property ranges from 1900 m, where high sulphidation and polymetallic mineralization occurs, down to 1100 m in the eastern portion of the property where a conceptualized porphyry target lies concealed in a broad northwest trending valley. Mineralization on the property is highlighted by the Nub skarn and Nub stockwork areas. At the Nub stockwork showing an area of 4% to 8% quartz stockwork is hosted within flows and tuffs, with generally narrow quartz \pm carbonate \pm barite veins hosting pyrite-chalcopyrite-galena \pm sphalerite mineralization. At the Nub skarn showing chalcopyrite-pyrite \pm sphalerite \pm galena with anomalous precious metal values is associated with calc-silicate alteration along a 600 metre long exposed wall of limestone that is in contact with intrusive quartz monzonite.

Commencing September 1, 2017, an airborne magnetic survey was performed over the entirety of the Nub East property. The survey consisted of 62 line-km along north-south lines spaced 200 m apart. The survey has outlined and further defined a magnetic high anomaly situated in underneath glaciofluvial cover in a broad NNW - SSE oriented valley bottom.

A reconnaissance stage Reverse Circulation drilling program is recommended to determine the nature of potential sulphide mineralization on the Nub East property. The estimated cost of the program is \$36,500.

2 Property Description & Location

The Nub East property is located in north-central British Columbia, approximately 300 km northwest of Mackenzie and 450 km northwest of Prince George. The Nub East property is owned 100% by Pacific Empire Minerals Corp. ("PEMC") and can be accessed from Mackenzie via the Omineca Resource Access Road followed by a short helicopter flight.

The property is located on NTS map sheet 094E/7, and falls within the jurisdiction of the Omineca Mining Division. The property currently consists of 1 mineral claim covering 1,258.37 hectares (Figure 2.2), Table 2.1 summarizes the claims. All claims are on Crown Land and administered by the Government of British Columbia's, Mineral Titles Online system ("MTO").

Table 2.1: Table of Claims

Tenure ID	Name	Owner	Type	Good To Date	Status	Area (ha)
1,042,967	NUB EAST	276676 (100%)	Mineral claim	$2018/\mathrm{Sep}/30$	GOOD	1,258.37
						1,258.37 ha

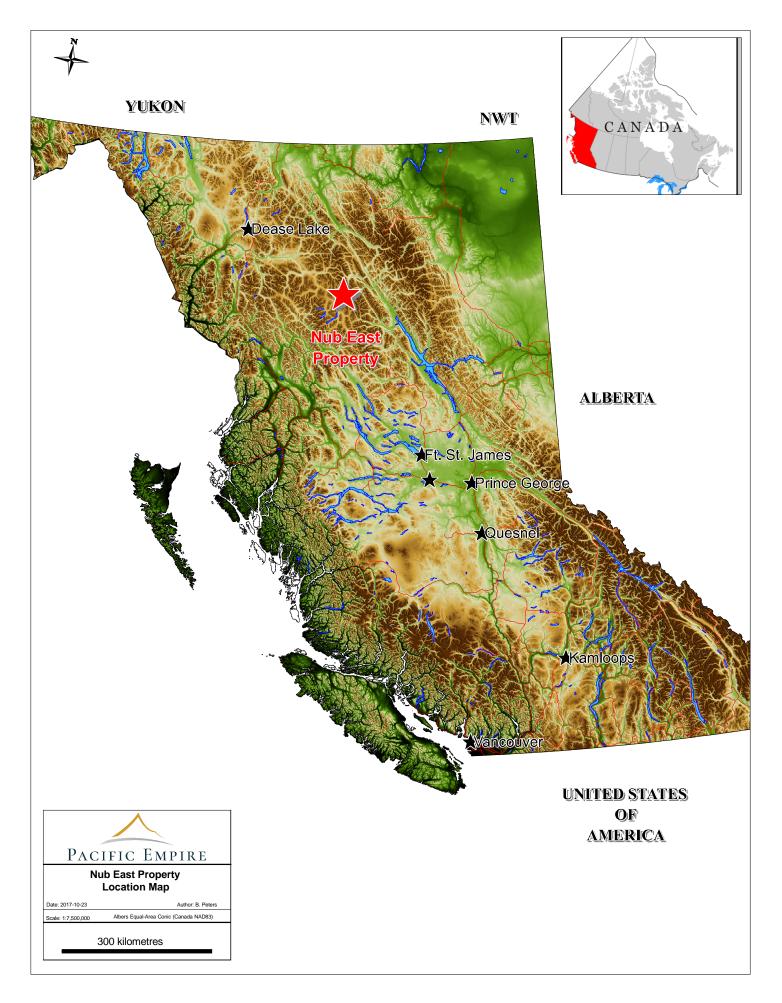


Figure 2.1: Location Map

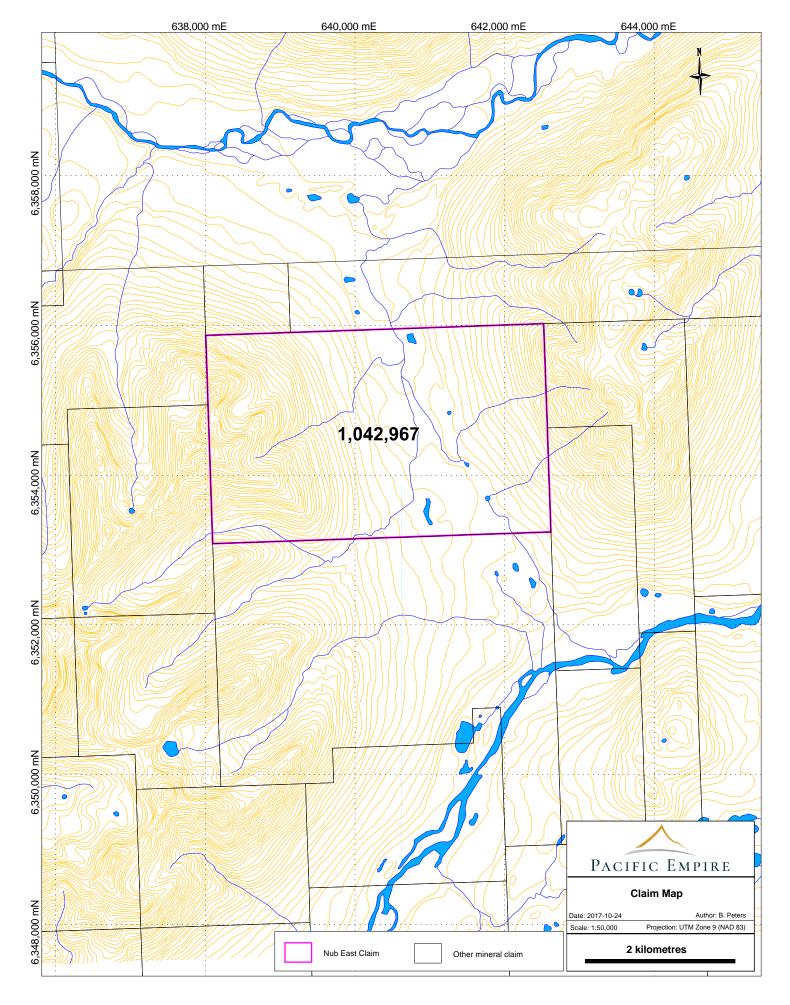


Figure 2.2: Claim Map

3 Climate, Local Resources, Infrastructure & Physiography

3.1 Climate

Seasonal temperatures vary from -35 °C in winter to 30 °C during the approximately four months of summer. The mean daily temperatures for July and January are approximately 14 °C and -15 °C, respectively. Precipitation between 50 and 75 centimetres occurs annually, with most during the winter months resulting in a snow cover of approximately 2 metres. The optimal time for surface exploration on the property is between June and October.

3.2 Local Resources

Labour and services are readily available from Prince George, Fort St. James and Mackenzie. Trucking, expediting, industrial supply, heavy machinery and operators are available, as are personnel for line-cutting, core-cutting and other exploration services.

3.3 Physiography

Topography in the area is generally moderate with a large area of glacio-fiuvial gravel deposits along the east side of the property. Highly altered rocks are generally soft and rounded ridges prevail. The western area of the property is steeper with elevations ranging from 1100 m in the central portion of the property to 1900 m at the western margin of the property. Slopes above tree line at 1500 m are scree and talus covered, sparsely vegetated by grasses and sedges with willows in avalanche chutes. No glaciers or permanent snowfields exist on the claims. Lower slopes are forested with balsam at higher elevations and pine-spruce forest, with local areas of swamp at lower levels.

4 History

Mineral exploration in the Toodoggone area dates back to the early 1900's with the discovery of placer gold. The Toodoggone and Finlay River regions have been subject to several phases of exploration from the early 1960's to the present day and has been recognized as under explored for copper-gold porphyry deposits since the 1960's when companies such as Cominco were exploring for bulk tonnage systems. During the 1980's several operators explored the district for epithermal gold and silver. The first mineral production was from epithermal style gold deposits in the 1980's.

During 2004, Stealth Minerals explored its Toodoggone Project that was comprised of 11 properties. One of the 11 properties was the Nub Mountain Property and exploration in 2004 consisted of soil and rock geochemistry (Kuran, 2004, #27634). During the 2004 exploration program, a total of 320 soil samples and 82 rock samples were collected. Some of this work was carried out on the western portion of the Nub East claim, in the area of the Stockwork-Skarn (Nub) Showing (MINFILE # 094E 249) (BC Geological Survey, 2015) where numerous rock samples were collected. Assay results returned numerous samples grading greater than 1% copper.

Regional mapping was conducted from 2003 to 2005 as part of a partnership between the B.C. Geological Survey and Stealth Minerals Ltd., Northgate Exploration Ltd., Finlay Minerals Ltd., Bishop Resources Inc., Sable Resources Ltd., the Geological Survey of Canada, and the University of British Columbia (Diakow and Rhodes, 2006; Diakow et al., 2004, 2006; Diakow, 2005).

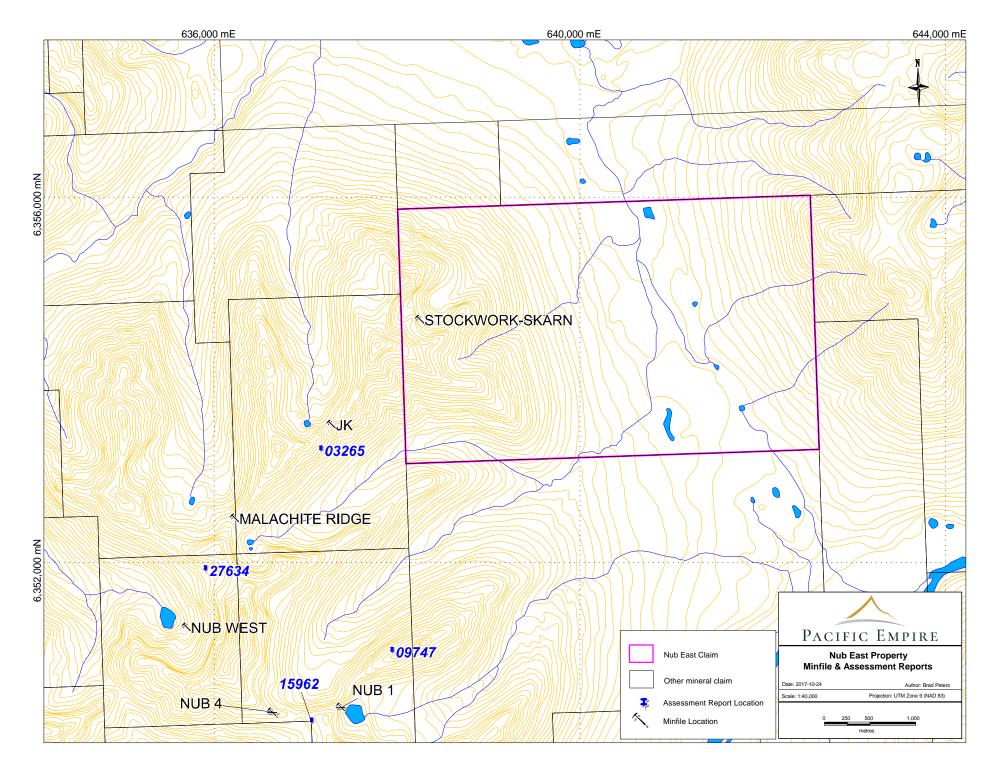


Figure 4.1: Minfile & Assessment Report Locations

5 Geological Setting

5.1 Regional Geology

The Toodoggone district is an Island Arc assemblage consisting of a conformable sequence of Permian, Triassic and Jurassic quartz monzonite and coeval volcanic rocks. These intrusions and associated host rocks have the potential to host porphyry style copper-gold and silver mineralization. The intrusions also have the potential to generate low and high sulphidation gold and silver epithermal style deposits telescoped or possibly related to the intrusions within Triassic and Jurassic aged rocks. Bulk tonnage copper-gold production first occurred with with commissioning of the Kemess South deposit that was developed by Royal Oak Mines in 1997.

The oldest rocks in the district are the Pennsylvanian to Early Permian Asitka Group sediments that consist of limestone and chert with minor black mudstone. The Asitka sediments are overlain by Early Triassic Takla Group volcanic rocks consisting of basaltic lavas, plagioclase \pm clinopyroxene phyric lavas with locally pyroxene-rich sandstones. Takla volcanics are in turn overlain by the quartz-biotite bearing Early Jurassic Toodoggone Formation volcanic rocks. A basal unconformity occupies the interval between Takla and Toodoggone rocks and is characterized by bedded polymictic conglomerates and sandstone. The Toodoggone Formation is an exclusively subaerial volcanic succession that comprises the sole subdivision of the Early Jurassic Hazelton Group in the Toodoggone River area. Together with cogenetic plutons of the Black Lake Intrusive Suite, these rocks host important Au-bearing epithermal and porphyry-style mineral deposits (Diakow et al., 2004).

Typically, rocks of the Toodoggone formation have a narrow compositional range between high-silica andesite and dacite, and contain varying amounts of diagnostic quartz, biotite, hornblende and apatite phenocrysts. Mapping in 2004 identified locally abundant basalt to andesite porphyritic flows containing clinopyroxene and flow-laminated dacite to rhyolite lavas. Unlike most of the Toodoggone formation, quartz and biotite phenocrysts are rarely observed in these younger rocks.

Plutons and minor intrusions of the Early Jurassic Black Lake Intrusive Suite are found throughout the Toodoggone district. The largest bodies occur along the eastern margin of the district and are temporally and probably genetically related to extrusive rocks of the Toodoggone formation. Typical intrusions are biotite and hornblende bearing quartz monzonites with a medium to coarse-grained equigranular to porphyritic texture.

In 2004, porphyry -style mineralization was discovered at the Sophia showing, 7 km to the northwest of the Nub East property. The main hostrock is a medium to coarse-grained equigranular monzonite, although mineralization also occurs within adjacent augite-phyric lavas with significant chlorite and pyrite up to 8 volume %. Mineralization consists of subparallel magnetite veinlets and subsequent layered quartz-magnetite(\pm specularite)-chalcopyrite stockwork veins enveloped by potassium feldspar alteration. Intense pyrite-sericite alteration occurs locally in the area of the showing. Grab samples from the Sophia prospect have produced assays of up to 0.22 g/t Au and 0.05 % Cu.

The Alexandra Au-Cu porphyry prospect was also discovered in 2004. It is located approximately 6 km to the northwest of the Nub East property and consists of quartz-magnetite stringers cutting intensely bleached, clay altered and esitic volcanic rocks. Alteration is coincident with elevated copper, gold and silver values in soils over an area 800 by 250 m.

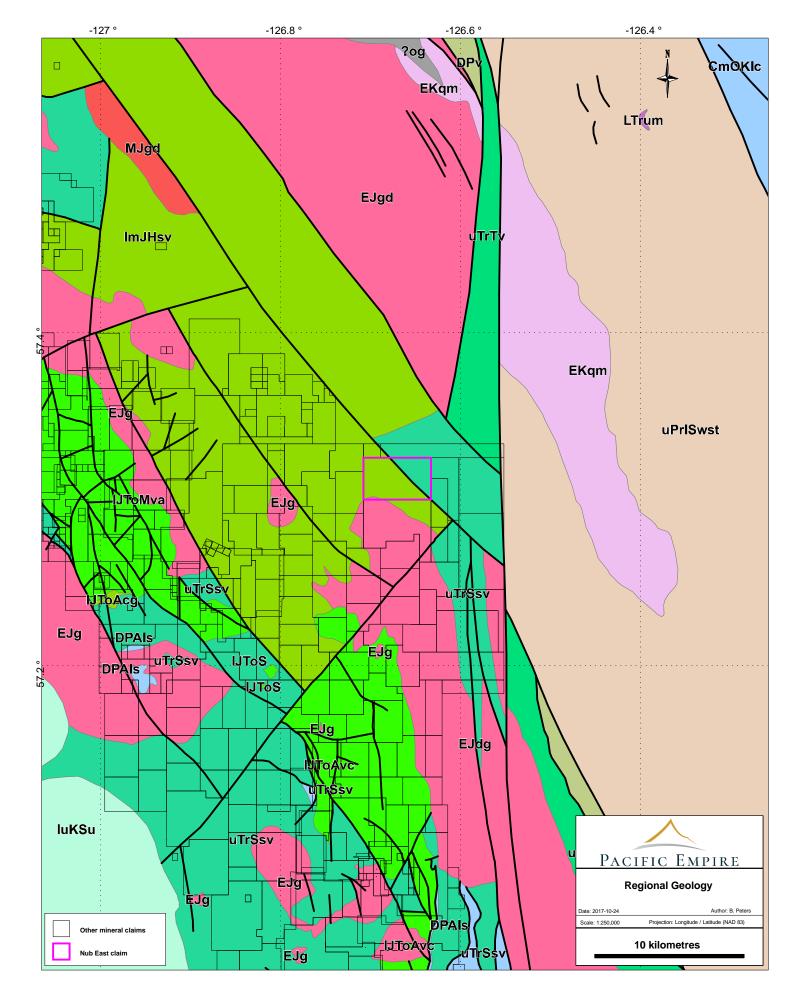


Figure 5.1: Regional Geology Map

Volcanic & Sedimentary Rocks luKSu Lower Cretaceous to Upper Cretaceo undivided sedimentary rocks Lower Jurassic to Middle Jurassic marine sedimentary and volcanic rocks Lower Jurassic conglomerate, coarse clastic sedimentary rocks **IJToAvc Lower Jurassic** volcaniclastic rocks **IJToS Lower Jurassic** dacitic volcanic rocks IJToAd **Lower Jurassic** dacitic volcanic rocks IJToMva **Lower Jurassic** andesitic volcanic rocks uTrSsv **Upper Triassic** marine sedimentary and volcanic rocks uTrTv **Upper Triassic** undivided volcanic rocks PnPL Pennsylvanian to Permian marine sedimentary and volcanic rocks DPv **Devonian to Permian** undivided volcanic rocks **DPAIs Devonian to Permian** limestone bioherm/reef

Intrusive Rocks



mudstone, siltstone, shale fine clastic sedimentary rocks

argillite, greywacke, wacke, conglomerate turbidites

uPrIT

uPrISwst Upper Proterozoic

5.2 Property Geology and Mineralization

The western portion of the Nub East property has been covered by regional mapping programs and is presented in Figure 5.3. The central portion of the property is dominated by Late Triassic quartz monzonite intrusive rocks that are in contact with and overlain to the west Late Triassic Takla group volcanic rocks. Along this contact a wedge of Permian Asitka limestone has been mapped and is associated with mineralization at the Stockwork-Skarn showing. Along the western margin of the property Toodoggone formation rocks have been mapped and include lapilli tuffs with volcaniclastic-epiclastic interbeds of the Duncan member, andesitic lava flows of the Metsantan member and possibly a dacite ash-flow tuff of the Graves member. In the northwest corner of the property intrusive rocks of the Jack Lake pluton have been mapped and are characterized by orange to pink monzonite that ranges in texture from coarse inequigranular to porphyritic.

The Stockwork-Skarn Showing (Minfile # 094E 249) is located along the western margin of the property and is characterized by an area of 4 to 8 percent quartz stockwork hosted in Lower Jurassic Toodoggone Formation flows and tuffs. Most of the stockwork quartz veins are generally narrow but one is reported to reach one meter in width. The majority of the quartz veins are associated with carbonate and barite alteration and galena, pyrite, chalcopyrite with trace sphalerite mineralization.

Monzonitic intrusions in the vicinity of the property are related to porphyry-style mineralization at the Pil North, Sophia and Alexandra prospects and may have temporal and genetic links to epithermal precious-metal mineralization.

6 2017 Work Summary

During 2017, an airborne magnetic survey was completed over the entire Nub East property. The purpose of the survey was to further define and outline a known magnetic anomaly situated in the bottom of a broad NNW-SSE trending valley. A regional airborne magnetic survey completed in the Toodoggone by the British Columbia Geological Survey in 2003 had partially outlined a magnetic anomaly in the aforementioned valley, and the recently completed airborne survey was successful in further outlining and defining this magnetic high anomaly.

Commencing on September 1st, an heliborne magnetic survey consisting of 62 line-km of north-south lines spaced 200 m apart was completed over the entire Nub East property. Magnetic susceptibility measurements were collected and processed by Peter E. Walcott & Associates Limited, with the results being presented in this report. The Walcott geophysical crew was mobilized from Smithers, BC, and were accommodated at the AuRico Metals's mine site. Silver King Helicopters were commissioned to fly the 2017 survey.

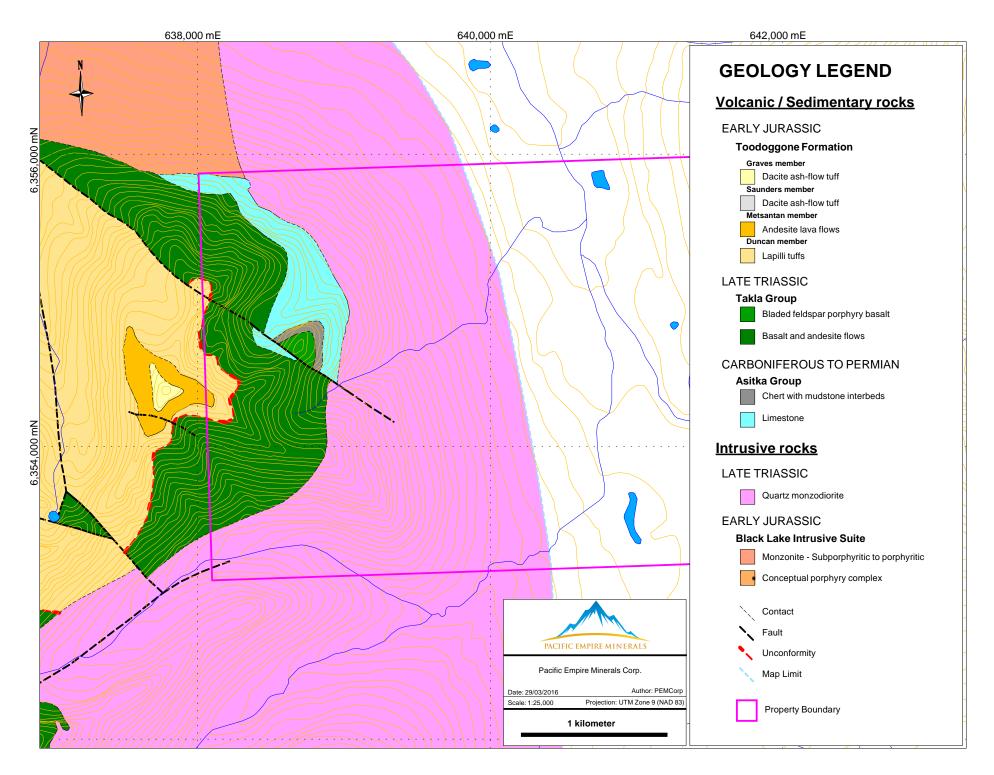


Figure 5.3: Property Geology ((Diakow et al., 2006))

7 Interpretation & Conclusions

Exploration for epithermal style deposits has been the focus of numerous exploration programs in the Toodoggone region and this work has generally taken place at elevations between 1700-1900 metres where the majority of epithermal style mineral occurrences are located. Although exploration for porphyry style mineral systems has occurred to a lesser degree, potential for porphyry style mineralization is present in the area and this is the focus for PEMC.

Due to the position of porphyry systems relative to epithermal systems in the Toodoggone area, valley bottoms offer an attractive target space for porphyry exploration. There are several porphyry copper-gold occurrences in this general area of the Toodoggone district found at 1100 m to 1200 m elevations. The NNW-SSE trending valley in the center of the Nub East property lies at an elevation of 1100 m, and was initially targeted to explore for porphyry potential.

The 2017 heliborne magnetic survey outlined a pronounced magnetic high anomaly in the central portion of the property that is overlain by glacial overburden to an unknown extent. The anomaly itself is an ovate to elongate magnetic high anomaly that measures approximately $1500 \text{ m} \times 500 \text{ m}$, with the long axis oriented parallel to the NNW-SSE trending valley (Figure 7.1). The interpretation, although unsubstantiated to this point, is that the magnetic response is due to the presence of secondary magnetite, known to be associated with potassic alteration assemblages in the region, and/or primary magnetite associated with an intrusive body. In either case, the magnetic anomaly is certainly not a reflection of topography as is commonly known to be the case.

The magnetic anomaly outlined in the 2017 heliborne survey warrants further exploration. The conceptual targeting basis stems from the fact that, on the Nub East property and in many areas of the Toodoggone district, epithermal mineralization occurs at high elevation. On the Nub East, there is also polymetallic skarn mineralization at moderate elevations on the property.

8 Recommendations

Although an Induced Polarization survey over the valley bottom magnetic anomaly would likely provide further targeting information, there exists the chance that disseminated magnetite would be responsible for any observed chargeability, which could be misleading. As such, it is proposed that Reverse Circulation drilling be utilized to initially test the magnetic anomaly in the central portion of the Nub East property for potential sulphide mineralization. The budget for a proposed 5-hole Reverse Circulation drilling program totaling \$36,500 is outlined below.

DescriptionCost (CDN\$)Reverse Circulation drilling (all-in)\$12,500Analytical\$8,500

 Table 8.1: Proposed Exploration Program

\$1,500

\$14,000

Camp costs

Helicopter Support

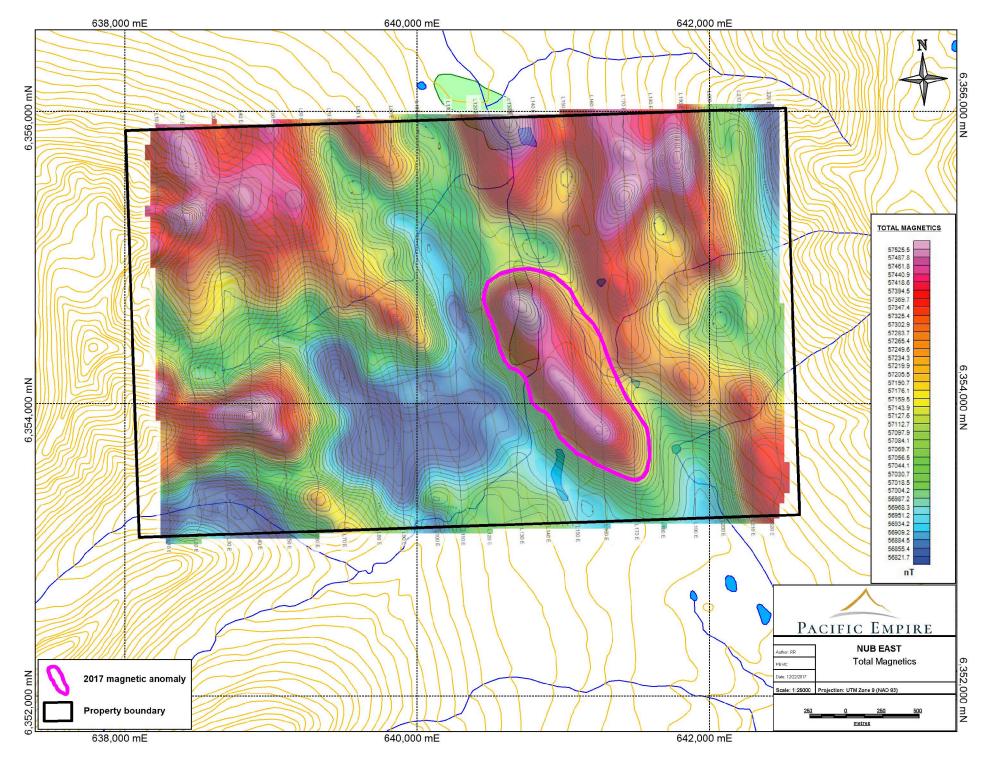


Figure 7.1: 2017 Airborne Magnetics - Total Magnetic Intensity

9 Statement of Expenditures

Table 9.1: 2017 Statement of Expenditures

Exploration Work	Comment	Days	Rate	Subtotal	Totals
Office Studies	List Personnel				
Reprocessing of data	Rory Ritchie	0.5	\$ 400	\$ 200	
Report preparation	Rory Ritchie	3	\$ 400	\$ 1,200	
				\$ 1,400	\$ 1,400
Airborne Surveys	Line-km / Invoiced amount				
Aeromagnetics				\$ 3,000	
				\$ 3,000	\$ 3,000
TOTAL Expenditures					\$ 4,400

References

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- Diakow, L., Nixon, G., Lane, B., and Rhodes, R. (2004). Toodoggone Geoscience Partnership: preliminary bed rock mapping results from the Swannell Range: Finlay River–Toodoggone River area (NTS 94E/2 and 7), north-central British Columbia. *Geological Fieldwork*, pages 2005–1.
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- Kuran, D. (2004). Geological and Geochemical Report on the Nub Claim Group. Assessment Report 27634, Stealth Minerals Ltd.
- Massey, N., MacIntyre, D., Desjardins, P., and Cooney, R. (2005). Digital Geology Map of British Columbia: Whole Province, BC Ministry of Energy and Mines, Geofile 2005–1. *URL http://www.empr. gov. bc. ca/Mining/Geoscience/PublicationsCatalogue/DigitalGeologyMaps/Pages/default. aspx.*

10 Statement of Qualifications

- I, Rory R. Ritchie, do hereby certify that:
 - 1. I am sole proprietor of Rory Ritchie Geological Consulting located at 1553 Woods Drive, North Vancouver, B.C., Canada;
 - 2. I have an H.B.Sc. degree in Chemistry from The University of Western Ontario, 2005. I fulfilled APEGBC requirements in Earth Sciences at Simon Fraser University, 2008. I am a Licensed Professional Geoscientist with the Association of Professional Engineers and Geoscientists of British Columbia;
 - 3. I have engaged in mineral exploration since 2007, for junior exploration companies and as an independent geologist;
 - 4. I have co-authored the report entitled "Geophysical Report on the Nub East Property";
 - 5. I am not independent using the definition in Section 5.1 of National Instrument 43-101;
 - 6. I am the Vice President of Exploration for Pacific Empire Minerals Corp.;
 - 7. As of the effective date of this Report, to the best of my knowledge, information and belief, the Report contains all scientific and technical information that is required to be disclosed to make the Report not misleading.

Signed and dated at	Vancouver, E	British Colu	umbia, on the	e 22^{nd}	day of Dec	cember 2017.
		_				

Rory R. Ritchie H.B.Sc., P.Geo.

- I, Brad J. Peters, do hereby certify that:
- 1. I am sole proprietor of BJP Consulting located at 411-801 Klahanie Drive, Port Moody, BC, Canada;
- 2. I have a Bachelor of Science Degree from the University of British Columbia (Geology);
- 3. I have engaged in mineral exploration since 2007, for junior exploration companies and as an independent geologist;
- 4. I have co-authored the report entitled "Geophysical Report on the Nub East Property";
- 5. I am not independent using the definition in Section 5.1 of National Instrument 43-101;
- 6. I am the President of Pacific Empire Minerals Corp.;
- 7. As of the effective date of this Report, to the best of my knowledge, information and belief, the Report contains all scientific and technical information that is required to be disclosed to make the Report not misleading.

Signed and dated at Vancouver, I	British Columbia, on the 22^{nd}	day of December 2017.
Brad J. Peters B.Sc.	-	

\mathbf{A}	2017 Airborne Magnetic Survey

