# VMS Mineral System Discovered on Obonga Project

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January 18, 2022 (Source) – Panther Metals PLC (LSE: PALM) the company focused on mineral exploration in Canada, is pleased to announce the discovery of a volcanogenic massive sulphide[1] ("VMS") mineral system at the Wishbone Prospect, based on the results of the Phase 1 diamond core drilling programme at the Obonga Project in Ontario, Canada.

**Darren Hazelwood, Chief Executive Officer, commented:**

*"The discovery of a VMS system at Obonga is a remarkable achievement for the team, and given that it took just two drill holes, it shows the level of work that was put into the exploration targeting process.*

*The implications of the Wishbone VMS discovery to the wider Obonga Project area are considerable. Before this programme no other VMS was known on this belt. Obonga has now been confirmed as a favourable geological environment for the development of VMS systems and many more potential VMS targets exist on Panther's landholding.*

*The very nature of this type of deposit means they tend to cluster, once you have one, the chances increase dramatically of finding others.*

*Elevated base metal content, especially within close proximity of our drilling location, adds further confidence to our future plans."*

**Wishbone Phase 1 Technical Summary**

- Wishbone Phase 1 Drilling Programme results, with the discovery of the first VMS system on the Obonga Greenstone Belt, show proof of concept and validation of the exploration targeting and modelling undertaken by Broken Rock Resources, Panther's exploration partner at Wishbone.
- Two diamond core drill holes, totalling 600m, completed to planned depths of BBR21_WB_001 ("WB001"): 297m; BBR21_WB_002 ("WB002"): 303m. Core diameter: 42mm.
- Wide massive sulphide and semi-massive sulphide mineralisation intersections in both drill holes:
    - WB001: Three wide sulphide intersections:
        - 27.3m of massive sulphide from 106.2m ('Upper layer'), with fault at base;
        - 2.5m of massive sulphide from 234.8m ('Mid layer'; and
        - 1.4m of massive sulphide from 256.6m ('Lower layer')
    - WB002: Wide zoned sulphide intersection:
        - 51m from 174m comprising a wide zone of sulphide dominated mineralisation, including:
            - 17m from 180m of massive sulphide ('Upper zone') and
            - 7m from 218m of semi-massive sulphide ('Lower zone')
- An important characteristic of VMS deposits is that they typically display a zonation of metals within the massive sulphide body from Fe+Cu at the base to Zn+Fe±Pb±Ba at the

top and margins, related to differing temperature and chemical conditions at mineral deposition. The major observed mineral component[2] of the Wishbone massive sulphide mineralisation is pyrrhotite with less common pyrite and minor sphalerite and chalcopyrite in distinct zones:

- WB001:
  - Upper layer: MS intersection includes a 7.5m wide zone of Fe above/ close to 50% Fe upper detection limit, with pyrrhotite, pyrite and magnetite identified in the core logging.
  - Mid layer: Strongest zinc (sphalerite) intersection averages 0.5m @ 1.9% Zn (based on verification sampling) within a 1.5m @ 1.1% Zn with 3.1g/t Ag from 235.5m.
  - Lower layer: geochemical correlation to the Mid layer with lower Zn & Ag.
- WB002:
  - Upper zone: displays 10x relative enrichment in Ag (1g/t) over the Lower zone and similar mineralogical composition to WB001.

- Work is ongoing to assess the Phase 1 programme results in combination with geophysical, structural and geological datasets to determine next steps to specifically target the potential for economic base metal zonation within and close to Wishbone.
- The Wishbone assay result suite, including rare earth element (REE) analyses, yields important geochemical information allowing the classification of the mineralisation, alteration ratios and the development of exploration vectors towards zones of potential economic interest.
  - Alteration and REE ratio markers in both drill holes correlate well with established VMS

exploration models.

- Zn+Pb and Cu ratios of the Wishbone massive sulphide layers indicate the mineralisation is most likely a bi-modal type VMS deposit. The deposits of the Sturgeon Lake/Mattabi VMS Camp (consisting of 6 historic VMS mines) 75km west of Wishbone, has been classified as a bimodal type deposits as have Canada's Kidd Creek (Ontario) and Noranda (Quebec) VMS deposits.

- Another important characteristic of VMS type deposits is that they typically occur in clusters. The Company views that the discovery of the Wishbone VMS system bodes very well for the existence of further, as yet undiscovered VMS bodies in the vicinity, as it confirms the western part of the Obonga Greenstone belt as a favourable geological environmental, and permissive tract, for the development of volcanic associated mineralising systems.
- Panther have retained the support of a post-doctoral academic from a Canadian VMS centre of excellence and are working towards forging university relationships which will see the Company leverage all available knowledge and expertise to open up the Obonga greenstone belt for further VMS exploration.

**Wishbone VMS Prospect**

The Wishbone VMS Prospect, targeting the base metals copper ("Cu"), lead ("Pb"), zinc ("Zn) and silver ("Ag") and gold ("Au"), is located in the west of the Obonga Project area.

The Wishbone VMS system confirmed by Panther's Phase 1 drill programme coincides with of a significant magnetic geophysics anomaly which is coincident with a strong electromagnetic ("EM") geophysical anomaly (the "Wishbone anomaly").

Wishbone is situated in a similar geological environment to the

nearby Sturgeon Lake area, and its Mattabi VMS mining camp, on the Wabigoon Greenstone Belt, approximately 75km due west. The Sturgeon Lake / Mattabi area hosted five commercially viable VMS mining operations that produced from the early 1970's into the 1990's. The Mattabi mine being the most prolific, reportedly produced 13.5 Mt of ore with an average grade 7.5% Zn, 0.88% Cu, 0.77% Pb and 3.10 oz/t (96.42g/t) Ag in the period 1970-1983. It was reportedly discovered through the drilling airborne geophysics anomalies.

In the Obonga area, drilling in the 1970's intersected massive stringer and disseminated sulphide 800m north of the Wishbone anomaly and drilling by BHP in the 1990's intersected massive stringer and disseminated sulphide 600m south of the anomaly. BHP ranked the Wishbone anomaly a high priority for follow up in 1992 however no further work was completed. Airborne geophysics datasets compiled since that time have shown that the historical drilling failed to intersect the major anomalies.

**Obonga Project Overview**

The Obonga Project("Obonga") covers the Obonga Greenstone Belt which consists of a 32km long by up to 9km wide, broadly east-west striking, tract of Archean age metamorphosed volcanic, sedimentary and intrusive rocks.  It is a highly prospective setting for the formation of orogenic shear-hosted gold deposits, volcanogenic massive sulphide copper-lead-zinc-silver deposits, komatiite/ultramafic associated nickel-copper-platinum group metal ("PGM") deposits and porphyry style base metal mineralisation.

Panther's Obonga Project constitutes an 88% coverage of Obonga Greenstone Belt and includes seven high prospectivity targets for gold, nickel, PGM and base metals identified by partner company Broken Rock Resources Ltd. The remaining ground over the

belt is either designated areas as environmental reserves and not available for exploration, or under minor landholding by third parties.

Broken Rock is a Canadian registered private exploration company with a number of exploration interests in north-west Ontario. The company is headed up by Liane Boyer who is a well-respected and experienced exploration and resource geologist who has worked at a number of mines in Ontario including Barrick Gold Corp's Hemlo gold mine, Newmont's Musselwhite gold mine, the Impala Platinum Lac Des Iles PGM mine and consulted on an extensive portfolio of exploration projects and mines internationally.

Panther's aim at Obonga is to create shared value that benefits local communities and to explore and develop projects in an environmentally sensitive manner.

Reference Notes:

1: Volcanogenic Massive Sulphide ("VMS") also known as a volcanic-host massive sulphide ("VHMS"). Mineralisation related to submarine volcanic processes linked to sea floor spreading at tectonic plate boundaries.

As defined by the United States Geological Survey ("USGS"): VMS are important sources of copper, zinc, lead, gold, and silver (Cu, Zn, Pb, Au, and Ag). These deposits formed at or near the seafloor were circulating hydrothermal fluids driven by magmatic heat are quenched through mixing with bottom waters or porewaters in near-seafloor lithologies. Massive sulphide lenses vary widely in shape and size and may be pod-like or sheetlike. They are generally stratiform and may occur as multiple lenses.

VMS deposits consist of >40% sulphides, characterised by

abundant Fe sulphides (pyrite or pyrrhotite) and variable but subordinate amounts of chalcopyrite, sphalerite, and galena; non-sulphide gangue typically consists of quartz, barite, anhydrite, iron (Fe) oxides, chlorite, sericite, talc, and their metamorphosed equivalents.

VMS deposits range in size from small pods of less than a tonne (which are commonly scattered through prospective terrane) to supergiant accumulations like Rio Tinto (Spain), 1.5 Bt (billion tonnes); Kholodrina (Russia), 300 Mt (million tonnes); Windy Craggy (Canada), 300 Mt; Brunswick No. 12 (Canada), 230 Mt; and Ducktown (United States), 163 Mt (Galley and others, 2007).

2: Mineral definitions:

Pyrrhotite is an iron (Fe) sulphide mineral with the formula $Fe_{(1-x)}S$ (x = 0 to 0.2)

Pyrite is an iron sulphide with the chemical formula $FeS_2$

Chalcopyrite is a copper (Cu) iron sulphide mineral and the most abundant copper ore mineral; it has the chemical formula $CuFeS_2$

Sphalerite the most important ore mineral of zinc, it has the formula (Zn,Fe)S

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