A new, outcropping, greenfields gold discovery at Paupong (near Jindabyne) NSW; serendipity and science.

Part 1

Dr B. Jane Barron\(^1\) and Dr Russell J. Fountain \(^2\)

Alt Resources Limited

1. Consulting Petrologist, Director Alt Resources Limited. Visiting Fellow, School of BEES, UNSW.
2. Consultant. Director Exploration Alt Resources Limited.
Divisions of Lachlan Orogen

(Glen R. A., 2005)

Ordovician Adaminaby Supergroup

Turbidites – GREY

Silurian-Devonian Granitoids - PINK
Major gold and copper deposits in the Lachlan Orogen.

Located on or near major NSW sutures and splays.

Major deposits include:
- Peak Hill
- Northparkes
- Cadia
- Cowal
- West Wyalong
- Mt Adrah
- Unicorn Porphyry
- Adelong
- Dargue's Reef
- Jindabyne
- Cooma
- Braidwood
- Canberra
- Sydney

Paupong-Myalla (Alt Resources)
PAUPONG PROJECT

• Real greenfields discovery.
• Started as school project on pioneers/gold in Monaro region.
• 1898 SMH article Litchfield vein.
• Magnetic drill target, took out EL
• Petrology on drill core defined some fractionated members of Blind Gabbro Complex. Map EL.
HOW WAS IT MISSED?

- Gold is too fine grained to pan
- Forgotten distant region of state
- Only old wide-spaced magnetics
- No radiometrics
- Two historic stream sediment surveys did not assay for gold; base metal anomalies not followed up
Paupong Project
Geology
Ordovician
Adaminaby Group
metasediments
Alternating units of -
• Fine grained sandstone - YELLOW
• Carbonaceous shale - GREY
• Siltstone – OLIVE GREEN
• Blind Gabbro Complex - PINK
• Altered porphyry – RED
• Veins - GREEN
PART OF QTZ-SULPHIDE VEIN SYSTEM.

VARIETY OF QTZ VEINS;
VEIN BRECCIAS;
STOCKWORK VEIN SYSTEMS - BLUE-GREEN

STRUCTURALLY CONTROLLED ~ CONJUGATE NE-SE FAULTS - VEINS

BLIND GABBRO COMPLEX
More than 972 surface samples give outstanding Au-Ag assays

Average of 0.40g/t Au
Maximum of 14g/t Au
Average 2.6g/t Ag
Maximum of 190g/t Ag.

Cu, As, Pb, Mo and Bi suggest an intrusive source.
Geologist and massive outcropping quartz vein
Quartz vein stockwork and gossan
Several vein generations. Early, lensed, irregular quartz veins overprinted by late thin veins; note conjugate directions.
Large dogtooth quartz crystals in vein

Late central fill of fine quartz - sulphides

Coarse sulphide shapes are preserved in oxide zone
Gossan with oxidised (weathered) sulphides
Iron oxides in gossan

microscope view

Colloform banded Fe-oxides replace sulphides
Dogtooth quartz crystals in vein

Holes of previous pyrite crystals

microscope view
Shattered and milled vein quartz
?tectonic/?phreatic. Microscope view
Carbon-rich fragment

Multiple veining/brecciation events

Large late quartz vein

Shattered rock fragment

microscope view
Rotational breccia

Microscope view
Radiolaria in carbonaceous fragment
SHATTERED PYRITE

microscope view
Cpy inclusion in py

microscope view
Gold specks

Weathered out py crystal sites

microscope view
Paupong
Aeromagnetic Interpretation

Outcropping intrusive rocks (solid colour)

Interpreted intrusives (stipple).
Fractures, joints, Quartz veins, Weathered porphyry intrusion
Mafic
Quartz
Feldspar
Oxidised sulphides
Cut surface of porphyry
Another altered porphyry

microscope view
Intensely altered porphyry

Pyrite, late patchy h’thermal quartz

microscope view
Fracture-located qtz vein with py

microscope view
Miarolitic gas cavity in altered porphyry now filled with radial biotite-chlorite
CONCEPTUAL MODEL

- Ordovician metasediments are faulted, silicified, brittle-fractured.
- Hydrothermal system is defined by multiple veining and brecciation events.
- Significant Au, Ag, apy, py, and base metal sulphides suggests IRS.
- A variety of S-type, and later I-type fractionated intrusive bodies are present.
- High level, altered, veined, mineralised porphyry suggests proximal igneous source.
MYALLA PROSPECT

• Inlier of deformed Ordovician metasediments
• Small historic mine
• 11 historical DDH, significant base metals and gold –
  • Au up to 21 g/t
  • Alt plans two DDH (500m)
Ordovician metasediments are strongly foliated and multiply deformed.
Dump sample.

Polymetallic mineralisation in foliated quartz vein - may be igneous related.