

Sample 16 of 20: 237180

Person submitting samples: Josh Guilliamse
Affiliation: GSWA
Project Title:
Sample Number(s) (including IGSN if one exists): 237180
Mineral separation required? Yes or No: Yes
Date submitted:

GEOGRAPHIC AREA/ PROVINCE/ BASIN : Paterson Orogen	
1:250k SHEET NAME: Anketell	NUMBER: SF51-02
1:100k SHEET NAME: Absolon	NUMBER: 3257
LOCATION METHOD: (GPS: WGS84 / AGD66 / AGD84 / GDA94) GPS GDA94	
ZONE: 51	
EASTING: 386023	NORTHING: 7746061
LATITUDE: -20.3802	LONGITUDE: 121.9078

STRATIGRAPHIC UNIT FORMAL NAME *:
STRATIGRAPHIC UNIT INFORMAL NAME:
LITHOLOGY: Amphibolite

DRILLHOLE ID (if applicable): EIS Venus Citadel C8
PROSPECT (if applicable): Citadel
DEPTH FROM (metres): 243.07 m
DEPTH TO (metres): 243.17 m

* Stratigraphic Unit names can be searched and checked within the Australian Stratigraphic Units Database via the following link: <https://asud.ga.gov.au/>

Dating Objective

What is the geological question $^{40}\text{Ar}/^{39}\text{Ar}$ analysis will address?

Dating alteration associated with sulfide mineralisation

What type of age(s) are expected? (e.g. magmatic crystallisation, metamorphism, fluid alteration/mineralisation, cooling, shearing etc):

Alteration/mineralisation

Mineral target(s) for dating:

Biotite

Estimated $^{40}\text{Ar}/^{39}\text{Ar}$ age (e.g. Cenozoic, Mesozoic, Paleozoic, Proterozoic, Archean – provide estimated numerical age range if possible):

Mid- to Late-Neoproterozoic

Sample Information

Location description (e.g. a sample of x was collected from y, z km from abc town):

Sample 237180 was collected from drillhole C8 at the Citadel prospect in the Paterson Orogen. Drillhole C8 is located 380 km E of Port Hedland in Western Australia.

Lithological characteristics (rock description):

Mineralised quartz vein cutting an amphibolite. Biotite alteration associated with quartz-sulfide vein.

Relative age constraints (pertinent geological relationships with surrounding rock units and any previous geochronology):

The sample is from basement under Canning Basin sediments and currently assumed to be a magmatic interval within the Yeneena Basin. It is perhaps equivalent to the Duke/Magnum/Hasties Retreat gabbroic intrusions that have ages of c. 830 Ma. The metamorphism & foliation age is expected to be Neoproterozoic, corresponding to one of either the Miles (c. 810 – 650 Ma) or Paterson (c. 550 Ma) Orogenies. Sediments of the Yeneena Basin have

a maximum depositional age of c. 831 Ma. Alteration & mineralisation is expected to be one of either Miles or Paterson Orogeny timelines.

Thin section description (if available):

Mineralised quartz vein cutting an amphibolite. Biotite alteration associated with quartz-sulfide vein.

Photograph(s) e.g. field site, hand-specimen, photomicrograph:



Relevant bibliographic references:

Towner, RR 1982, *Anketell, Western Australia (2nd edition): 1:250 000 Geological Series Explanatory Notes: Geological Survey of Western Australia.*

Gardiner, NJ, Maidment, DW, Kirkland, CL, Bodorkos, S, Smithies, RH and Jeon, H 2018, *Isotopic insight into the Proterozoic crustal evolution of the Rudall Province, Western Australia: Precambrian Research*, v. 313, 31–50.

Maidment, D, Huston, DL, Maas, R, Czarnota, K, Neumann, N, McIntyre, A and Bagas, L 2008, *The Nifty-Kintyre-Duke Cu-U-Pb-Zn mineralizing events: Links to the evolution of the Yeneena Basin, northwest Paterson Orogen*, in *GSWA 2008 extended abstracts: promoting the prospectivity of Western Australia: Geological Survey of Western Australia: Record 2008/2*, p. 27–29.

Bagas, L 2004, *The Neoproterozoic Throssell Range and Lamil Groups, northwest Paterson Orogen, Western Australia - a field guide: Geological Survey of Western Australia, Record 2004/15*, 18p.

Bagas, L and Nelson, DR 2007, *Provenance of Neoproterozoic sedimentary rocks in the northwest Paterson Orogen, Western Australia*, in *Proceedings of the Central Australian Basins Symposium (CABS), Alice Springs, Northern Territory, 16-18 August 2005* edited by TJ Munson, TJ Munson, GJ Ambrose and GJ Ambrose: Northern Territory Geological Survey: Special Publication, p. 1–10.