

## Sample 18 of 20: 247517

<b>Person submitting samples:</b> Dave Kelsey
<b>Affiliation:</b> Geological Survey of Western Australia
<b>Project Title:</b> Tectonism and Exhumation of the Paterson Orogen and East Pilbara Craton margin
<b>Sample Number(s) (including IGSN if one exists):</b> 247517
<b>Mineral separation required? Yes or No:</b> yes
<b>Date submitted:</b>

<b>GEOGRAPHIC AREA/ PROVINCE/ BASIN :</b> Yeneena Basin	
<b>1:250k SHEET NAME:</b> Paterson Range	<b>NUMBER:</b> SF51-06
<b>1:100k SHEET NAME:</b> Coolyu	<b>NUMBER:</b> 3355
<b>LOCATION METHOD: (GPS: WGS84 / AGD66 / AGD84 / GDA94)</b> GDA94	
<b>ZONE:</b> 51	
<b>EASTING:</b> 423337.999	<b>NORTHING:</b> 7635512.033
<b>LATITUDE:</b> -21.380934	<b>LONGITUDE:</b> 122.260483

<b>STRATIGRAPHIC UNIT FORMAL NAME *:</b> Malu Formation (interpreted)
<b>STRATIGRAPHIC UNIT INFORMAL NAME:</b>
<b>LITHOLOGY:</b> biotite + sillimanite schist

<b>DRILLHOLE ID (if applicable):</b> Newcrest Minyari MHC10001
<b>PROSPECT (if applicable):</b>
<b>DEPTH FROM (metres):</b> 415.06
<b>DEPTH TO (metres):</b> 415.9

### Dating Objective

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

Either: What is the age of the axial planar cleavage in this sample? OR What is the age of exhumation/cooling in this sample?

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

Cooling/exhumation.

**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):**

Located 77 km NE of Nifty mine and 38 km N of Telfer.

**Lithological characteristics (rock description):**

The rock is a medium-grained biotite schist. Reasonably homogeneous at scale of drillcore, and foliation is well defined by more biotite rich regions versus more biotite poor regions. The rock was described as a psammite but it contains sillimanite (noticed in thin section) so it is probably a metapelite, or at least a semipelite.

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

The deformation/foliation age is expected to be Neoproterozoic, corresponding to be 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.

**Thin section description (if available):**

The sample is a medium-grained biotite schist with prismatic to fibrous sillimanite. The matrix of the rock is quartz and feldspar bearing. Biotite and sillimanite define a moderate to strong foliation. Sillimanite tends to occur as aggregates in 'pockets' in the rock, rather than being pervasively distributed.

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

