

ASX announcement

24 February 2021

Uranium Exploration Assets: FROME PROJECT

Argonaut Resources NL (ASX: ARE) (Argonaut or the Company) is pleased to announce that the Company has acquired a package of three highly prospective uranium exploration licences known as the Frome project located south of Lake Frome in South Australia (Figure 1).

Highlights

- Substantial landholding of 2,894 square kilometres covering:
 - a network of sandstone palaeochannels containing groundwater that drains from uranium-bearing granite source rocks (Figure 3);
 - existing drilling with downhole gamma logs that defines 12 line-kilometres of redox fronts within thick sandstone units; and
 - two walk-up, high priority drilling targets plus at least six early-stage drilling targets.
- The Frome project is nearby to the Honeymoon, Four Mile and Beverley uranium mines and is immediately adjacent to the Goulds Dam uranium deposit (Figure 1).
- Argonaut will base exploration works on the “two fluids” model for uranium roll front deposits (Figure 2).

Frome Project, SA

The Frome project involves three highly prospective exploration licences in the Frome Embayment area of South Australia which is arguably the most prospective region in Australia for sandstone-hosted uranium deposits. The area hosts the Beverley deposit and the Four Mile in the northwest and the Honeymoon, Goulds Dam and Oban deposits in the southeast (Figure 1).

Importantly, the area is nearby to existing, licenced uranium production sites. South Australia hosts four of six approved Australian uranium mines: Olympic Dam, Beverley, Four Mile and Honeymoon. Three of these mines are nearby to the Frome project (Figure 1) and uranium production at these sites is by in-situ recovery (ISR).

Tenure

Argonaut holds a 100% interest in two large exploration licences - both greater than 950 square kilometres and a third licence via an option, sale and milestone agreement (Figure 3). This agreement provides for the acquisition by Argonaut of a 100% interest of a third similarly large exploration licence, currently in the application stage (Figure 3). Frome project exploration licences are described in detail below.

Frome project exploration licences:

- EL6554, Frome Downs – 960km² (100%);
- EL6555, Curnamona – 947km² (100%); and
- ELA 2021/003, Erudina – 987km² (option to acquire 100%).

Prospectivity

These licences cover sandstone-bearing palaeochannels that contain groundwater that drains from uranium-bearing granite. Previous drilling of these palaeochannels confirms the presence of excellent sandstone aquifers at or near the base of the channels. These sandstone aquifers are 4m to 20m thick (typically 10-12m) and contain the necessary permeable coarse sands.

These basal sandstones have been shown to contain both oxidised, uranium-bearing zones and reduced zones. Work by Argonaut has confirmed 12 kilometres of redox front within palaeochannels along which high priority exploration is necessary.

Argonaut is applying the “two fluids” model for uranium roll front deposits (Figure 2) which involves oxidised, uranium bearing groundwater (Fluid 1) flowing along the permeable sandstone units until it encounters reducing groundwaters which have leaked upwards through faults from deeper, hydrocarbon-bearing aquifers (Fluid 2). The interface of these fluids creates a redox front that can trap and concentrate uranium.

Geology

As stated above, uranium accumulation as a consequence of the two fluids model requires three principal elements: uranium rich source rocks, a permeable sandstone aquifer to carry the oxidised, uranium bearing groundwater, and the introduction of a reductant up faults from a lower, hydrocarbon-bearing aquifer.

At the Frome project area, we see the following geological units:

1. The Eyre Formation (Honeymoon and Goulds Dam deposits) and Namba Formation (Beverley deposit) palaeochannels. These units are contained in the Callabonna Sub-basin of the Lake Eyre Basin.
2. The underlying Arrowie Basin, which includes the hydrocarbon-bearing Wilkawillina Limestone unit.
3. The Crocker Well Suite granite (Figure 3) which is an excellent uranium source rock and displays a strong radiometric anomaly where it outcrops.
4. Faults that cut both the Arrowie basin sediments and the overlying Eyre or Namba formations.

Exploration

Argonaut has compiled and interpreted all existing data. The data is exciting in that it points towards numerous opportunities for the discovery of sandstone-hosted uranium. Work will proceed in several phases:

1. Palaeochannel and fault interpretation via existing aeromagnetic and airborne EM data.
2. Acquisition and interpretation of new, detailed airborne EM data.
3. Drilling of high priority targets (Figure 3)
4. Drilling of regional, early-stage targets (Figure 3).

Argonaut is currently commencing the permitting process required for drilling.

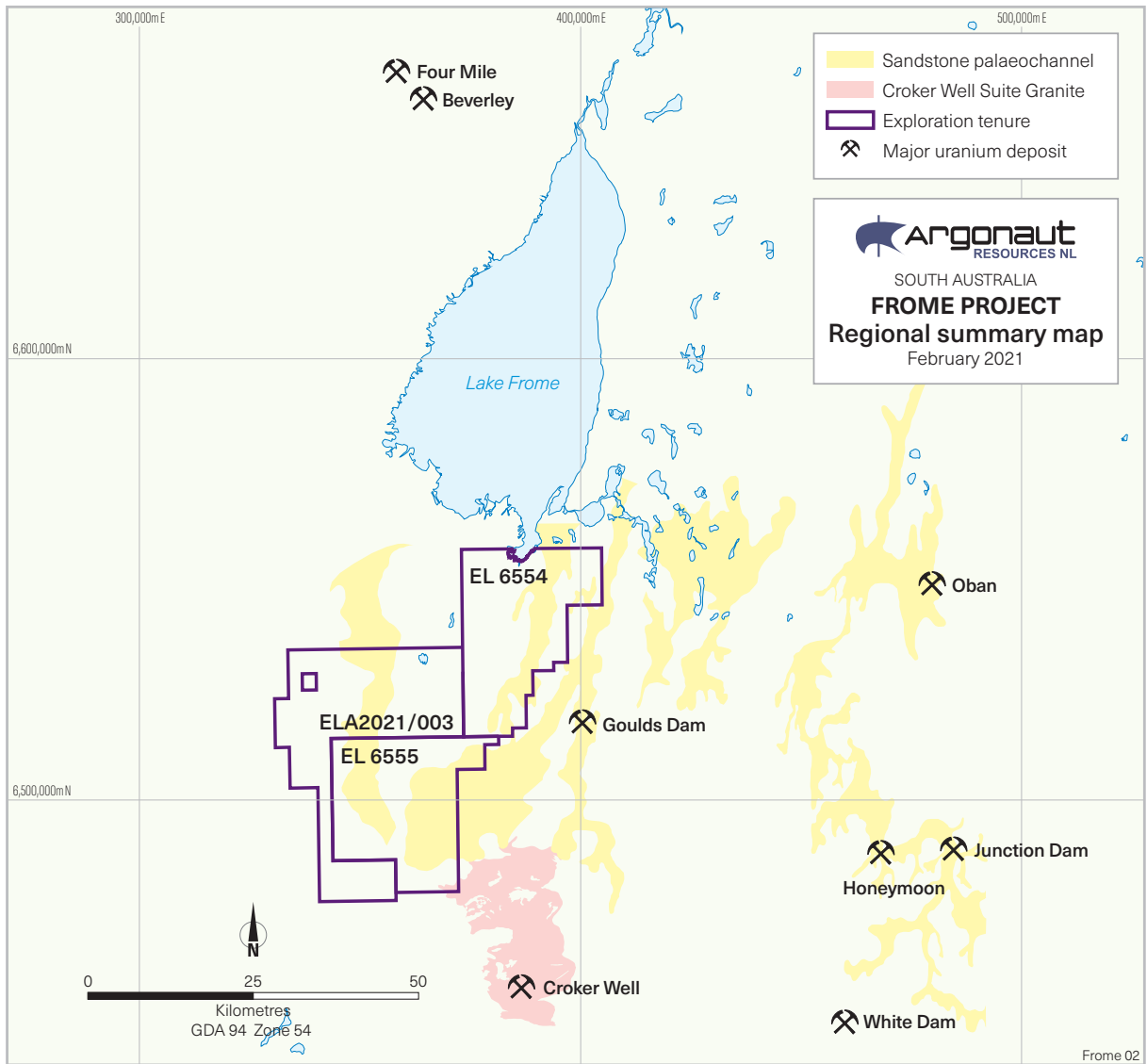


Figure 1 Frome project tenement location and major uranium deposits.

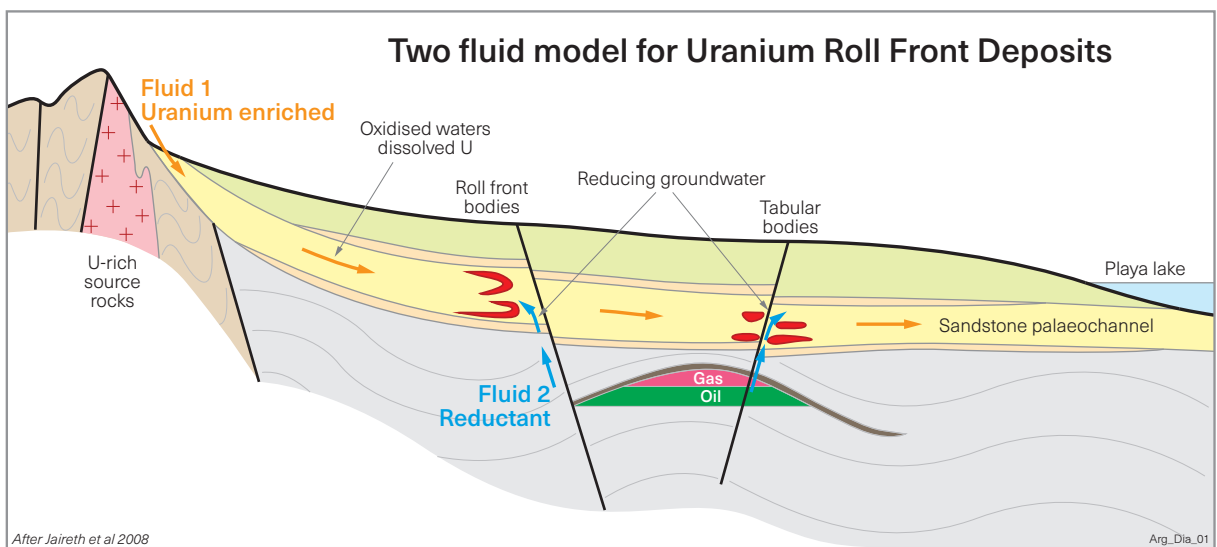


Figure 2 Diagram showing two fluid model. Uranium is carried in oxidised groundwaters and reduced by hydrocarbons and/or H_2S released from the underlying hydrocarbons. Both roll-front and tabular ore bodies can result from the process. After Jaireth et al 2008.

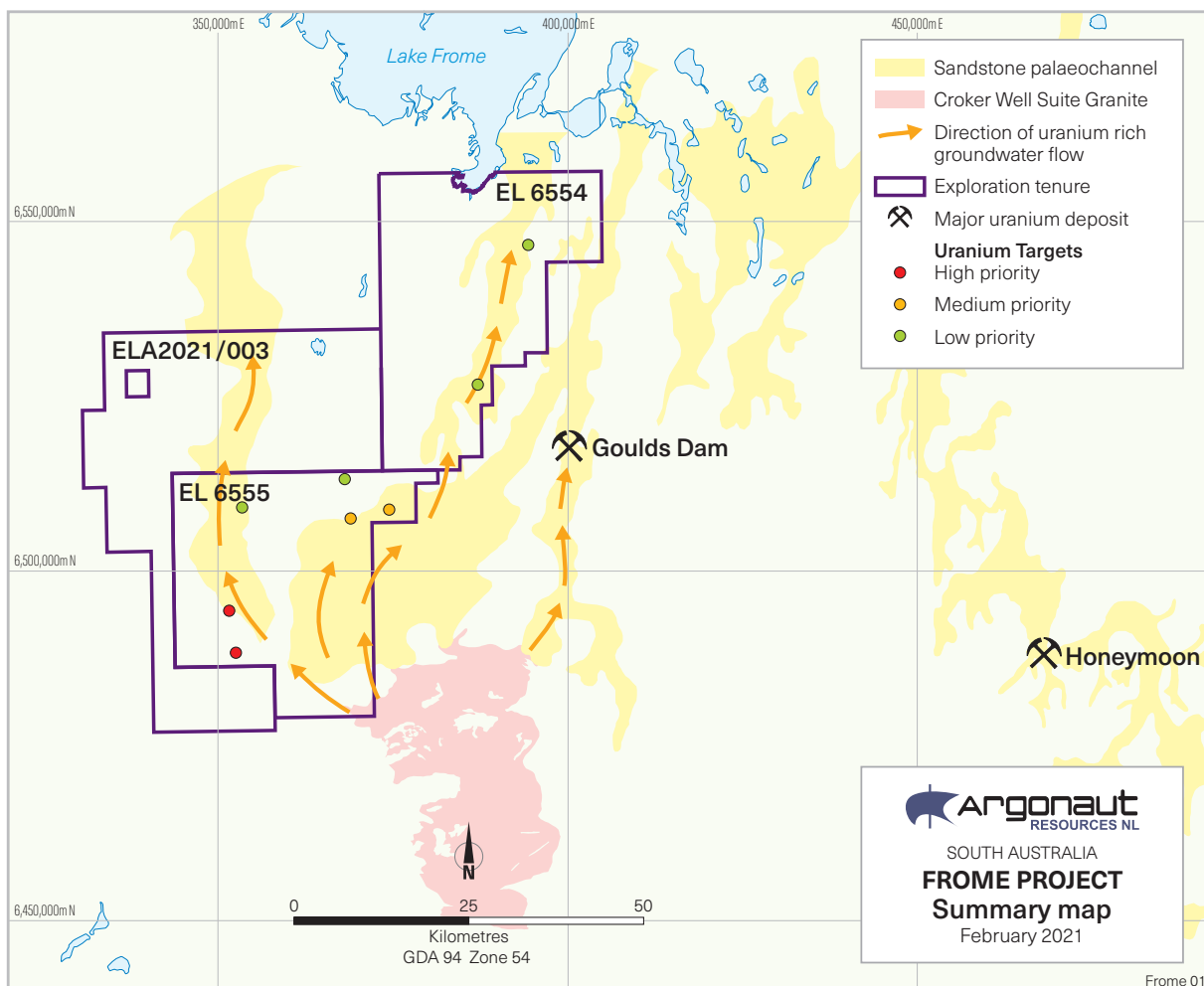


Figure 3 Frome Project licences with Eyre Formation sandstone palaeochannels – which have been shown to host uranium deposits – and the Crocker Well Suite granite which is a uranium-bearing source rock from which oxidised groundwater can flow through the palaeochannels until it encounters a reducing environment where it can form concentrated deposits.

Erudina Option, Sale and Milestone Agreement terms

A 100% held subsidiary of Argonaut has entered an agreement with Groundwater Science Pty Ltd in relation to the Erudina exploration licence application, ELA2021/003. The principal terms are as follows:

Option: \$15,000 exclusivity fee plus a contingent issue of \$30,000 of exclusivity shares.

Sale: if the option is exercised then \$300,000 of purchase shares become payable.

Milestone: if at least 10 exploration drillholes within the tenement that exhibit 500m.ppm U_3O_8 grade thickness accumulation with a 100ppm U_3O_8 grade cut-off at a minimum drillhole spacing of 100m are drilled, then \$300,000 in cash or shares becomes payable.

About Argonaut

Argonaut Resources NL is an Australian Securities Exchange listed exploration and development company focused on the Murdie copper project in South Australia and copper development at the Nyungu copper-cobalt deposit at the Lumwana West project in North Western Zambia.

This report is authorised for release by:

Lindsay Owler

Director and CEO

Argonaut Resources NL

Sections of information contained in this report that relate to Exploration Results were compiled or supervised by Mr Lindsay Owler BSc, MAusIMM who is a Member of the Australasian Institute of Mining and Metallurgy and is a full-time employee of Argonaut Resources NL. Mr Owler holds shares and options in Argonaut Resources NL, details of which are disclosed in the Company's 2020 Annual Report. Mr Owler has sufficient experience which is relevant to the style of mineral deposits under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the "Australasian Code for Reporting of Mineral Resources and Ore Reserves". Mr Owler consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.