EL 30943
Calvert Hills
First Annual and Final Report year to 28th February 2017
Ripple Resources Pty Ltd

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Summary

Ripple Resources is a fully owned subsidiary of Armour Energy Ltd. Armour has been exploring the gas and oil resources of the McArthur Basin, and has made a significant gas discovery in the Glyde sub basin.

Ripple had applied for a number of Exploration Licences in the Calvert Hills area, on the basis of the recently confirmed regional SEDEX potential of the Wollogorang and McDermott formations.

Previous exploration work demonstrated large scale anomalous in copper lead and zinc.

The work during the past year has been limited to a compilation of the previous data. A broad target area has been recognised, but due to an untimely death, the main source of funding has evaporated, and the project abandoned. The adjoining newer EL applications have been withdrawn, and this EL is to be surrendered.
1.0 Introduction
Ripple Resources Pty Ltd was set up by DGR Global Ltd for the purpose of exploring for base metals within areas of the McArthur and Mount Isa basins that were being examined by Armour Energy Ltd for gas and oil. After the float of Armour Energy, Ripple Resources was sold to Armour at cost. Since that time, Armour has been providing funding and much of the operating resources for Ripple.

Modern concepts regarding the formation of sediment hosted base metal deposits have given new emphasis to the century old model that the metals were introduced along with hydrocarbons, either in conventional trap sites or within basin centred accumulations.

There was an opportunity to modify and extend the Armour program so that Ripple Resources could benefit from aspects of the petroleum evaluation which were relevant to base metals. Ripple has employed a basin wide approach towards exploration, and has widened its search away from the Batten trough and the Barney Creek formation. This approach led to the Calvert Hills area.

Several adjoining Exploration Licences were applied for, however all but EL 30943 were withdrawn when funding ceased with the death of Aubrey McLarendon in the USA. EL 30943 had been granted at that stage.

1.0 Location and Access
The project area is centred just south of Calvert Hills homestead. Access is via either the Carpentaria highway between Wollogorang and Borroloola or via the Calvert Road from the Tablelands highway. Within the EL, access is mainly via station tracks.

Fig. 1 Location and access
3.0 Licence Details
EL 30943 was granted on the 1st March 2016 for 5 years. EL 30943 covers 28 sub blocks. It is are subject to 50% minimum reduction every second year.

The work requirement for year 1 is $16500.

4.0 Geology and Previous Exploration
The Calvert Hills area is comprised of the gently northeast dipping Proterozoic Tawallah group sediments which are unconformably overlain by the Nathan Group Karns Dolomite. Cambrian Cretaceous and Cenozoic sediments in turn obscure much of the Proterozoic. The unit of prime interest was the Tawallah Group Wollogorang formation, which contains mineralisation with Sedex characteristics.

Fig.2 Geology

Other mineralisation styles have also been noted, such as the breccia hosted copper mineralisation in the Masterton formation, and more recently, the Nathan – Tawallah unconformity has been recognised regionally as host for uranium - copper – palladium – REE – phosphate mineralisation.

The major previous exploration work has been done by

1. Australian Geophysical (CR 1970-005) minor sampling IP and drilling a diamond hole to 105.46m just north of the EL.
2. Carpentaria Exploration (MIM) EL 1671 (CR1981-124) Geochemistry mapping and drilling a section of holes, one of which was in EL30943 – A14.

Additional minor BCL stream sediment geochemistry has been done by Golden Plateau CR89-0409 and again by Redbank Copper EL 27241.
The stream sediment anomalism revealed by CEC was attributed to disseminated copper–ferroan dolomite infilling secondary porosity in the Karns dolomite, as well as minor occurrences in the Masterton formation and Gold Creek volcanics, at the top of the Tawallah Group. CEC also reported an apatite quartz haematite–REE pipe in Cattle Creek 19km north west of Calvert Hills homestead, outside the EL. This was hosted by the Pungalina Member of the Masterton formation.

To the north of Calvert Hills, several areas have been found to host extensive phosphate associated U-Cu-REE-Pd-Au mineralisation. No ore grades have been encountered, but the mineralisation appears to occur in all areas where the Nathan–Tawallah unconformity has been prospected for uranium.

A conceptual model for metal deposition is shown in Figure 4. Essentially, the model is for the metalliferous oxidised brines to originate in highly anomalous volcanics and associated sediments at the base of the Tawallah Group. The brines pass up fault systems into higher more reduced sequences where they precipitate as breccia infills and in secondary porosity. The mineralisation in this district typically involves petroleum in the paragenesis, and this is noteworthy at Century, Walford Creek, Running Creek, and probably Redbank.

The Tawallah–Nathan unconformity juxtaposes sequences with quite different oxidation states, and has precipitated an array of different metals.
5.0 Exploration Completed during the Reporting Period
The only work conducted was a compilation of previous work.

5.1 Compilation of Previous Work
The purpose of the compilation was to provide target areas for further field examination. The reported data was examined to locate those areas with the strongest indications.
Fig. 6 Uranium targets on KUTh radiometrics

Fig. 7 Gold targets on TMI
6.0 Results and Conclusions
The project area contains valid geochemical – radiometric targets which need further investigation on the ground. The uranium – phosphate and copper dominant mineralisation styles are probably very extensively developed under the Nathan – Tawallah unconformity at a shallow depth.

The Wollogorang formation regionally, is a valid Sedex target, but a large scale geophysical survey is needed to detect massive sulphides.

The gold anomalism is probably related to the Packsaddle microgranite, which is inferred to underlie the northern boundary of the EL. Packsaddle related volcanics and the volcanoclastic Pungalina member of the Masterton formation should be more highly mineralised in this area.

The potential is seen as covering a much larger area than EL 30943. Consequently, a greater ground position is required to make a program worthwhile. This is beyond the suddenly reduced capability of Ripple Resources.

7.0 Proposed Program
There is no proposed program, as the EL is being surrendered.