THIRD ANNUAL AND FINAL REPORT
16th February 2013 to 7th February 2014
EL 28184 – Cow Creek

TITLE: Third Annual and Final Report for EL 28184 Cow Creek for the Period ending 7th February 2014

HOLDER: COPPER RANGE (SA) Pty Ltd

OPERATOR: CARAVEL ENERGY Ltd

1:250,000 SHEET: Larrimah SD 53-13

AUTHOR: Mark Arundell

ADDRESS: Caravel Energy Ltd, PO Box 540, Subiaco, WA, 6904

SUBMITTED BY: [Signature]

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TABLE OF CONTENTS

TABLE OF CONTENTS ....................................................................................................... ii
LIST OF FIGURES ............................................................................................................... ii
SUMMARY ........................................................................................................................... i
1. INTRODUCTION .......................................................................................................... 1
2. LOCATION AND ACCESS ........................................................................................... 1
3. TENURE DETAILS ....................................................................................................... 2
4. REGIONAL GEOLOGY ................................................................................................ 2
5. PREVIOUS EXPLORATION ........................................................................................ 4
6. EXPLORATION RATIONALE ....................................................................................... 6
7. WORK COMPLETED DURING THE CURRENT REPORTING PERIOD ..................... 6
8. CONCLUSIONS ........................................................................................................... 7
9. REFERENCES ............................................................................................................. 7

LIST OF FIGURES

Figure 1  Larrimah Phosphate Project Tenement Location Plan ........................................ 1
Figure 2  Geology Map with Larrimah Phosphate Project EL’s 28184 & 28185 (after BMR SD5313 Larrimah) ................................................................. 3
Figure 3  Stratigraphy of the project area (after BMR SD5313 Larrimah) ....................... 4
Figure 4  Water Bore Location Plan showing thickness contours of the Cambrian stratigraphy based on water-bore logs ......................................................... 5
SUMMARY

Exploration work for phosphate mineralisation was carried out on EL28184. The EL was deemed prospective due to similarities in the geology with that hosting recently discovered phosphate mineralisation in the Cambrian Georgina Basin of the Northern Territory.

Work carried out during the current reporting period included review of results from a 20 hole regional exploration drilling program on EL28184 completed during the previous reporting period.

Drilling at the Larrimah Project (EL 28184 & EL 28185) had intersected anomalous phosphate mineralization in a stratigraphic setting analogous to known major phosphate deposits in the Georgina Basin. Phosphate mineralization appears to be hosted by a zone of weathered clays, siltstones and cherty silcrete, located at the top of the Cambrian carbonate sequence. Anomalous phosphate mineralisation was intersected at the top of the Cambrian sequence in a number of holes on EL28185, with a best intercept of 5m @ 1.97% P₂O₅ in LAC020.

Intersections of phosphate mineralisation deepen towards the south. While no economic grade phosphate intercepts were obtained, the widely spaced nature of the drilling program was considered to indicate that sufficient potential remained for the discovery of economic phosphate mineralisation.

Given the +40% decrease in the rock phosphate price over the last twelve months (~US$180 to $100 per ton), it was considered that further exploration on EL28184 could not be justified at this time and the decision was made to relinquish the title.
1. INTRODUCTION
Phosphate mineralisation was the primary target on EL28184. The area was considered prospective due to similarities in the geology with that hosting recently discovered phosphate mineralisation in the Cambrian Georgina Basin of the Northern Territory.

2. LOCATION AND ACCESS
EL28184 "Cow Creek" was located approximately 40km west of the town of Larrimah, on the Stuart Highway and approximately 140km south of Katherine in the Northern Territory (Figure 1). The license area was accessed by Western Creek Road from Larrimah or from the Sturt Plateau Road (Gorrie/Dry River Road) Turnoff which commences off the Stuart Highway a few kilometres to the south of Mataranka. Within the licence area, station tracks and the North Australian Railway Corridor provide access.

The license covered parts of Tarlee, Birdum Creek, Cow Creek, Western Creek, Middle Creek and Gorrie cattle stations, which are part of the Sturt Plateau pastoral area. The land tenure is pastoral leasehold. The land surface is flat to gently undulating and is covered by open tropical savannah woodland, with only small areas of cleared, improved pasture in the vicinity of the station homesteads. Soils consist chiefly of sands and sandy loam, with smaller areas of lateritic gravels or clays. Natural drainage in the area is intermittent, flowing only briefly after heavy rain. Permanent natural surface water is restricted to a few clay pans, so the local pastoral industry relies heavily on water-bores.

Figure 1  Larrimah Phosphate Project Tenement Location Plan
3. TENURE DETAILS

EL28184 "Cow Creek" was granted to Copper Range (SA) Pty Ltd (Copper Range) on 23/02/2011 for a period of 6 years expiring on 15/02/2017. Copper Range is a fully owned subsidiary of Caravel Energy Limited (Caravel). The EL covered 500 blocks or 1653.63 square kilometres. The EL was relinquished on 7th February 2014. This report covers the third and final year of tenure of EL 28184.

4. REGIONAL GEOLOGY

after Lindsay-Park, 2011 and Randall M et al, 1969

Exploration licence 28184 lies within the Dunmarra Basin. The Dunmarra Basin is recognised (NTGS) as a intracratonic basin overlying the Georgina, Wiso and Daly Basins. The Dunmarra Basin is characterised by unmetamorphosed sandstone and mudstone of between Jurassic and Cretaceous age. There are no known mineral occurrences hosted by Dunmarra Basin sediments.

Within the tenement area numerous water bores have been drilled and the cuttings from these provide adequate evidence of the buried stratigraphy and the thickness of the units. The oldest and deepest unit encountered in the drilling is the Lower Cambrian Antrim Plateau Volcanics. The Antrim Plateau Volcanics are a basaltic unit up to 250m thick which is thought to underlie most of the Larrimah and Daly Waters 1:250,000 map sheet area. In the water bore drilling the basaltic unit and its weathered products are encountered at about 50 to 80m depths.

Overlying the Antrim Plateau Volcanics are the Middle Cambrian Montejinni and Tindall Limestones of the Daly Basin. Both are described as limestone, dolomitic limestone, minor siltstone and mudstone. Both Formations contain the same fossil assemblage of Biconulites, Girvanella, hyolithids, gastropods and trilobites. Further work on these Formations may reveal they are the same unit. Overlying the Cambrian Limestone Formations is the Cambro-Ordovician Jinduckin Formation, however these sandstone, siltstone, marl and carbonate rocks appear to be restricted to the Northwest of the Larrimah Sheet area and have not been recognised in water bores drilled in the licence area.

Extensively developed within the licence area is the Lower Cretaceous Mullaman Beds and Tertiary lateritised material including sand and ferruginous rubble (Figure 2 and Figure 3). The Mullaman Beds comprise quartz sandstone, siltstone and claystone. The available water bore data indicates the thickness of the sequence over the Middle to Lower Cambrian Limestone varies from just a few metres to as much as 30m in place.
Figure 2  Geology Map with Larrimah Phosphate Project EL’s 28184 & 28185 (after BMR SD631 Larrimah)
5. PREVIOUS EXPLORATION

Work carried out during the 2012 reporting period included desk top studies, a historical data review, and the geochemical analysis of drill cuttings from 10 different water-bores held in the NTGS core library using a hand held XRF machine for a total of 309 individual samples.

A review of the previously completed exploration work on eleven exploration titles that impinge on EL's 28184 and 28185 was completed and was reported in the 2012 Annual Report (Mees, 2012). Most of the previous titles were taken out for the purpose of diamond exploration and without exception the only work done in the current title has been gravel sampling. Apart from water-bores no exploration drill-holes have ever been completed on EL28184.

These historical water bore data were used to determine approximate depths to and thickness of the Cambrian sequence (Figure 4). An RC-Aircore drilling program was designed, a Mine Management Plan (Lindsay-Park, 2011) was submitted and authorisation was granted (AN 0645-01, granted on 9th September 2011) for drilling to proceed. RC Drilling scheduled for late 2011 had to be delayed until the next reporting period due to difficulties locating a suitable drilling contractor.

Work carried out on EL28184 during the 2013 reporting period consisted of a 20 hole regional exploration drilling program carried out from 18/04/2012 to 14/05/2012. Drilling was also completed on the adjacent tenement - EL28185.

The area of drilling covered parts of Tarlee, Avago, Western Creek, Middle Creek, Gorrie, Birdum Creek and Cow Creek stations to the west of the town of Larrimah, NT.
Figure 4  Water Bore Location Plan showing thickness contours of the Cambrian stratigraphy based on water-bore logs
Drilling intersected anomalous phosphate mineralization in a stratigraphic setting analogous to known major phosphate deposits in the Georgina Basin. Phosphate mineralization appeared to be hosted by a zone of weathered clays, siltstones and cherty silcrete, located at the top of the Cambrian carbonate sequence.

A total of 187 samples (both EL 28184 & 28185) were submitted to Amdel Darwin for analysis. These samples were mainly 5m composite spear samples. Anomalous phosphate mineralisation was intersected at the top of the Cambrian sequence in a number of holes on EL28185, with a best intercept of 5m @ 1.97% P₂O₅ in LAC020.

Intersections of phosphate mineralisation deepen towards the south. While no economic grade phosphate intercepts were obtained, the widely spaced nature of the drilling program was interpreted to indicate that sufficient potential remained for the discovery of economic phosphate mineralisation.

A report on the drilling program and digital drillhole data were included as appendices to the 2013 report.

6. EXPLORATION RATIONALE

The Lower to Middle Cambrian aged Limestones in the Northern Territory host several large tonnage stratiform phosphate deposits. A review of phosphate potential along the Adelaide – Darwin rail line corridor in the Northern Territory completed by Copper Range and identified an area of Cambrian sediments prospective for phosphate under Cretaceous cover. The Cambrian sediments have a number of phosphate prospects derived from historic government drill holes (Bureau of Mineral Resources [BMR] now Geoscience Australia). The holes were located near the town of Larrimah. For example, BMR Larrimah 3 is reported to have 1 to 7% P₂O₅ from 120-130ft.

Copper Range aimed to test the limestone sequence within EL28184 under the Cretaceous cover in areas where the cover was estimated to be thin enough to allow for potentially economic stripping rates. In addition these areas of thinner cover were thought to represent areas of basement highs prospective for phosphate mineralisation.

7. WORK COMPLETED DURING THE CURRENT REPORTING PERIOD

Work carried out on EL28184 during the reporting period consisted of a review of the drilling completed in the previous reporting period.

A significant decline in the price of phosphate over the last twelve months was a major factor in the necessity of this review. Intersections of phosphate mineralisation recorded in the widely spaced drilling program completed previously were re-examined. Although anomalous mineralisation was intersected, the grades, thicknesses and the depth of the mineralisation under cover was considered inadequate at this time to warrant further follow up.

It was thus decided to relinquish EL 28184.
8. CONCLUSIONS

Drilling at the Larrimah Project intersected anomalous phosphate mineralization in a stratigraphic setting analogous to known major phosphate deposits in the Georgina Basin. Phosphate mineralization appears to be hosted by a zone of weathered clays, siltstones and cherty silcrete located at the top of the Cambrian carbonate sequence.

While no economic grade phosphate intercepts were obtained, the widely spaced nature of the drilling program was considered at the time to be quite encouraging.

However, a recent review of the results of the drilling concluded that although anomalous mineralisation was intersected, the grades, thicknesses and the depth of the mineralisation under cover was considered inadequate at this time to warrant further follow up and the decision was made to relinquish EL 28184.

9. REFERENCES

Arundell, M. 2013. Second Annual Report for EL 28184 "Cow Creek" for the period ending 15th February 2013, Caravel Energy Ltd. Submitted to NT DoR.


Randal, M et al. 1969. Larrimah Sheet SD5313 1:250,000 Geological Map Series, BMR.