Tenement holder: Tianda Uranium (Australia) Pty Ltd

Operator: Terra Search Pty Ltd
12/120 Briggs St
Welshpool
WA 6106

Title: Annual Report for EL 25694 Central Mount

Period: 18 September 2009 to 17 September 2010

Commodities: Uranium, base metals, iron ore

Authors: geological expenditure
Charles Poynton Shefa Chen
80 Edward Avenue Tianda Uranium (Australia) Pty Ltd
St Albans 37/328 Albany Highway
Christchurch 8013 Victoria Park
New Zealand WA 6100

Contacts: Phone: +643 9422445 (08) 9472 7447
cepoynton@hotmail.com shefachen@tianda.com

Date: 17 September 2010

Mapsheets: Mt Peake 1:250,000 Anningie 1:100,000

Datum: GDA 94 zone 53
Executive Summary

During a brief visit to Tianda’s Central Mount project by Terra Search staff in 2008, encouraging uranium samples were collected and gave results of up to 89ppm of the element. These results justified a more detailed investigation.

During April 2010, EL25694 was investigated by a Terra Search geologist and field assistant. Their objective was an area near the western boundary of the tenement, where uranium anomalism had been found in ferruginized sandstone and in nearby ironstone veins.

While in the area, the crew took 85 rock chip and 174 soil geochemical samples. Several stream calcrite deposits were discovered, as well as a complex of ironstone veins. The disposition of the ironstone veins appears to be controlled by a major fault and its conjugates. The northern area, centred about a radiometrically-active vein, has been designated as the Archimedes prospect. A second, more scattered southern anomaly has been dubbed the Bragg prospect.

Much of the area was covered by colluvial and alluvial deposits. Outcrop, subcrop and lag were mapped, as were structural data. These data were recorded on hand GPS units and downloaded onto a computer in the field. As the dykes were ferruginized and probably magnetic, a detailed ground magnetometer survey was performed, of 120 line-km over 3.8km². After processing, this revealed tabular bodies parallel to the dykes, as well as a number of cylindrical bodies, probably dolerites. Neither the tabular nor cylindrical bodies have any surface expression.

ICP-MS of the rock chip samples returned a number assays in the Archimedes prospect in the range 100 – 299ppm of uranium, over a strike length of 160m. Further south, in the Bragg prospect, they were lower but still gave values of 40 – 70ppm over a strike length of about 700m. No other element gave commercially-significant results, with the possible exception of iron. Uranium soil geochemical assays were in the range of 3 – 6ppm, with a few higher returns in the vicinity of the outstanding rock chip assays.

In July 2010, a return visit was made to the prospects. Apart from detailed rockchip sampling of 11 traverses, a gamma ray spectrometer survey was performed on the same traverses. Also, magnetic susceptibility determinations were undertaken of all of these samples, as well as of other rock specimens in the tenement. Altogether, an additional 149 rock chip samples were taken, of which 145 had gamma ray spectrometry performed. An additional 50 locations on a twelfth traverse also had spectrometer and magnetic susceptibility data recorded, but were not sampled for geochemistry.

It is recommended that a program of reverse circulation drilling along the strike of the various ironstone veins and magnetic anomalies. A total of seventeen holes, generally oriented in a northeasterly to southeasterly direction, is planned. These will be at a dip of 60 degrees and up to 200m drill depth.
Contents

Executive Summary

1. Introduction 3
2. Location and Access 4
3. Tenement Status 5
4. Geology 6
4.1 Regional Geology 6
4.2 Local Geology 6
5. Geological Exploration 7
5.1 Previous work 7
5.2 Tianda 2008 and 2010 programs 8
5.3 Navigation 8
5.4 Photography 8
5.5 Geological Field Work 8
5.5.1 Ironstone/gossan 10
5.5.2 Calcrete deposits 12
5.5.3 Northern Area 12
6. Geophysics 14
6.1 Airborne Radiometrics 14
6.2 Ground Magnetics 15
6.3 Processing of Ground Magnetic Data 15
6.4 Interpretation of Ground Magnetics 17
7. Geochemistry 18
7.1 Detailed sampling 19
7.2 Another ironstone discovery 29
8 Proposed Drilling Program 31
9 Conclusions and Recommendations 32

Figures

Figure 1: Location of and access to EL 25694 Central Mount 4
Figure 2 Sub Block Diagram EL 24694 5
Figure 3 1:250000 Geology of EL 25694 7
Figure 4 Historic exploration licenses in area of EL 25694 7
Figure 5 Sandstone, sample locations, over anomalous area 8
Figure 6 Field mapping of radioactively anomalous Archimedes (north) area 9
Figure 7 Hilltop ironstones (in red) at southern (Bragg) end of prospect 10
Figure 8 Ironstone outcrops, subcrop and lag in the southwest of EL 25694 10
Figure 9 Archimedes Prospect: Photograph locations 11
Figure 10 Calcrete search (purple) and occurrences (red) 12
Figure 11 Dolerite outcrop in northern area: inset of xenolith in dolerite 13
Figure 12 Airborne radiometrics over EL 25694 14
Figure 13 Comparison of ground magnetics processing over anomalous area 15
Figure 14 Analytic Signal overlaid by geology outlines 16
Figure 15 Interpretation of Analytic Signal magnetic data 17
Figure 16 Traverse 1 uranium, iron and phosphorus chemistry 20
Figure 17 Traverse 2 ICP-MS assays of Fe, P, U 20
Figure 18 Traverse 1 & 2 mag sus and spectrometer Uppm on Analytic Signal 21
Figure 19 Traverse 3 Fe - P - U geochemistry in Bragg prospect 21
Figure 20 Traverse 4 Fe - P - U geochemistry in Bragg prospect 22
Figure 21 Traverses 3 & 4: magnetic susceptibility and spectrometer uranium on Analytic Signal  
Figure 22 Traverse 5 Fe - P - U geochemistry in Bragg prospect  
Figure 23 Traverse 5: magnetic susceptibility and spectrometer uranium on Analytic Signal  
Figure 24 Traverse 6 Fe - P - U geochemistry in Bragg prospect  
Figure 25 Traverse 7: magnetic susceptibility and spectrometer uranium  
Figure 26 Traverse 7 Fe - P - U geochemistry in Bragg prospect  
Figure 27 Traverse 8 may be tested with two drillholes  
Figure 28 Traverse 8 Fe - P - U ICP geochemistry in Bragg prospect  
Figure 29 Traverse 9 magnetic susceptibility and spectrometer uranium on Analytic Signal  
Figure 30 Traverse 9 Fe - P - U ICP geochemistry in Bragg prospect  
Figure 31 Traverse 10 ICP Fe - P - U geochemistry in Bragg prospect  
Figure 32 Traverse 10 magnetic susceptibility and spectrometer uranium on Analytic Signal  
Figure 33 Traverse 12 elevation profile  
Figure 34 Traverse 13 elevation profile  
Figure 35 Northern ironstone discovery and Archimedes, Bragg Prospects

Appendix
Plate 1 Bragg prospect: Geology, ICP assays overlaid on Google image 1:2000
Plate 2 SE Bragg prospect: Geology, ICP assays overlaid on Google image 1:500
Plate 3. Archimedes prospect: Geology, ICP assays overlaid on Google image 1:500
Plate 4. EL 25694 photo locations, general
Plate 5. Photo locations, Archimedes and Bragg prospects
Plate 6. EL 25694 Analytic Signal with geological boundaries and proposed RC drilling
Plate 7 Archimedes Prospect, Traverses 12 & 13: spectrometer uranium ppm
Plate 8 EL 25694: additional ironstone potential
Plate 9 Archimedes Prospect, Traverse 12: ICP U assays
Printout in PDF format of geochemical assay results
1 Introduction

Tianda Uranium (Australia) Pty Ltd’s Central Mount project is situated near Central Mount Stuart, about 200km north of Alice Springs in the Northern Territory of Australia.

The Exploration License EL 25694 was reconnoitred in 2008 by staff of Terra Search Pty Ltd, exploration consultants based in Perth and Townsville, Australia. They investigated a number of airborne radiometric anomalies to establish whether they had commercial potential for uranium.

Several of the radiometric anomalies were attributed to hot granite, but one on the western extreme of the tenement showed considerable potential, with assays up to 89ppm of uranium. Given these encouraging results, the tenement was revisited in April 2010 for a more detailed investigation.

Terra Search geological personnel spent a week in the area, performing field scintillometer surveys, mapping outcrop, taking 83 rock chip and soil geochemical samples. Further areas elevated radiometric activity was encountered, as well as a complex of gossan ironstones. In May, a magnetometer crew were mobilised into the project, acquiring 120 line kilometres of data over 3.8 square kilometres of ground.

The rock chip and soil samples were assayed for 61 elements using ICP-MS or ICP-OES. These assays revealed a number of points with uranium between 100 and 300ppm, and many more in the range 30 – 100ppm. The “gossan”, though containing slightly elevated copper and cerium assays, was not found to be a base metal project.

In July 2010, Terra Search crew returned to the tenement and conducted further mapping and sampling work. A gamma ray spectrometer was used in the search for further uranium mineralisation and sixteen rock chip samples taken because of their elevated activity. Furthermore, a detailed rock chip sampling program was performed over outcrops of hematitic ironstone present as veins throughout the project area.

The magnetic survey revealed interesting lineaments after Analytic Signal processing. These, and other cylindrical features, had no surface expression. They are probably caused by quite different lithology to what appears in nearby outcrop.
2 Location and access

Exploration License EL 29694 is located about twenty kilometres west of the summit of Central Mount Stuart and is accessible from Stuart Highway by a turnoff 15km north of Ti Tree Community. This turnoff to Anningie station is also about 160km south of the Devils Marbles. The Ti Tree settlement is 180km north of Alice Springs and can provide fuel, a limited range of provisions, telephone, basic accommodation and water.

The tenement is on Anningie Station, owned by Steve Fogarty. He can be contacted on (08) 8956 9748 or in Alice Springs on 8952 1750. The station homestead is to the south of the graded road but the turnoff is unsigned and easily missed.

As can be seen from the map in Figure 1, access to the Exploration License is possible along fence lines south of a large hayshed about 100m north of the road. This is suitable only for small 4WD vehicles and will require a makeover with a bulldozer and grader before heavy equipment can be mobilized to the prospect. Alternatively, it may be possible to construct access from an abandoned bore indicated in Figure 1, but this shorter route requires a field survey to assess its practicability.

Even though there is access along the western fenceline, the reader should be aware that no internal access is available within the tenement. Some open ground exists between the fenceline track and the area of interest (shown in red on the left-hand map in Figure 1) but the dry creekbeds are densely vegetated and are a hazard for a Toyota Landcruiser to cross. Heavier equipment will require earthmoving to cross the creeks.

Limited quantities of brackish water can be obtained from a tap at the rear of the hayshed. Drinking and drilling water will need to be brought from outside sources, such as Ti Tree. Saltwater Bore (located on the northeastern boundary of the tenement) is abandoned and dry.
3 Tenement Status

<table>
<thead>
<tr>
<th>BID MAP Block No</th>
<th>Sub-Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alice Springs</td>
<td>1599 3</td>
</tr>
<tr>
<td></td>
<td>xyz</td>
</tr>
<tr>
<td>Alice Springs</td>
<td>1600 1</td>
</tr>
<tr>
<td></td>
<td>v</td>
</tr>
<tr>
<td>Alice Springs</td>
<td>1617 15</td>
</tr>
<tr>
<td></td>
<td>cdehjknopstuxyz</td>
</tr>
<tr>
<td>Alice Springs</td>
<td>1672 12</td>
</tr>
<tr>
<td></td>
<td>abfghlnmqrvw</td>
</tr>
</tbody>
</table>

Figure 2 Sub Block Diagram EL 25694

EL 25694 has its boundaries as shown on Figure 2. It is altogether 31 graticular blocks, covering a total of 97.69 square kilometres. It was granted to Tianda Resources on the 23 August 2007 for a period of 6 years.

The 31 sub-blocks are as follows:
4 Geology

4.1 Regional Geology

The Arunta Region is a complex basement inlier in central Australia that has undergone a prolonged history of sedimentation, magmatism and tectonism extending from the Palaeoproterozoic to the Palaeozoic. This interesting array of metamorphosed rock assemblages ranging from high-grade metamorphic to granitic gneiss terrains is very prospective for mineral discoveries. The Arunta Region can be subdivided into three, largely fault-bounded areas with distinct geological histories; the Aileron, Warumpi and the Irindina Provinces. The presence of major structures also enhances the Provinces’ potential for ore deposits.

The Aileron Province comprises greenschist to granulite facies metamorphic rocks with protolith ages in the range 1865 – 1710 Ma. It forms part of the North Australian Craton and is geologically continuous with the gold-bearing Tanami and Tennant Creek Regions to the north. In contrast, the Warumpi Province consists of amphibolite to granulite facies rocks with protolith ages in the range 1690 – 1600 Ma and is interpreted to be an exotic terrane that accreted to the southern margin of the North Australian Craton at 1640 Ma.

A number of metal occurrences of copper-lead-zinc, gold, tin, tungsten, tantalum, nickel and chromium are known in the Arunta Region. There is significant potential for gold in the northern and western Aileron Province adjacent to the Tanami area and untested base metal prospects in the Warumpi Province. The Anningie Tin Field is located about 20 kilometres west of the tenement.

4.2 Local Geology

The outline of the exploration license, overlaid on the 1:250000 geology of the Mt Peake sheet, is shown below.

The geology of the Mount Central EL 25694 project is dominated by Proterozoic granite, overlain by Tertiary ferricrete and Quaternary alluvium. Several drainage systems are sourced from the granite, flowing to the northeast. These systems have potential for palaeochannel uranium enrichment and possible calcrete hosting of uranium. The map below shows a number of quartz and pegmatite veins throughout the granites in the tenement.

In particular, the area of the uranium anomalism was mapped as being comprised of red Quaternary soils, ferricrete and mica schist. River gravel has been marked to the north of the area.
5 Geological Exploration

5.1 Previous work

An evaluation of previous exploration in the area was undertaken in 2008 and reported at that time. There had been eight previous tenements covering the area of interest and these are detailed below for reference.

Eight historic exploration licenses were found to intersect EL 25694. These were EL1447, EL1881, AP2854, EL9814, EL5985, EL5800, EL2437 and EL7557. Of these, the last (EL7557 had ten reports covering the period 1994-1999.

Of the ELs, 9814 exactly covered almost exactly the same ground as the existing tenement, but the abstract records the “no further work was conducted.” EL 7557 only covers a sliver of ground a block or two wide on the north and east of the tenement, while EL 1447 covered it all (and much more). The distribution of the more important of these historic exploration licenses is shown in Figure 4.
5.2 Tianda 2008 and 2010 Programs

During 2008, Terra Search Pty Ltd staff visited the tenement, inspecting the surface features for radioactivity associated with airborne geophysical anomalies. Most were associated with hot granites, but in the far west of the tenement, a gossanous vein gave elevated counts. This, and nearby hot scree, was sampled and gave assays of up to 85ppm of uranium at 315616E 7571892N.

This sample and others nearby also gave elevated assays for copper, phosphorus, cerium and vanadium. The results of the 2008 exploration program are reported in the 2008 Annual Report for the tenement.

The elevated assays for uranium and other elements justified further investigation of the area.

EL 25694 Central Mount was further explored during April and July 2010 by Terra Search Pty Ltd staff. The anomalous uranium occurrence observed in the 2008 field season was revisited, mapped and a program of soil geochemistry and rock chip sampling undertaken. Further exploration of the surrounding area was performed, with emphasis on exploration for additional gossans, radiometric anomalies and calcrete occurrences.

5.3 Navigation

Most mapping was performed with Garmin GPS devices, in this case being the map60 and eTrex Vista models. These GPSs have a field accuracy of about 5 metres, adequate for reconnaissance mapping and far better than the precision possible from air photo interpretation. The disadvantages of these devices are that the geologist must walk around the outcrop, and only one outcrop can be mapped at a time. These outcrop tracks and point data have to be entered by a keyboard of very limited functionality. Track and waypoint data are uploaded to a computer and saved into Mapinfo and other formats. Interim maps were generated with GPS Trackmaker, quickly allowing the field geologist to see and update the day’s fieldwork. These GPS Trackmaker maps appear in Figures 5 – 8 of this report.

5.4 Photography

Many photographs were taken during the investigation, usually of rock chip or petrological samples. These have mostly been at a scale where it is possible to view detailed structure of the sample. Image files are included in the digital compilation of this report and the locations are shown on Plates 4 and 5.

5.5 Geological Fieldwork

The area around and to the south of the radiometric anomaly was mapped and investigated with a scintillometer. The outcrops were found to be mostly a limonitic medium-grained sandstone. While walking the perimeter of these outcrops, occasional pegmatites and radiometrically-anomalous sandstone were found and sampled. The outlines of the sandstone are shown in Figure 5.

Figure 5 Sandstone, sample locations, over anomalous area
Particular attention was then paid to the area highlighted in red in Figure 5. It was here that interesting results were obtained in the 2008 field trip. A radioactive vein was found nearby and detailed sampling and mapping undertaken.

Figure 6 Field mapping of radioactively anomalous (Archimedes) area

Apart from the outlines of outcrops, rock chip sample locations and a structural data point appear on the above map. Later ICP geochemical analysis gave results of up to 299ppm of uranium in this area. Photo 3152 below shows the anomalous radioactive sandstone.
5.5.1 Ironstone/gossan

Due to the limitations of using GPSs to map outcrops, the presence of ironstones on top of the sandstone outcrops had been noted while mapping the sandstone, but had not been mapped. Closer examination revealed them to be vertical veins, rather than lateritic ironcaps. These ironstones were mapped and sampled later in the program.

Figure 7  Hilltop ironstones (in red) at southern (Bragg) end of prospect: note that individual veins strike at about 335 degrees, while the overall orientation of the outcrops is about 60 degrees. The veins are approximately vertical.

Some ironstone subcrop and lag had been seen while driving through to the anomalous area. When mapped, these were on a similar strike with the individual ironstone veins shown in Figure 7. These subcrop and lag ironstones are shown in Figure 8.

Figure 8 Overall distribution of ironstone outcrops, subcrop and lag in the southwest of EL 25694
A number of photographs were taken of the ironstone veins and adjacent sandstone. Most of these do not appear in the report and are included in the attached digital files. Photo 3142 below shows one of the more promising ironstones in the Archimedes Prospect, at the north of the ironstone vein system. Figure 9 shows the locations of photographs in the Archimedes Prospect while Plates 4 and 5 in the Appendix show photo locations elsewhere.
5.5.2 Calcrete deposits

A significant calcrete outcrop was observed in a creekbed along the access track near the exploration camp, extending into the adjacent ground. This was mapped and two days spent attempting to find more deposits within the tenement. Though considerable effort was expended walking along dry creekbeds, this was found to be slow and laborious, and a strategy adopted of checking creekbed sediments at intervals of about a kilometre. Apart from the small occurrences mapped in red on Figure 10 below, the traverses made in search of calcretes were unsuccessful. The walked tracks are shown in purple.

Apart from the calcrete on the border fenceline, none had encouraging radiometric signatures. Later analysis cast doubt as to whether the material could be labelled “calcrete”, as the highest Ca abundance in any of them was 0.5% and most were around 0.1% Ca. On the other hand, the aluminium assays were in the range of 3 – 7%, indicating that the white mineral may be kaolin or bauxite.

5.5.3 Northern Area around 314900E 7575330N

An ASTER anomaly was investigated at 314900E 7575330N, though no airborne radiometric anomaly had been indicated in the area. Granite, pegmatites and quartz outcrops were mapped, but particular interest was taken in a fine-grained mafic intrusion. This was mapped as dolerite, but may be an amphibolite as described in the legend of the Mt Peake 1:250,000 geology map.
This dolerite/amphibolite was considered a possible cause of bullseye magnetic anomalies discussed in Section 6.2.1 and shown in Figures 14 and 15.

Figure 11 Dolerite outcrop in northern area: inset photograph of xenolith in dolerite
6 Geophysics

6.1 Airborne radiometrics

The area was flown for magnetics and radiometric data, which is archived as the Mount Peake program. An image of the raw uranium data is shown below. This was acquired on a 400 metre line spacing which could well miss an economic mineralisation.

The airborne image identifies granite outcrops as radiometric highs. The low radiometric areas are under sedimentary cover. The highly-motile uranium has been leached from the soil, which itself acts as a barrier to gamma radiation from depth.

The publicly available Northern Territory airborne uranium data had the following appearance when the highest points were plotted as an overlay on the 1:250k geology map. A number of radiometric anomalies were identified and became the objectives of the 2008 reconnaissance exploration effort. Most of the radiometric anomalies were located over granite outcrops. However, in the prospect area, the anomalous values were associated with sediments.
6.2 Ground magnetics

During the geological mapping of the prospect, it was observed to be covered by extensive sediments. The outcrop area accounted for only a few percent of the project, with alluvial and colluvial deposits obscuring the remainder. The principal uranium anomaly disappeared under scree and sediments within ten metres of very encouraging rock chip assays of 200 – 300ppm of the element. The association with gossans justified a detailed magnetometer survey, which should reveal iron-rich rocks.

A program of ground magnetometer acquisition, on west-to-east lines at 50m and 25m spacing, was run between 314500E and 316100E, from 7570400N to 7572750N. Between 7570950N and 7572300N, the line spacing was closed to 25m. The spatial sampling interval along-line depended on the walking speed of the operator, and varied between 5 and 20 metres. A total of 120 line-kilometres were acquired, covering about 3.8km².

Processing of the data included leveling to produce the Total Magnetic Intensity (TMI), followed by Reduction to Pole (RTP), First Vertical Derivative (1VD) and Analytic Signal (AS). This processing was undertaken in the Perth offices of Terra Search Pty Ltd. All of these images were overlaid with outcrop geology and assay data for interpretation.

![Image](rtp_1vd_as.png)

Figure 13 Comparison of ground magnetics processing over anomalous area

6.3 Processing of Ground Magnetic Data

The Total Magnetic Intensity (TMI) data fails to correct the position due to the inclination and declination of the magnetic vector. This results in mis-location of magnetic anomalies, and distortion in their shape and orientation. These distortions may be dealt with using RTP corrections, but this algorithm has problems at low magnetic latitudes, especially for N-S oriented features.

Analytic Signal (AS) overcomes these difficulties, allowing magnetic anomalies to be more adequately interpreted. This is particularly relevant in the Northern Territory, which is at low magnetic latitude and in EL 25694, where there is a N-S strike in the project area. The three panels in Figure 13, with RTP on the left, first vertical derivative (1VD) in the centre, and AS on the right, show the latter to give the best outcome.

Overlaying the Analytic Signal data set with field geology outlines reveals that very little of the outcrop corresponded with magnetic anomalies, as shown in Figures 14 and 15.
In July 2010, a magnetic susceptibility meter was taken to the tenement. This was with the purpose of determining which outcrop, if any, might provide magnetic characteristics that would produce the substantial anomalies within the prospect. A larger image of the Analytic Signal data is in the Appendix as Plate 6.

The presence of anomalies on the eastern or southeastern margins of the ironstone outcrops (60 – 100m further east) could be a processing chimera and that the cause is the outcrop itself. However, the direction of displacement varies from northeast to southeast, indicating that the cause is geological, not a geophysical artifact.

Inspection of the ironstones on the ground reveals no outcrop of any kind on their eastern side. There is only ironstone scree, sourced from the veins themselves.

Outlines of the Analytic Signal anomalies were loaded into a GPS and a field search made for any possible source. There was a striking correlation between the anomalies and a total absence of outcrop. Whatever lithology produces the anomalism must be readily weathered and eroded to below the surface level.
6.4 Interpretation of Ground Magnetics

The interpretation shown in Figure 15 shows tabular features on the eastern and southeastern sides of the gossan/ironstone outcrops. Two smaller tabular features are shown south of the fault at about 315750E which have no associated ironstone. During a return visit in July 2010, a thorough search was made in this area for ironstone without success. There was a substantial sandstone outcrop with some quartz veining on the eastern side.

Field observation of the eastern margins of the ironstones was that they were quite abrupt and the veins dipped almost vertically, so the anomalies probably have some other cause.

A number of anomalies attributed to vertical cylindrical bodies are observed. Again, there is no outcrop to indicate the cause of these, but the legend on the Mount Peake 1:250,000
geological map mentions amphibolite dykes and plugs. A dolerite outcrop was mapped nearly 3km north of the survey at 7575330N and these anomalies might have a similar cause. In July 2010, the dolerite was visited and magnetic susceptibilities were obtained. These were surprisingly low, indicating that the dolerite was unlikely to the cause of a large magnetic anomaly.

Whatever the cause of the magnetic anomalism, it must be in rocks which are far less resistant to weathering than the ironstone, sandstone and granite seen in outcrop. It is proposed to drill the cylindrical anomalies, as they might be the primary mineralisation.

7 Geochemistry

During the 2008 reconnaissance of EL 25694, a number of encouraging assays were obtained from rock chip samples. In particular, sample MP19 (at 315616E 7571892N) gave ICP-MS results of 84.9ppm U, with several others in the range of 50 – 57ppm. High values for cerium, copper and vanadium were also observed within the area. These encouraging results warranted further investigation of the prospect, with detailed mapping and geochemical sampling of highest priority.

Analysis was performed in 2010 by ICP-MS or ICP-OES at the Perth laboratories of Labwest Minerals Analysis Pty Ltd of Malaga, Western Australia for a total of 61 elements.

Rock chip sampling was undertaken in conjunction with geological outcrop mapping, with a scintillometer to guide the geologist to the most active zones. Some of the rockchip samples were taken of unprospective outcrops for orientation, while others were of gossans and lag that were being checked for base metal mineralisation. Many of these samples were photographed during acquisition.

Soil geochemical samples were taken around a number of outcrops that stand as separate hills. The objective was as a backup to rock chip sampling, which might miss an important mineralisation that could be observed in soils as a halo at the base of the hill.

A grid of –80 mesh soil geochemical samples was obtained over the gossan area. These were acquired on a 50m line spacing and 25m sample interval. The limits of the area were defined by drainage channels, beyond which transported material would make the results difficult to interpret.

The rock chip and soil geochemistry for the northern Archimedes prospect, overlaid on a Google Earth image with geology outlines, is in the Appendix as Plate 3. The highest assays obtained were 299 and 277ppm U, with a number of others above 100ppm. The associated copper and phosphorus assays indicate that the uranium might be present as torbernite Cu(UO2)2(PO4)2.10H2O.

The southern Bragg prospect, though demonstrating some interesting structural geology, had lower uranium assays in the rock chips, the highest being 67ppm in a lag sample but otherwise less than 45ppm and as low as 10ppm in the gossans.

Generally, the soil geochemical sampling was unexciting in the northern Archimedes prospect, with assays around 5ppm. These rose to 10 – 25ppm near the radioactive outcrops. In the southern Bragg prospect, soil assays were in the range of 4 – 10ppm.
The Bragg geochemistry can be also be viewed as an overlay on a Google Earth image can be seen as Plates 1 and 2 in the Appendix.

Though the soil geochemistry does reflect the very elevated values found in nearby rock chip samples, it does so rather indifferently. The magnitude and dynamic range of the rock chip uranium concentrations is far more impressive and indeed, based on the soil geochemistry, it would be quite possible to miss the mineralisation completely. This outcome discouraged the further use of –80 mesh soil geochemistry as an exploration tool.

7.1 Detailed Sampling

When revisiting the tenement in July 2010, a program of detailed sampling of the ironstone outcrops was performed. The objective was to define a possible iron ore resource, and also to understand the possible uranium mineralisation within the ironstone outcrops.

The prospect resembles that of Uranium Exploration Australia’s Crystal Creek occurrence, also in the Northern Territory in the Arunta Inlier. The Crystal Creek prospect is described as “Uranium is associated with ironstone and is hosted in an East Northeast bearing shear within greisenised (altered) monzogranite of the Southwark Granite Suite, part of the Arunta Inlier. The structure can be traced for a distance in excess of 3,000m and varies in width from 30cm to 12m, averaging 3m.” The accompanying photographs bear surprising similarity to the Central Mount mineralization.

A word about positioning is in order here. GPS has been used throughout, but at the scale of the maps (1:500 or less), the five metre error is observable. It is also greater than the one metre separation between samples. The end-points of Traverses 1 – 10 were recorded, with the intermediate points interpolated. On the ground, the separation was measured with a tradesman’s steel rule and the locations indicated with fluorescent spray paint and labelled using a paint marker. Should greater precision be necessary, the locations can be picked up in the future using DGPS.

The GPS positions of every point on Traverses 12 and 13 were recorded. Some of the irregularities in the lines can be attributed to the 5m error, though they also may be due to the difficulties of walking lines through thick scrub over uneven, rocky ground.

Traverses 1 and 2 Bragg Prospect

These traverses have been planned on the southern ironstone outcrops. These outcrops are of a similar nature (but maybe better developed) to those of the northern Archimedes prospect. They are characterised by upstanding ironstone outcrops, slightly uranium enriched.
It was requested by the client that a number of shorter traverses be acquired in this area, cutting the outcrop orthogonally. They were designed to encompass as much ironstone as was feasible.

As with many of these images, this figure is difficult to read at the scale which could be printed on here and is instead reproduced at a larger scale in the Appendix.

Traverse 1 on the southwestern side generally has higher uranium values, but at 25 – 30 ppm are not particularly interesting. Traverse 2 is rather lower. All samples were tested for their magnetic susceptibility. The values for these traverses were very low, consistent with being comprised of hematite and devoid of magnetite.

Though the uranium chemistry on Traverse 1 is not encouraging at around 10 – 12 ppm, it returns consistently high Fe assays in the range of 43 – 47% over a width of about ten metres. The high phosphorus assays of up to 0.5% detract from this result. Traverse 2 demonstrates similar characteristics.
Traverses 3 and 4 Bragg Prospect

Also located over prominent ironstone outcrop, these again show low uranium concentrations with the gamma ray spectrometer. They were in the range of 10 – 20ppm.

The magnetic susceptibility of these samples was low, about 1.0 SI units. Again, this indicates that the iron enrichment is hematite, rather than magnetite.

Hole CMRC 13, to the north and approximately parallel to Traverse 4, is intended to test the largest of the ironstone veins in the area. It is expected to commence in sandstone, pass through ironstone, then terminate in whatever lithology might be causing the previously-mentioned Analytic Signal anomaly.
Figure 20 Traverse 4 Fe - P - U geochemistry in Bragg prospect

Figure 21 Traverses 3 & 4 mag sus and spectrometer Uppm on Analytic Signal

**Traverse 5**, like 1 – 4 above, showed indifferent results both for spectrometer determinations of uranium and with the magnetic susceptibility. Hole CMRC 12 has been planned just to the north and roughly parallel to Traverse 5. It is expected to start in sandstone, intersect about
seven metres of ironstone, then enter the unknown lithology producing the Analytic Signal anomaly.

The ICP analyses of this traverse are shown below, but will be more legible in the A4 diagram in the Appendix.
**Traverse 6** is the first of these detailed traverses to show anomalous uranium, at 35 – 40ppm. This comes with a reduced iron and phosphorus content. It should be noted that there is a minor error with the location of this traverse, which should be about ten metres further north. Like all others, it is clearly and permanently marked in the field.

![Figure 24 Traverse 6 Fe - P - U geochemistry in Bragg prospect](image)

**Traverse 7**, on the other hand, gave encouraging uranium determinations with the spectrometer. This traverse was acquired over outcrop that had given some encouraging ICP-
MS and spectrometer results. This traverse is also closest to the magnetic anomaly of any of the ironstones in the Bragg Prospect, and has high uranium assays.

Three of the spectrometer determinations were about 60ppm. Though explored on the surface, some drilling beneath these consistent anomalies is justified. CMRC 11 is planned to intersect the ironstone a few metres north of the traverse.

![Figure 26 Traverse 7 Fe - P - U geochemistry in Bragg prospect](image)

The ICP assays for Traverse 7 gave encouraging results for uranium, with several values in the range 60–70 ppm U. Iron assays were in the range of 40–46% over a width of 8 metres, along with elevated concentrations of phosphorus. The spectrometer and ICP results for uranium were generally similar.

**Traverse 8** was taken over some ironstone subcrop, which itself was surrounded by an extensive area of ironstone lag and quartz scree. It showed indifferent gamma ray spectrometer results, though earlier ICP-MS determinations were a bit more encouraging at 20–67ppm. There is no Analytic Signal anomaly near this ironstone.

![Figure 27 Traverse 8 may be tested with two drillholes.](image)
Two holes are planned at this location, CMRC 10 going to a TD of 70m and intercepting the ironstone at about 35 – 40m. This will be above CMRC 09, which should intersect the ironstone at a depth of 90-100m.

The outcome of ICP analyses of Traverse 8 were in line with the poor results from the gamma ray spectrometer. Uranium concentrations were in the range of 7 – 15ppm, while the iron percentage was below 40%.

Traverse 9 was intended to test a newly-discovered subcrop adjacent to one which had had an ICP-MS assay of 40ppm. Disappointing results in the range of 6 – 16ppm were obtained with the gamma ray spectrometer.

Figure 29 Traverse 9 mag sus and spectrometer Uppm on Analytic Signal
The magnetic susceptibilities of samples on this traverse were consistent with elsewhere in the prospect, being in the range of 0.7 – 1.0 SI units.

Though the uranium assays were low (8 – 10ppm) on this traverse, the Fe% was interesting at 45 – 48%, with marginally lower phosphorus than elsewhere on the tenement.

Hole CMRC 07 is planned to test these two ironstone subcrops, intercepting them at depths of 40 to 60 metres after passing through the hanging wall sandstone.

**Traverse 10** was sited over an ironstone subcrop at the northwestern extreme of the Bragg Prospect. Only mediocre results were obtained from ICP-MS analysis of rock chip samples in the area (14 – 16ppm U) and a similar outcome was obtained with the gamma ray spectrometer (10 – 13ppm).

An RC drillhole CMRC 06 is oriented to pass under the subcrop at approximately its midpoint.

The ICP analyses shown in Figure 31 confirm the low concentrations of uranium in the area, though the iron content is 44 – 47%, with modest phosphorus content.
Overall, the detailed sampling traverses (1 – 10) in the Bragg Prospect only showed any interesting uranium concentrations in Traverses 6 and 7. In these, up to 70ppm of uranium were encountered, while elsewhere it was low and can be ignored. The iron content of the vein system never exceeds 50% and is plagued by phosphorus impurity as high as 0.5%.

**Traverses 12 and 13 Archimedes Prospect**
The two longest sampling traverses were completed through the Archimedes Prospect. These were numbered 12 and 13 and are shown as an A0 chart in Plate 7 in the Appendix.

The data is overlaid on a Google Earth image. The drillholes CMRC 01 to 05 are oriented to pass through the ironstones at depth, avoiding gaps in between. Each of them is programmed to be certain of intercepting the Analytic Signal magnetic anomaly which lies to the east of the ironstone outcrops.

The image shows the walked outline of colluvium, most of it derived from the ironstone outcrop. This corresponds well with the dark area on the Google Earth data, which on the ground can be seen as ironstone scree. No other lithology was observed during a number of walked traverses through the area east of the ironstone outcrop, covered in quite dense scrub.

This map is reproduced at a more appropriate scale (1:500) in the Appendix. At the time of writing, no assay data was available for the 50 samples taken in Traverse 12. The altitude profile of this traverse is shown below:-
Traverse 13 showed much reduced radioactivity compared with Traverse 12. Rather than have a scattering of rock chip samples through each of the two traverses, it was decided to take all 50 samples on Traverse 12.

On Traverse 12, the highest spectrometer determinations were at the northwestern end, where values in the range of 70 – 100 ppm were encountered in sandstones in or near the “hot zone” which has been the source of interest in the prospect. Further to the southeast, the values generally taper off, but there are some exceptions. Even the southmost ironstone in the Archimedes Prospect returned several high assays, both from the spectrometer and ICP-MS.

Gamma ray spectrometer determinations on Traverse 13 gave a few high values (around 70 ppm) at the northwestern end, but rarely exceeded even 30 ppm on the remainder of the traverse. One significant difference between the two traverses is that Traverse 13 does not cross over much ironstone. It is there that the uranium is concentrated. As the ironstone outcrops are the cause of the relief in the prospect, the altitude profile is more subdued.

The ICP analyses performed on the 50 rock chip samples of Traverse 12 are displayed on an A0 map in the Appendix as Plate 9.

### 7.2 Another Ironstone Discovery

The evening before the crew was due to depart, some additional ironstone was encountered serendipitously while visiting a known dolerite outcrop. The vein was mapped, sampled and a quick search mounted before sunset. It was immediately apparent that a repeat of the southern vein system was possible over quite a large area.
Figure 35 Relationship of northern ironstone discovery to Archimedes and Bragg Prospects
The potential area is nearly four kilometres long and a few hundred metres wide, much of it inaccessible due to gullies and scrub. Further work on the area would have to wait until a crew had the time, provisions and water to explore it properly.

Later mapping onto a Google Earth image showed a general trend at about 150 degrees, similar to the southern vein systems.

8 Proposed Drilling Program

The two southern projects, Archimedes and Bragg, have prominent ironstone outcrops with readily detected radiometric anomalism. Further exploration requires drilling to determine the nature of the uranium occurrence, whether it persists or improves with depth, and its structural features.

Three holes (CMRC 15 – 17) have been planned to test magnetic anomalies that lack any surface expression.

A program of 17 holes has been outlined in as below…

<table>
<thead>
<tr>
<th>hole ID</th>
<th>easting</th>
<th>northing</th>
<th>azimuth</th>
<th>TD</th>
<th>revised depth</th>
<th>dip</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMRC 01</td>
<td>315621</td>
<td>7571983</td>
<td>109</td>
<td>116</td>
<td>80</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 02</td>
<td>315623</td>
<td>7571941</td>
<td>105</td>
<td>140</td>
<td>100</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 03</td>
<td>315608</td>
<td>7571896</td>
<td>95</td>
<td>190</td>
<td>150</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 04</td>
<td>315640</td>
<td>7571848</td>
<td>93</td>
<td>164</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 05</td>
<td>315672</td>
<td>7571803</td>
<td>94</td>
<td>160</td>
<td>100</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 06</td>
<td>314961</td>
<td>7571709</td>
<td>67</td>
<td>130</td>
<td>100</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 07</td>
<td>315056</td>
<td>7571629</td>
<td>64</td>
<td>103</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 08</td>
<td>315083</td>
<td>7571541</td>
<td>72</td>
<td>100</td>
<td>80</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 09</td>
<td>315078</td>
<td>7571505</td>
<td>74</td>
<td>120</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 10</td>
<td>315108</td>
<td>7571511</td>
<td>73</td>
<td>70</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 11</td>
<td>315139</td>
<td>7571460</td>
<td>73</td>
<td>100</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 12</td>
<td>315167</td>
<td>7571186</td>
<td>52</td>
<td>170</td>
<td>110</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 13</td>
<td>315170</td>
<td>7571072</td>
<td>96</td>
<td>190</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 14</td>
<td>315023</td>
<td>7570863</td>
<td>156</td>
<td>133</td>
<td>80</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 15</td>
<td>315275</td>
<td>7571715</td>
<td>68</td>
<td>200</td>
<td>200</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 16</td>
<td>315384</td>
<td>7571583</td>
<td>68</td>
<td>190</td>
<td>190</td>
<td>60</td>
</tr>
<tr>
<td>CMRC 17</td>
<td>315257</td>
<td>7571244</td>
<td>63</td>
<td>200</td>
<td>200</td>
<td>60</td>
</tr>
</tbody>
</table>

2476  1930

This drilling program is shown on Plate 6 in the Appendix.
9 Conclusions and Recommendations

The uranium exploration project on EL 25694 shows considerable promise. This is due to the collection of samples containing elevated uranium concentrations (100 – 300ppm) over a strike length of 160 metres.

The source of mineralisation appears to be deep, magnetic intrusions that have no surface expression. These have released uranium and iron-enriched hydrothermal fluids that have migrated along a wrench fault system within a sandstone. The iron precipitated as hematite within voids created by the wrench fault system. Precipitation of uranium has been both within the hematite veins and also in adjacent sandstone beds.

More geological mapping
During the sampling and mapping campaigns described in this report, the geologist was acutely aware that extensions to the prospects might exist. Walked traverses through the scrub were made in all directions, searching for further outcrop. Instead, Quaternary alluvium was encountered and the search was abandoned.

At the last moment, however, a promising ironstone outcrop was found some kilometres north of known occurrences. This and an adjacent outcrop were sampled. Though the assays were disappointing, several kilometres of strike length need to be investigated closely, mapped and sampled where appropriate.

More ground magnetics
None of the magnetic anomalies have any surface geological expression. The ground magnetics should be extended to the north, south and east, over some outcrop. This is particularly true to the north, where a mapped dolerite may well be similar to concealed cylindrical features near the ironstones.

Should uranium-enriched ironstone and sandstone be found north of the present prospects, detailed ground magnetics would be a valuable tool for evaluating the structural controls in the area. The cost-effectiveness of the method alone would justify extending the survey area.

Furthermore, the line separation of the ground magnetics is uneven, with it being 50 metres for much of the project and 25 metres in the central section. Infill or re-survey to an even 25m spacing is indicated.

Detailed, systematic radiometric survey
The uranium occurrence at the radiometric anomaly may well be repeated along-strike. Though exploration was done with both a spectrometer (in 2008) and a scintillometer in 2010, it was not exhaustive. A systematic ground scintillometer/gamma ray spectrometer survey should be performed, extending kilometres northward to the late-stage ironstone discovery.

Drilling
A program of Reverse Circulation drilling should be implemented, with a total of at least 17 holes for a total of 2000 – 2500 metres.
Plate 3

Archimedes Prospect
Google Earth image overlaid with geology and uranium assays

- Ironstone vein
- Sandstone outcrop
- Sandstone subcrop
- Radiocative sandstone
- Radiocative conglomerate
- Colluvium
- Ferruginous lag

Date: 31 August 2010 Author: Charles Payntons

GDA84 zone 52