SECOND ANNUAL REPORT ON DUNMARRA COOE HILL PROJECT

NORTHERN TERRITORY

Dunmarra Cooee Hill Uranium Project

Exploration Licence: 25841

BY

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1.0 SUMMARY

Exploration Licence 25/841 (Cooee Hill Project, Northern Territory) is located in the Dunmarra sedimentary basin, which has the potential to host unconformity or sandstone style uranium mineralisation.

Processing airborne radiometric images in the 2008 reporting period defined a broad, diffuse north – south trending uranium anomaly over the southern 2/3 of the tenement and a number of small, sharp sub-rounded anomalies to the north.

United Mining Resources Ltd engaged the services of Fortis United Pty Ltd and sub-contractor Geoarc Pty Ltd from Perth to assess the anomalies by on-ground regolith mapping, spectrometer surveys and geochemical sampling.

Traversing off-road was very slow due to extremely thick acacia and undergrowth. Three main regolith domains were encountered: lateritic pisolites and lesser quartz-hematite rich rubble in soil; clayey / sandy / loamy soil in subtle drainage areas; and gentle undulating hills with sandstone scree / rubble / subcrop.

A total of 80 U, Th and K readings were taken with the spectrometer; the majority on a 3000m N-S by 400m E-W grid along 2 traverse lines over the southern area. The survey was effective in defining higher values over the airborne anomaly, but no significant uranium values were returned.

One traverse line of soil sampling (36 samples) was completed on a 200m E-W spacing. Samples were analysed by four acid digest to determine if mineralisation occurs near surface. The analysis technique was effective in defining higher values over the airborne anomaly; however no anomalous uranium or base metal values were returned. The same soil samples were analysed by ionic leach. The Ionic leach technique will define mineralisation beneath thick cover and / or from a greater depth within the Dunmarra basin and / or possibly from the basement rocks beneath the basin. No anomalous uranium, precious or base metal results were returned despite the analysis technique being effective.

Conclusions from interpretation of geochemical results, regolith mapping and field observations indicate the broad, diffuse radiometric anomaly located over the southern 2/3 of the tenement is caused by a transported regolith profile and not by an in-situ uranium source located beneath.

The sharp oval - shaped airborne radiometric anomaly located in the northern region of the tenement was not supported by on-ground spectrometer measurements. It is possible that processing of radiometric data has caused the anomaly: supported by the fact that there are multiple (but lower tenor) small rounded “anomalies” within the northeastern area of E25/841.

Given the poor results, no further work is recommended on the tenement.
2.0 INTRODUCTION

Exploration Licence 25/841 (Cooee Hill Project) is located in the Dunmarra sedimentary basin; one of the newest intra-cratonic basins to form in the Northern Territory (Jurassic Period), with sedimentary input from multiple highland regions. Uranium deposits in the Dunmarra basin could form in a number of ways:

Unconformity style and shale / siltstone / sandstone hosted uranium deposits formed from re-mobilisation of uranium (a highly mobile element) from older sources such as the Pine Creek Block (NW), McArthur Basin (North), Murphy Inlier (SE), Daly Basin (West) and Tennant Creek Block (South).

If any structures occur (possibly limited given the young age of the basin), then reactivation of these structures over a long period of time could result in the re-deposition of underlying basement-derived uranium into the Dunmarra basin.

Suitable aquifers may be present, allowing for the long term movement of possible uranium bearing groundwater to depositional sites.

A field trip to E25/841 was completed in August 2009 to evaluate the significance of a number of coherent airborne radiometric anomalies (Figure 1). Radiometric data was acquired from the public domain and re-processed (to enhance uranium anomalies) during the 2008 reporting period, followed up by field reconnaissance including a first pass scintillometer survey which returned up to 630 counts per second (CPS).

It was thought that the airborne radiometric anomalies may be associated with favourable lithologies which have potential to host uranium deposits. Focus of this field trip was on the broad north-south trending uranium anomaly that covered the majority of the southern 2/3 of the tenement and on two small but well-defined untested anomalies north of the Borroloola Road.
3.0 LOCATION AND ACCESS

The project is located approximately 300km south east of the township of Katherine (Figure 2) and covers an area of approximately 461 km² to the east of Daly Waters. The licence occurs in the Arnold River and Arnold River 1:100,000 topographic sheets and on the TANUMBIRINI 1:250,000 geological sheet.

Access is gained from the north along the Stuart Highway to the Daly Waters and thence 75km east along the Carpentaria Highway. Access within the tenement area is limited to station tracks extending from Cooee Hill. Temperatures are highest in October and November, when the mean maximum is 35-37°C and the mean minimum is 22-24°C. The coolest months are June and July, when the mean maximum is 30-32°C and the mean minimum is 12-15°C, with relative humidity is normally less than 50% during the dry season. The relatively soft climate of the region makes it possible to operate almost all-the-year-round.
4.0 DUNMARRA COOEY HILL LOCAL GEOLOGY

The Lower Cretaceous Mullaman Beds, comprising lateritised claystone, soft grey claystone, impure sandstone, white grey sandstones, and conglomerates extend over the over the majority of EL25841. The sediments outcrop extensively over the north eastern half of the tenement area. Exposures consist mostly of white to light brown highly lateritised claystone with occasional porcellanite and interbeds of fine grained sandstone. Tertiary deposits of laterite and lateritic rubble generally overlie the Mullaman Beds. The laterite is a semi-pisolitic ironstone laterite and varies in thickness from a few centimetres to over 10m. Deposits of residual soils, sands and ferruginous gravels generally occur along the water courses. There are no gazetted uranium occurrences proximal to the tenement area. The Rum Jungle and South Alligator Uranium fields are located 350km to the north west of the tenement whilst the Calvert Hills uranium occurrences are located 490km to the east south east of the project. The Dunmarra Basin contains many minor copper occurrences, though these are largely on the margins to the Dunmarra Basin and also within the McArthur Basin 120km to the east of the tenement area.

5.0 EXPLORATION HISTORY

The Dunmarra Basin as a whole is relatively underexplored in comparison to other Provinces in the Northern Territory. All historical exploration undertaken within the tenement area has been reviewed. Based on the open file reporting from the Northern Territory Geological Survey, there were a limited number of historical tenements that either partially or fully covered EL25841. Historical exploration carried out within the area covered by EL25841 has been carried out since 1970 largely for diamonds and base metals.

Previous exploration conducted both within EL25841 and proximal to the tenement area (EL Number, Year, Report Number, Company) follows;

5.1 AP2781 (1970-1971-Comalco) The Commonwealth Aluminium Corporation Limited (Comalco) carried out extensive exploration for a range of minerals with the focus being on Bauxite in 1970-1971. Field work included drilling and radiometric surveys. A detailed investigation of an airborne radiometric anomaly was also conducted. An extensive vacuum drilling program was conducted using an Edson tractor mounted vacuum rig to bedrock or to a depth of 10m. A total of 276 holes were drilled, of which only 3 fall within the north western corner of EL25841. Hole collars have been digitised into MapInfo by Zephyr. There were no significant results. Three radiometric surveys were carried out;

• Airborne gamma radiation survey

• Surface gamma radiation survey

• Geiger-Probe borehole gamma radiation survey

Counts of upto 2½ times background (90cps) were recorded although the anomalies were patchy and non contiguous. Higher counts were almost all invariably over areas with a dense covering of ironstone gravels and surface lag.

Scintillometer readings were collected for all drill hole samples from the areas outlined within the airborne radiometric anomaly but no readings above background were recorded.

5.2 EL23020, EL23021, EL2302 (2004- De Beers Australia Exploration) De Beers Australia held ground over the tenement area and intended to undertake exploration for diamonds in 2004. No work was reported. 5.3 EL8451 (1994 - Normandy Exploration) EL8451 partly covers the northern half of the tenement area. The licence was applied for to
target base metal mineralisation in the Middle Proterozoic Roper Group. The region is host to the giant MacArthur River (HYC) shale-hosted Zn-Pb-Ag deposit. Exploration carried out included an aeromagnetics and radiometric survey. Data from a petroleum well open file report revealed that the depth of cover in the area is in excess of 150m over the tenement area and in some places up to 450m and the ground was subsequently relinquished.

6.0 EXPLORATION ACTIVITIES COMPLETED

6.1 Field Reconnaissance
Given the large size of the tenement (approximately 25km N-S x 18km E-W) and lack of previous on-ground exploration, field reconnaissance was first completed to locate station tracks and infrastructure outlined on government topographic maps and to determine accessibility off-road. Most of the station tracks detailed on the 1:100,000 Arnold River (Sheet 5765, Edition 1, 1973) and Amungee Mungee (Sheet 5764, Edition 1, 1974) National Topographic Map Series are completely overgrown by thick bush and are no longer traceable. However, Amungee Mungee cattle station pastoralists have since cleared portions of the northern and central-western areas of the tenement and installed numerous fence lines with associated well maintained tracks in places. The pastoralists are currently clearing extensive areas of the central and south-western portions of the tenement and will erect hundreds of kilometres of fence lines. The gas pipeline parallels the bitumen road to the north and has a well maintained gravel road and overlying cleared area. Figure 3 shows updated infrastructure location.
The majority of the tenement is covered by thick to extremely dense acacia trees and thick bush / grass undergrowth; through which neither 4WD nor quad bike can penetrate. Initial plans of hiring a quad bike were abandoned. Fortunately, it was possible to locally hire a two wheel off-road motorbike. Even the 2 wheel motorbike could not penetrate extremely thick expansive areas of bush at times and walking was required. Small to large pockets of moderate to sparse eucalypt + thick grass + termite mounds +/- spinifex occur. Sporadic small areas have been recently burnt as a result of lightning strikes.
Topography over the southern third of the tenement is very flat (300+/-10m ASL), with little variation except for slight lows in areas of drainage (creeks and watercourses) which drain into a creek system about 3km south of the tenement, where a waterhole still had water in it despite no rain for about 6 months. Gentle undulating hills dissected by flat-lying watercourses and minor creeks cover the middle third. The top third of the exploration licence consists of undulating hills up to 30m high with gently sloping to flat terrain in-between. These hills have minor ferruginous - lateritised quartz rich sandstone rubble and sparse sub-crop near the crest; but although it appears in-situ, this is not known for sure. Low lying areas consist of soil (sandy, clayey or loam) +/- <5cm diameter lateritised rounded pisolites and rare +5cm sandstone scree / rubble or lateritic rubble which is unlikely to be in-situ. Drainage areas consist of sand and clayey soil.

Once field reconnaissance was completed and logistics defined, a scaled 1:20,000 map was drawn-up on graph paper and spectrometer / geochemical traverses planned for targeting the airborne uranium anomalies.

6.2 Spectrometer Survey
A spectrometer survey was planned to target the main broad north-south trending uranium anomaly covering the southern 2/3 of the tenement and two small but high tenor anomalies to the north. Initial plans of covering all of the anomalies by systematic traversing on an 800m N-S x 200m E-W grid had to be changed as the thick vegetation dramatically impeded traversing speed. Instead, three key traverses targeting the most intense southern radiometric highs were chosen, as well as one anomaly to the north.

A SAIC GR-135G Explorainium Identifier differential spectrometer was hired to take recordings of U (ppm), Th (ppm), K (%) and total CPS. It is important to be aware that a spectrometer can only measure gamma-ray emissions to a depth of about 40cm (as does an airborne radiometric survey) and so thick transported cover will mask residual uranium anomalies.

6.2.1 Southern Survey
A total of 62 spectrometer readings were taken (UCHS001-27, 29-63 odd numbers, 71-74, 75-97 odd numbers; U, Th, K) on a traverse spacing of 3000m N-S x 400m E-W. Although this spacing is not ideal given strike of underlying lithology / structure is not known due to no outcrop, time constraints did not allow for closer spaced traverses. To determine background levels for U (ppm), Th (ppm), K (%) and total CPS, traverses were started and finished about 1km outside the radiometric high margins. Access to the traverse lines is by a good track trending SE through Amungee Mungee Station homestead.

Before commencing each day, the spectrometer was calibrated using the supplied source to ensure peak stabilisation. At times during the day the spectrometer was automatically required to re-calibrate. The spectrometer was carried on the motorbike in a backpack. Every 400m along the traverse (co-ordinates recorded using a hand held GPS), the spectrometer was checked to ensure background CPS when held facing the air horizontally was normal, then placed flat on the ground (vegetation and scree cover scraped aside) so the recording disc was within 5mm of the surface. Accumulation time was automatically set for 90 seconds and during this time the spectrometer was not moved. When in two-way radio
range, measurements were relayed from the motorbike back to the 4WD vehicle and entered directly onto the laptop to save data entry time.

At each sample point the regolith, vegetation and topography was also recorded so later analysis could determine if they had an influence on U, Th and K values. Refer to Figure 1 for location of spectrometer traverses and Appendix 2 for U, Th, K results and graphs of values along traverse lines. Also included is regolith, vegetation and topography description. **Traverse line 8171000N** is 10km in length and covers the southern-most portion of the airborne uranium anomaly high. Maximum values returned are very low: only 13ppm U, 70ppm Th and 0.9%K. Total CPS are generally <200 and given the low count this was not recorded unless it read +200 CPS. There is minor correlation between spectrometer U values and the airborne anomaly. There is no correlation between higher U values and regolith. Thorium correlates moderately well with the radiometric anomaly; K has no correlation. U and Th weakly correlate with each other.

Regolith encountered is dominantly brown-red loamy soil with 10-20% <2cm diameter ferruginous pisolites consisting of hematite > goethite > limonite. Small patches (<1m wide) of up to 50% lateritic lag <15cm in diameter occur sporadically and sparsely. In places, quartz grain-rich partially lateritised ferruginous lag with the texture and grain size of sandstone is found, suggesting the laterite lag and pisolites are a weathered and / or re-worked product of the sandstone.

**Line 8174000N** is 14km long and covers the middle portion of the airborne uranium high. Maximum values are also low for this line; returning a maximum of 22ppm U, 52ppm Th and 0.7% K. Again, total CPS is generally <200, however readings from 200 to 320 CPS were recorded which correlated well with higher U and Th values. Uranium corresponded very well with the airborne anomaly, as did Th; K had no correlation and is generally <0.1%. U and Th correlate well with each other.

Uranium values correspond moderately well with regolith. Regolith in areas of higher U values consist of 20-30% <105cm diameter ferruginous pisolites in red-brown loamy soil, often with patches of 10-15% <50cm diameter quartz-hematite rich partially lateritised rubble. The rubble is possibly weathered and oxidised sandstone (based on quartz content, grain size and homogeneity); however it may also be a re-worked secondary product and thus it is difficult to say if it is close to being in-situ or if the rubble has been transported a moderate / large distance. Areas low in U and Th (at each end of the traverse) are associated with little to no +1cm pisolites, and soil +/- clayey soil which is light brown to brown-grey in colour (from a lower iron content). The lower U values are therefore likely to be a result of being further away from the lateritised rubble / pisolites where U is better concentrated from iron scavenging. Furthermore, these areas at either end of the line correspond topographically with broad diffuse drainage areas, where U, being a mobile element, is stripped from the regolith easier than in areas of less drainage.

**Line 8177000N**. Given the very low U values recorded, unknown depth of cover and slow traverse speed caused by very thick vegetation, it was decided to survey the northern uranium anomaly first then return to the third line later. Once the northern anomaly was surveyed there was only ½ a day left and so an attempt was made to traverse just the highest uranium anomaly position on line 8717000N. Access from both the north and the west was attempted (no access available from the east) but the acacia vegetation was extremely thick and could not be penetrated by the motorbike; and so except for 1 sample, traversing had to be abandoned.
6.2.2 Northern Survey

A small but strong oval-shaped airborne uranium anomaly about 1500m N-S by 1000m E-W was defined in the northern-central area of the tenement. A weaker but larger anomaly was also defined to the SE near the tenement boundary. The Tanumbirini geological map Sheet SE53-2 (1964, first edition) suggested the anomaly was located over outcropping lower cretaceous sediments as distinct from the southern 2/3 of the tenement which shows lithology being covered by recent (Cainozoic) cover. This made the target worth following-up as it was possibly an in-situ anomaly.

Access to the oval-shaped anomaly is by turning off the Borroloola bitumen road to the north at a windmill/tank just to the west of the western tenement boundary, then following well-maintained tracks along fence lines within the cleared cattle grazing corridor.

Vegetation mostly consisted of extremely thick acacia and other trees which was impenetrable by motorbike. Luckily, a number of old, weakly overgrown narrow tracks had been cleared through the anomaly in N-S, E-W and NE-SW orientations (historic explorers following-up the same anomaly?). Regolith was dominated by red-brown soil, clayey in parts, with 20-40% <1cm pisoliths; the high pisolite content perhaps due to the anomaly being located on moderately flat terrain located down-slope of a hill with a very shallow gradient. No outcrop was found despite what the Tanumbirini geological map indicated. This is not surprising given the entire tenement area was interpreted from air-photo interpretation with one helicopter traverse (as defined on the geological map).

A total of 16 spectrometer readings were recorded (UCHS099-114: U, Th, K) on a 200m spacing along the N-S and NE-SW orientated tracks. Uranium values recorded are very disappointing, with a high of only 8ppm. Maximum Th and K are 25ppm and 0.8% respectively. There is no correlation between the airborne anomaly and spectrometer readings. One possibility for this is that re-processing of the airborne radiometric data in the area is not correct. Figure 1 shows that the NE area has some processing issues as the resultant image consists of multiple segregated blobs of U highs and lows, which does not look geologically correct.

Given the poor results and possible airborne radiometric data processing issue, it was decided not to examine the anomaly to the SE.

6.3 Geochemical sampling

Soil and rock chip sampling was planned to validate the airborne radiometric anomaly and assess if potential exists for uranium and other commodities near-surface and at depth.

6.3.1 Rock chip sampling

One rock chip sample (USCH115) was taken from ferruginous/weakly lateritised sandstone subcrop near the crest of a small hill in the northern area of the tenement (Figure’s 6 and 7). In hand specimen, the rock consists of approximately 30% fine grained quartz (<1mm); homogenous to weakly and finely layered with a strong goethite-limonite overprint and fine colloform specular hematite in places. The sandstone is porous and has minor cavities with white silica precipitate infill.

The rock chip sample was submitted to ALS Laboratory Group in Perth. The sample was crushed then riffle split, with 50% of the coarse residue discarded and 50% pulverised to 85% passing 75 micron. A 250g split was then taken using a scoop (remainder stored in original calico and kept) and 0.25g taken from this split (remainder stored in paper packet and kept). The 0.25g portion was subjected to analysis by four acid “near total” digest; with
Al, Cu, Fe, K, Mn, P, Pb, U, V, Zn determined by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES). Four acid digestions are able to dissolve most minerals; however, although the term “near total” is used, depending on the sample matrix, not all elements are quantitatively extracted.

No anomalous U or base metal results were returned. Fe content was 28%, due to the high goethite-limonite-hematite content. However, the extremely high quartz content makes it unattractive for iron ore mineralisation potential. Refer to Appendix 3 for assay results and laboratory QC.

As it was not clear from field observations whether the rock was an in-situ lower Cretaceous sandstone or a re-worked Cainozoic product of the sandstone, or if the hematite was a product of alteration or weathering, a specimen was sent to “Pilbara Pete” for thin section preparation and “Pathfinder Exploration” for petrographic description (both in Perth).

Petrographic analysis shows the rock is a ferruginous - lateritised or weathered sandstone containing fine angular quartz clasts (22%) as well as accessory tourmaline (1%) and magnetite (2%) clasts. This composition indicates the sandstone may be derived from a variety of source rocks that are dominantly granitic. The rock is not a re-worked weathering product and so this gives confidence that similar rocks seen scattered over the southern / central end of the tenement as scree or rubble is sandstone. However, it does not mean the rubble is in-situ and given the dominant flood plain environment, is most likely transported.

Petrographic analysis also shows the hematite is a product of lateritisation in the weathering profile and not from alteration. This is important to differentiate as in some mineralised systems, hematite alteration can be a indicator / pathfinder element.

XRF analysis was also completed on the hand specimen using a hand held thermo scientific Niton XL2 XRF analyser, with Zr, Sr, Rb, Ti, Ca, Ba, V, Cr, Ni, Cu, Zn, Pb, W, Mn, Fe, U, Th values reported. Results were somewhat similar to the four acid digest assay results. Although the Niton XL2 can analyse approximate results, it is not accurate at low levels and this explains the difference in results between XRF and four acid digest. Furthermore, the XL2 cannot analyse for gold at low levels of detection. Keeping this in mind, results returned possibly anomalous values for Au and Pd (although a specific value could not be given due to the high detection limits). To validate the XRF results, sample UCHS115 should be re-assayed for Au, Pt and Pd.

Petrographic description, photomicrographs and XRF results are located in Appendix 4.

6.3.2 Conventional soil sampling

Conventional soil and rock chip sampling analysis would test for near-surface uranium. Reconnaissance showed that the southern airborne radiometric anomaly is most likely associated with Tertiary deposits of soil / sand / loam / clayey soil +/- loose lateritic pisoliths and minor partially lateritised quartz-iron rich rubble. Estimated thickness (from road cuttings and quarries) of the soil profile is at least 1m; however literature says that the cover can be up to 10m thick. It is not known if the cover is in-situ or transported, but it is possibly mostly transported given the thick watercourses encountered when traversing. Given the thickness of the cover and possibility it is transported, there were major doubts whether conventional soil sampling would be effective. However, given this is first-pass soils, it was decided to test the theory. If conventional soils did work then cost savings would be significant, as other methods such as Ionic Leach or using an auger to reach the bottom of the transported cover is expensive.

A total of 36 soil samples (UCHS028-64 even numbers, 65-69, 76-98 even numbers) were taken on 200m spacing on traverse line 8174000N, at the same point as the spectrometer
reading was taken. As samples were taken for Ionic leach analysis purposes, soil was collected from 10-25cm depth. This is not ideal for conventional soil sampling as it is best to collect it from the top of the B horizon. However, depth to the top of the B horizon is not known (perhaps up to 10m deep).

At the laboratory, once the 100g portion was split from the primary sample for Ionic Leach analysis, the remainder of the sample was pulvérised to 85% passing 75 micron particle size. A 250g split was then taken using a scoop (remainder stored in original calico and kept) and 0.25g taken from this split (remainder stored in paper packet and kept). The 0.25g portion was subjected to analysis by four acid “near total” digest; with Al, Cu, K, Mn, P, Pb, U, V, Zn determined by ICP-AES.

No anomalous uranium or base metal results were returned. U and K values were similar to those recorded from the spectrometer (however no U values from the acid digest were above the lower detection limit of 10ppm). Fe and V values show moderate correlation; as do Al, K and P. Al values correlate well with the regolith profile and vegetation: high where pisolite % is low and eucalyptus is present: low where pisolite % is higher and thick acacia is present. This is expected as Al is more mobile than Fe and has concentrated in the drainage areas. Cu, Pb and Zn correlate moderately well as expected and show a weak correlation with regolith and vegetation type (reason as outlined for Al). Moderate correlation of key elements to regolith and vegetation type indicates the sampling and analysis technique is effective for this terrain.

The lack of anomalous U results is due to either:

- There are no U or base metal anomalies along this traverse near-surface;
- Samples being taken from 10-25cm depth rather than the top of the B horizon thus were not effective.
- The regolith is transported and possibly up to 10m thick thus masking any bedrock anomalies if present. This is most likely the case based on results and field observations.

Given (3) is the likely scenario, a more sophisticated soil sampling technique was used to “see through” the transported cover. (see Section 3.3.3) Refer to Appendix 3 for four acid digest soil results, graphs of element values along the traverse line and laboratory QC.

6.3.3 Ionic Leach soil sampling
In terrains where transported overburden masks underlying geochemical anomalies, a sampling method and corresponding analytical technique has been developed to “see through” the overburden and return well defined anomalous results directly over mineralisation (unlike conventional methods which return more diffuse anomalies which at times are not directly over mineralisation). The method is based on the premise that soil geochemical anomalies over mineralisation are dynamic, and are maintained by an ascending supply of ions from source. The method has been tested over a variety of terrains and in one trial the method defined an anomaly over mineralisation covered in 35m of recently transported overburden (Mann et al, 2005).

Ionic leach analysis will also define mineralisation sourced from deep within the Dunmarra basin or from the Proterozoic basement rocks themselves, as the mobile metal ions will migrate from the basement up through the basin to the near-surface. The unconformity between the base of the Dunmarra basin and upper Proterozoic basement is interpreted (from cross section on the Tanumbirini 250K geological map sheet) to be approximately 300-400m below surface.
Ionic leach analysis involves a static sodium cyanide leach using chelating agents’ ammonium chloride, citric acid and EDTA with the leachant buffered at pH 8.5. This leaching selectively dissolves or solubilises mobile metal ions that have been leached from the primary source, migrated and then redeposited near the surface.

Given the possibility that overburden covering most of EL25/841 is transported and that the basement – basin unconformity is perhaps at a depth of 400m, it was decided to trial the ionic leach method along the same traverse line as conventional soil sampling was completed (8174000N). A total of 36 soil samples (UCHS028-64 even numbers, 65-69, 76-98 even numbers) were taken on a 200m spacing at the same point as the spectrometer reading was taken.

Samples were sent to ALS Laboratory Group in Perth for analysis. A 100g portion was taken from the primary sample using a scoop and the remainder kept for four acid digest analysis. From the 100g, 50g was weighed and then analysed by pH controlled Ionic leach (no crushing or pulverising required); the remaining 50g was kept for lab QC and storage. A package suite of elements were analysed for as the cost was similar to analysing required individual elements.

Ag, As, Au, Ba, Be, Bi, Br, Ca, Cd, Ce, Co, Cr, Cs, Cu, Dy, Er, Eu, Fe, Ga, Gd, Ge, Hf, Hg, Ho, I, In, La, Li, Lu, Mg, Mn, Mo, Nb, Nd, Ni, Pb, Pb 206, Pb 207, Pb 208, Pd, Pr, Rb, Re, Sb, Se, Sm, Sn, Sr, Ta, Tb, Te, Th, Ti, Tl, Tm, U, W, Y, Yb, Zn, Zr were determined by Inductively Coupled Plasma Mass Spectrometry (ICP-MS) and final pH was also determined. Results show that the ionic leach sampling trial worked as elemental groups which should correlate, do:

- Th and U correlate moderately well;
- Au and Ag correlate very well;
- Majority of the Rare Earth Elements (REE’S) correlate very well;
- Fe, Sn, Ti correlate very well.
- Pb 206 / 207 / 208 and Pb correlate very well (and with Ni; although slightly offset).

Uranium values are not anomalous. Au and Ag (and Ba) show higher values towards the west end of the traverse and a small spike in values at the east end; however are not

Refer to Appendix 5 for ionic leach results, graphs of element values along the traverse line and laboratory QC.

**7.0 CONCLUSIONS**

In summary, the following conclusions can be made regarding the broad, diffuse radiometric anomaly located over the southern 2/3 of the tenement:

The uranium anomaly is caused by the transported regolith profile and not by an in-situ uranium source located beneath. Three facts support this statement:

Firstly, four acid digest results do not match ionic leach results for U, Th, Cu or Zn. If the uranium anomaly was in-situ, the two results would be similar.

Secondly, field observations show the regolith is transported as the lateritised pisolites in soil are well rounded (a result of weathering and transportation in this instance) and occupy extensive flat areas covered with thick ‘watercourse’ type vegetation which drain into subtle drainage terrain.
Thirdly, domaining of different regolith environments into low drainage areas and slightly elevated lateritic pisolites + soil regions shows that the uranium anomaly is contained within the pisolite - soil domain. This is expected as iron (in the pisolites and scree / rubble) is a scavenger of U, resulting in elevated U in this domain. By contrast, low drainage areas are depleted in U as U is highly mobile. The domain boundary contrast between low drainage and pisolitic soils thus falsely amplifies the U pseudo-anomaly.

U and Th results returned from the spectrometer survey, four acid digest and ionic leach analysis are not anomalous and are very low.

No other valuable commodities tested are considered anomalous.

The four acid digest sampling and analysis technique is effective for U and Th in this regolith type. However, the sample was not taken from the correct depth for this technique given the transported cover is estimated to be up to 10m deep, and should not be applied to different regolith domains on this tenement without first completing a trial traverse.

The ionic leach sampling and analysis technique appears to have been effective in returning elemental values sourced from in-situ lithology beneath the transported cover. The results do not match four acid digest results, which is correct given those results are a reflection of the transported cover (as supported by the spectrometer survey). Furthermore, various elemental groups correlate well with each other as expected, such as Th, U; Au, Ag; U, Fe, Se; REE’s.

The following conclusions can be made for the sharp oval - shaped radiometric anomaly located in the northern region of the tenement:

The radiometric anomaly is not supported by on-ground spectrometer measurements; U and Th results are very low.

There are no distinct regolith, vegetation or topographic variations which could create the anomaly.

Given 1 and 2 above, it is possible that processing of radiometric data has caused the anomaly: supported by the fact that there are multiple (but lower tenor) small rounded “anomalies” within the north eastern area of E25/841.

Conclusions from rock chip petrographic / XRF analysis:

The rock is sandstone from the Dunmarra basin and not a recent (Territory) re-worked product; giving confidence that assay results from the rock chip are indicative of bedrock signature.

Hematite is a product of lateritisation / weathering not alteration and is thus not important in terms of mineralisation indication.

Niton XRF analysis indicates possible Au and Pd anomalism; however caution is required given the high detection limits for Au using this analyser.

8.0 Recommendations

No further work is recommended on the tenement. However, if exploration activities are planned it is important to realise that the possibility of finding an economic uranium deposit near-surface is low, and the cost of exploring for uranium / other commodities at depth or at
the unconformity with the basement will be expensive. Possible exploration activities are outlined below based on style of mineralisation being targeted.

**Unconformity related uranium mineralisation (Dunmarra basin – basement contact):**

Detailed aeromagnetic survey. Look for signs of intrusives at depth or zones of high magnetic contrasts along shear zones that might mark high redox potential. Check with a geophysicist for line spacing / sensor height to suit that terrain. To determine survey line orientation, lithology strike and dip needs to be determined for the basin and underlying basement.

**Sandstone hosted:**

Unlikely as the hot (elevated uranium) source rock needs to be located within less than 100km (50km ideally) of the tenement and there needs to be evidence of uranium shedding and redistribution. The nearest known hot source rocks to the tenement are 300+km away.

There needs to be the presence of traps / reducing conditions within the Dunmarra basin sediments. Find sites which are bound above and below by impervious layers (necessary to focus the flow of uranium - rich oxidised ground waters within the sandy horizon). Need to have variation in porosity and permeability. Locate sites where there are internal redox boundaries. If possible and if present, determine distribution and geochemistry of conglomerates (e.g.: change in grain size from course to fine), which could act as a pre-concentration and trap site or show re-mobilisation within the same unit (likely to be low grade through). Locate structures which may act as a control for a trap site.

Sample water from aquifers intercepted by station bores to map U distribution.

Continue with the ionic leach soil sampling program. Only one traverse could be completed and even though no positive results were returned, uranium mineralisation could occur beneath transported cover to the north and south. A response ratio for the ionic leach needs to be established. An Airborne magnetic survey is recommended first however as results may define smaller target areas and aid in orientating traverse lines correctly.

**9.0 References**


Refer to Appendix 5 for ionic leach results, graphs of element values along the traverse line and laboratory QC.