EL 30007 1st Relinquishment Report 2016

Tower Rock

GEMPART (NT) P/L

Huckitta SF53-11

Macdonald Downs 5953

(Cu, Pb, Zn, Ag, Au, U, Th, P, REE, Sn, W, Mo, Ta, Nb)

A MACKIE
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SUMMARY
A program of regional reconnaissance combined with preparation of equivalent Uranium /Thorium >5ppm Contour images were prepared from HUCKITTA Radiometric 500m I.s. geophysical survey located digital data flown over the licence area, dominated by highly radiogenic cropping/subcropping Mt Swan Granite assigned to Jinka Domain of Palaeoproterozoic Aileron Province. Although highly anomalous in uranium (grab samples assay 10-30ppm U) Mt Swan Granite is dominated by Thorium, ratio 3:1 thus downgrading prospectivity potential for intrusive-hosted uranium deposits. The licence area is reduced by 7 sub blocks butting up to sub cropping periphery/contact zone of highly radiogenic Mt Swan Granite, essentially devoid of any elevated radiometric signature.

Figure 1.
1 INTRODUCTION
EL 30007 Tower Rock located 200km northeast of Alice Springs overlies an inferred outlier of highly radiogenic 1714Ma Mt Swan Granite however recent Age dating of granite hosting Perenti IOCG prospect about 5km south of licence area returned an age of 1809Ma.

2. LOCATION and ACCESS Figure 1
EL 30007 Tower Rock overlies a relatively flat-lying area of cropping/sub cropping Mt Swan Granite. Access from Alice Springs is north 70km via Stuart Highway, east 110km via Plenty Highway to Mt Swan turnoff then 66km to MacDonald Downs homestead via Mt Swan. The last 6km traverse eastern blocks of licence area.

3. TENURE
EL 30007 comprising 14 graticular blocks,(44.44sqkm) was granted to Gempart (NT) P/L for 6 years on 5th February 2013. The licence area is reduced by a Partial Relinquishment of 7 sub blocks February 2016.

4. PREVIOUS EXPLORATION
1970 - 1980
In 1970 CPM (AP2162) conducted an IP survey along the Perenti Cu prospect shear zone (a single traverse 1828m long). Three inclined core drill holes were collared to test resultant IP anomalies namely DDNT -12 - 3, 2 and 1, 170m, 127.4m and 1.86,4m TD respectively (Total 484.32m).

A brief log of drillhole 3 is as follows:
0 - 143m foliated quartz-chlorite-biotite-feldspar granite
143 - 157.6m quartz reef + chlorite + 2% chalcopyrite + specular hematite
157.6 - 170m chlorite-rich granite + chalcopyrite/quartz veins + hematite.
14.6 m of core was split from 143 to 157.6m assayed for Cu, Pb, Zn, Ag and Au returning 11.9m averaging 0.6% Cu. DDNT-12-2 was spilt from 133 - 152m (16 samples) assayed for Cu, Pb, Zn, Ag, Au returning 9 m averaging 0.37% Cu. The following is an abridged log:
0 - 133m foliated granite
133 - 136.15m breccia, chlorite-hematite matrix with red feldspar+ quartz fragments
136.15 - 142.2m quartz reef + 2% disseminated chalcopyrite minor fluorite
142.2 - 143.7m breccia
143.7 - 145.9m quartz reef
During 1971 Siegal Geophysics conducted 4 north west trending lines of IP, 5km long, 3km apart in Mopunga Range area 10km southeast of Mt Ultim for VAM Ltd (AP 2196). Also in 1971 Kratos Uranium NL (AP 2587) conducted an airborne radiometric survey along northwest - southwest flight lines 1609m apart over an area of 944sqkm covering EL 28886. 15 anomalies delineated only one 11PR, 3km east of Mt Swan homestead was followed up (1740 cps at 30m) comprising Waite Formation overlying granitic gneiss assaying Thorium 105ppm, Uranium <40ppm. Asarco (EL 377) rockchip sampled Mopunga Range area (A2737 - 44) in 1972.

In 1973 Neptide Minerals conducted a rockchip sampling traverse commencing from 10km east of Delmore Downs to about 10km south of Macdonald Downs homestead collecting 54 samples of which MCI assayed Cu 1000ppm, Pb 2000.

1980 - 1990

In 1983 WMC (EL 3303) collected 41 drainage samples centred over the headwaters of Plenty River, draining lower half of EL 28837. Several pyrope garnets were recovered from AA614017, however followup infill sampling failed to repeat initial positive KI results.

CRAE were also active in the area during 1983 after reviewing Huckitta AMAG/Radiometric geophysical data identifying 12 dipolar AMAG anomalies requiring investigation(Figure 2).

12 AMAG features were identified as potential kimberlitic magmatic intrusions six of which are within EL 28837 i.e. H1, H2, H3, H9, H10 and a weak dipolar anomaly 2km north of sample site 821723 (2 x 0.5 chromites) over which they conducted a GMAG survey (5km x 0.5km), rockchip, soil and auger drill sampling of line 7000E for no anomalous geochemical results. The anomaly source was magnetic inclusions in granite?(Figure 4k)

AMAG feature H1 is overlain by an east west trending prominent quartz ridge fault trace. Ground magnetometry was carried out and a gravel sample 968947 (negative for KIs) was collected. AMAG features H4, 5, 6, 7, 8 were GMAG-traversed and sampled for no anomalous results except for rockchip 968950 (comprising magnetite-quartzite rock) overlying H4 which assayed 660ppm Zn, 120ppm Pb, 105ppm Cu, 155ppm Ni, 830ppm Ba. 29 gravel samples were collected, however only 11 were observed reporting 1, 2 and 1 chromites from 821719, 821723 and 821727 respectively.

Also 1983, Uranerz P/L conducted 26.7 line km of detailed scintillometry and collected 50 rockchip samples from EL 3308 an area covering 20km from west to east, of Delny - Mt Sainthill Fault Zone butting up to the eastern boundary of EL 28837. They also conducted a radon survey across Delny - Mt Sainthill Fault Zone comprising 2 x 3.5km north south traverses. They concluded all radiometric anomalies identified were Thorium based?

Anomalous rockchips included, 0090- 4.25%Cu, 0095, 0082, 0089 > 1000ppm Ce > 1500ppm Th-magnetic granite, 0086-3525ppm Th, 0079-410ppm U-quartzofeldspathic gneiss, 0113, 0114, 0115, 0116 >150ppm U, 0.3% Th epidote-magnetite granite.
Track Minerals P/L conducted a program of drainage (62) and rockchip sampling (31) over EL 5902 also during 1989 covering the current licence area of EL 28886. All samples were assayed for Cu, Ag, Au while rockchips were also assayed for Pb, Zn and As for no anomalous results. Three rockchipping traverses were undertaken namely T1, 3km west of Tower Rock where granite with very large feldspars, schists and metaseds are exposed. T2 is located 2km north west of Camel Dam comprising muscovite quartzite with tourmaline, mica schist, ferruginous quartzite, banded (chlorite/muscovite bands) ferruginous quartzite, chlorite schist/ferruginous metasediment becoming dominantly ironstone followed by quartzite, ferruginous schist and quartzite with muscovite + tourmaline(Figures 2d).

1990 - 2000

2000 - 2010

Astro Mining NL were granted EL 23390 May 2003 over current licence area of EL 30007 purportedly exploring for diamonds.

In 2005 helicopter supported sampling of a radiometric anomaly over Tomahawk Beds of Georgina Basin cover sequence to the north of EL 30007 was undertaken, apparently areas of Tomahawk Beds sometimes record elevated responses for uranium and potassium. Five rockchip samples were collected ie BCRK 015 - 019 in the vicinity of 511200m to 350mE, 7532240m to 550mN-GDA94. BCRK019 (ferruginous sandstone) assayed 14ppm Uranium 4530 ppm Ba, 76ppm Vanadium.

EL 9806 was granted to TGNL November 2002 covering current licence area of EL 30007. 9 rockchip samples were collected from what is currently near south west corner of EL 30007 overlying west north west trending Delny - Mt Sainthill Fault Zone (obstensively sheared brecciated, ferruginous ledan Schist) namely ALK070 - 078 the standout of which is ALK076 comprising weathered regolith/vein quartz (GDA 94, 476959mE, 7520423mN) assaying Ag 2ppm, Au 11ppbm Cu 21ppm, Pb 72ppm. Interestingly a bismuth assay of 3.64% or 36400ppm for the above rockchip sample was not followed-up?

In 2009 Nupower Resources Ltd (NUP) investigated a large radiometric (U-Th) anomaly coincident with cropping out Mt Swan Granite (1713Ma) over current area of EL 30007 (Figure 3a). The intense uranium anomaly overlying southwest corner of what was formerly EL 26876 gave spectrometer uranium values ranging from 3.9 - 17 ppm U, 1 - 197ppm Th. Three rockchip samples of porphyritic-biotite-hornblende granite were assayed for U, Th, Ce and La the best of which 20059 returned values of 51.5, 129, 260 and 116 ppm respectively(Figure 3a).
5. GEOLOGY(Figure 3)

5.1 Regional Geology

The licence area overlies 44.44 sq km of north east Aileron Province of Arunta Region a major ensialic Palaeoproterozoic to Mesoproterozoic mobile belt of multiply deformed polymetamorphic basement terrane covering 200 000 sq km of central Australia. The Aileron Province (the largest of three fault bounded terranes which collectively define Arunta Region comprises green schist to granulite facies metamorphic rocks with protoliths ranging from 1865 - 1710 Ma forming part of North Australia Craton geologically continuous with gold-bearing Tanami and Tennant regions to the north.

The northern boundary of EL 30007 butts up to attenuated, tightly folded northwest – trending strike ridges of mainly oxidized, red sandstone of Neoproterozoic age, forming part of the local North Australian Platform cover succession ie mildly deformed, unmetamorphosed siliciclastic to carbonate sedimentary packages unconformable on Palaeoproterozoic orogens namely Amadeus, Georgina and Ngalia Basins onlapping/enveloping Palaeoproterozoic Aileron Province crystalline basement.

West-northwest trending faults are dominant structures of northeast Aileron Province including the licence area. They are northwest extensions of Delny - Mt Sainthill Fault Zone characterised by retrograde schist zones 5km wide on HUCKITTA. The fault zone has a high angle reverse movement essentially vertically reactivated several times since the Palaeoproterozoic. The last documented reactivation was during the Carboniferous Alice Springs Orogeny where significant exhumation occurred resulting in a regional juxtapositioning of granulite facies rocks (south DSZ) against amphibolite facies rocks (north DSZ).

The oldest rocks cropping out in the northeastern ALCOOTA/northwestern HUCKITTA area are 1810-1800Ma Delny Gneiss; leucocratic biotite-muscovite-quartz gneiss, two-mica schist, metapsammite/pelite, amphibolite and (also 1810-1800Ma) Delmore Metamorphics; calc-silicate rock, pelitic gneiss, epidote quartzite, anthophyllite-chlorite-cordierite rock, rare epidosite considered the same sedimentary protolithic age as lower Strangways Metamorphic Complex rocks (SMC) deemed prospective for VHMS base metal and IOCG deposits on ALICE SPRINGS.

The Delmore Metamorphic lower amphibolite facies siliciclastic metasediments are age-dated, 1806Ma unconformably overlain by 1770Ma Ledan Schist which crops out over 40km trending west north west within EL28886 licence area wedged between Ida/Mt Swan Granites to south and unnamed 1780-1760Ma granite to north.

Ledan Schist comprising quartz-muscovite +/- biotite +/- andalusite schist plus metapsammite is a member of the informally named Ledan package (1770 - 1730Ma) along with conformably overlying Utopia Quartzite, time equivalent Mendip Metamorphics and granulite facie metasediments of Anira Metamorphics cropping out further west on ALCOOTA. Interestingly, Ledan package unconformably overlies the Strangways Metamorphic Complex and correlates with upper Hatches Creek Group taken together form part of an intracratonic basin which formed north of inferred plate margin during rollback of north - dipping subduction zone to the south and southeast, an event which produced the magmatic-dominated Oonagalabi (1765 Ma) succession on ALICE SPRINGS (AGES 2008).
The Strangways Orogeny (1735 - 1690Ma) metamorphosed Ledan package rocks to upper greenschist facies. The older SMC rocks i.e. Kanandra Granulite reached granulite facies (770 - 850°C, 6Kbar) were deformed twice imparting 2 gneissic fabrics, refolded about northwest to northnorthwest trending fold axes accompanied by migmatitic melting and granitic intrusion. Importantly tectono-metamorphic relationships observed in Delny and Mapata Gneisses mirror those of the Kanandra Granulite.

Within Delmore Metamorphics and Ida Granite (1780-1760Ma) cropping out 30km west of EL 30007 the effects of Yambah Event (1780 - 1770Ma) are able to be distinguished from Strangways Orogeny i.e. Delmore Metamorphic, upper amphibolite facies west north west to north west striking S1 fabric assigned to Yambah Event overprinted by east - west trending S2 fabric of Strangways Event which is also co-planar with a gneissic fabric found in Ida Granite. Syntectonic plutons namely 1730 - 1710Ma Mt Swan Granite intrude older metasediments and Ledan Schist on ELs 28838 and 28886. They are assigned to high heat production (HHP) group of granites (Zhao and McCulloch subdivision) which intrude 1780 - 1750 Ma Main Group i.e. Ida Granite, Crooked Hole and Queenie Flat Granites on central ALCOOTA. HHP granites are enriched in heat producing elements namely uranium, thorium and potassium (Figure 4e). They are also enriched in LREE, Zr, Nb, Y relative to Main Group. HHP granite geochemistry indicates a felsic (mantle derived) and granitic source i.e. re-melting of older Main Group granites.

Tertiary to Recent cover comprising lateritic sands/clays, calcrete and ferricrete are common over low-lying areas, up to 70m thick. Calcrete is sometimes replaced by chalcedonic silica which can be uraniferous (500 ppm U from a chip sample).

The present static water table is significantly below the calcrete base therefore older than present hydrogeological regime thus influencing both the preservation and appropriate media of trap sites forming secondary uranium mineralisation and also identifying palaeo- flow directions and source rocks.

5.2 Local Geology -EL 28838(Figure3)

EL30007 overlys cropping to sub cropping ,highly radiogenic Mt Swan Granite 1713Ma. Attenuated west northwest strike ridges of Neoproterozoic Grant Bluff Formation laminated to thinly bedded fine grain quartz arenite unconformably rests on unnamed and/or Mt Swan granite kissing the northern boundary of licence area. The schistose Mt Swan Granite is pink and porphyritic comprising quartz, orthoclase, plagioclase, hornblende partially altered to biotite accessory iron oxides, apatite, zircon and allanite. Large feldspar phenocrysts (up to 100mm)are common. The west north west strike ridges of Neoproterozoic Elkera Formation are preserved overlain or capped by Grant Bluff Formation also resting unconformably on highly radiogenic Mt Swan Granite.

The Elkera Formation comprises siltstone and sandstone capped by a distinctive stromatolitic dolostone marker horizon effectively drawing Neoproterozoic Georgina Basin sedimentation to a close.
6. 2012-15 EXPLORATION PROGRAM  Figures 4,5a,5b
1. Ground checking/prospecting over uranium channel ‘hot spots’ie subcropping Mt Swan Granite for any apparent ‘insitu’ secondary uranium mineralization.

2. Preparation of U2Th Ratio, Geology, TMI, Landsat composite images from NTGS GIWS site and review previous exploration activity.


8. CONCLUSIONS and RECOMMENDATIONS
The highly radiogenic Mt Swan Granite appears to be dominated by Thorium (ratio 3:1) which downgrades its prospectivity potential for intrusive/vein – hosted uranium mineralization. The 7 relinquished sub blocks show little elevated Uranium channel activity thus downgrading any potential for intrusive hosted uranium mineralization prospectivity.

9. REFERENCES
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