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ANNUAL REPORT  

Supplejack Project  

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SUMMARY

This report describes the work undertaken by Washington Resources Limited (WRL) and Polaris Metals NL/Northern Uranium Limited in assessing the granted exploration licence, EL24178, located 600km northwest of Alice Springs.

In November 2005, Polaris Metals and Washington Resources signed a Letter of Intent and Heads of Agreement, whereby the rights to uranium in their respective tenements would be vested in a single entity in which Washington and Polaris would hold equal interests, and which is initially be managed by Polaris. These tenements included the Supplejack Project, EL24178.

On 2nd August the Uranium Tenements and Uranium Rights Assignment Deed was signed by Polaris Metals, Washington Resources and Northern Uranium, whereby certain uranium rights and uranium tenements of Washington Resources and Polaris Metals would be vested into a new dedicated uranium exploration company, Northern Uranium in exchange for shares in Northern Uranium. Subsequently, Northern Uranium Limited was listed on the Australian Stock Exchange having completed an Initial Public Offer and raising $4 million for the purposes of exploring and developing uranium deposits on tenements which include the Tanami-Granites Project. Northern Uranium Limited have the uranium rights and are the current joint operators, together with Washington Resources, of the Tanami-Granites Project.

Exploration carried out by Polaris/Northern Uranium comprised a thorough and detailed compilation, integration and review of all available geophysical, geological and geochemical data, in the context of an unconformity-style uranium target. No on-ground exploration work was conducted on the tenements during the reporting period.

It was concluded that the geological setting of the Birrindudu Basin area has strong similarities with that of the Athabasca Basin in Canada and the Alligator Rivers region in the Northern Territory, which both host high-grade unconformity-style uranium mineralisation. Several exploration targets have been defined for further work, and a detailed exploration program for 2007 has been defined.

1 LOCATION AND ACCESS

The tenement covers an area of 292 km² in the Tanami region of the Northern Territory, (Figure 1). It is located some 600km northwest of Alice Springs.

Primary access is by way of the gravel Tanami Road from Alice Springs to the Northern Territory/Western Australian border.

2 TENEMENT DETAILS

The tenement was granted to Norman McCleary on 10 February 2005. WRL is now the registered holder having purchased a 100% interest following listing of the Company on the ASX on 14 November 2005.
On 16th November 2005, Polaris Metals and Washington Resources signed a Letter of Intent whereby the rights to uranium in their respective tenements would be vested in a single entity in which Washington and Polaris would hold equal interests, and which is initially be managed by Polaris. A subsequent Heads of Agreement was executed by both parties, with the agreement in principle that the jointly-owned entity will in due course raise its own capital and appoint its own management team to fully explore the tenements for uranium deposits. Each company was to contribute their current uranium exploration rights in exploration licences spanning some 8,000km² across the WA-NT border into a joint venture called the Gardiner-Tanami Super Project. The project included Washington’s Supplejack Project (EL24178).

On 11th May, 2006 Polaris and Washington Resources Limited announced their intention to combine uranium assets, to form a new dedicated uranium company, Northern Uranium Ltd, to be funded through an initial public offering (“IPO”) and new listing on the ASX. Subsequently on 2nd August the Uranium Tenements and Uranium Rights Assignment Deed was signed by Polaris Metals, Washington Resources and Northern Uranium, whereby certain uranium rights and uranium tenements of Washington Resources and Polaris Metals would be vested into Northern Uranium in exchange for shares in Northern Uranium.

On 15th November 2006, Northern Uranium Limited was listed on the Australian Stock Exchange having completed an Initial Public Offer and raising $4 million for the purposes of exploring and developing uranium deposits on tenements which include the Supplejack Project. Hence, Northern Uranium Limited now has the uranium rights and is a current joint operator of the Supplejack Project, together with Washington Resources. The Supplejack Project tenement will remain in the name of Washington Resources Limited.

3 GEOLOGICAL SETTING

In the Tanami Region, one of the most important tectonic units is the North Australian Craton, the stratigraphic succession of which shows similarities with the Pine Creek and Halls Creek Orogens, two other Palaeoproterozoic successions in northern Australia.

Within the region, the MacFarlane Peak Group, which is interpreted to be the basal unit of the Palaeoproterozoic sequence, is dominated by volcanic and volcanioclastic rocks, along with elastic and calc-silicate sediments. These are overlain by siltstone, carbonaceous shale, calc silicates and BIF of the Dead Bullock Formation. This in turn is overlain by a thick sequence of turbidites, the Killi Killi Formation. Interbedded siltstone, greywacke and chert west of Tanami are included in the Twigg Formation. The latter three units are grouped together in the Tanami Group.

The Pargsse Sandstone and the Mount Charles Formation occur in small extensional basins. A period of wider extension follows, accompanied by felsic volcanism in the Mount Winnecke Group and Nanny Goat Volcanics. Five main granitic suites are recognised in the Tanami Region, the most important being the Coomarie and Frederick Suites. The youngest granites in the area belong to The Granites Suite.
Archaean rocks identified from drilling comprise the Browns Range Metamorphics and the Billabong Complex.

EL24178 is located in the central portion of the Tanami/Granites area, overlying the Birrindudu Group sandstones. Deposition in the Birrindudu Basin began with sandstone transgressing over the metamorphic and crystalline basement probably at about 1.7 Ga. This was accompanied by regionally extensive north-trending growth faults and volcanism, possibly indicating rifting. The Birrindudu and Tolmer Groups represent the exposed basal section of this basin and may be as much as 6,000m thick locally. Apart from minor felsic volcanic rocks (tentatively assigned to undifferentiated Birrindudu Group) and carbonate rocks and shale in the upper Tolmer Group, these units are dominated by coarse clastic sedimentary rocks.

To the north of EL24178 lies an area of outcropping Palaeoproterzoic MacFarlane Peak Group, Dead Bullock Formation and Killi Killi Beds, together with an undifferentiated intrusive pluton. In the northern part of the tenement, the Gardiner Sandstones of the Birrindudu Basin are interpreted to unconformably overlie the Palaeoproterzoic basement rocks described above. This unconformity is considered prospective for unconformity-related uranium mineralisation, in particular where the unconformity has been offset by large regional-scale reverse faults. The tenement area appears to be controlled by two dominant structural trends. There are several NNW and N-trending structures within the project area, which reflect the major regional Black Peak structure which defines the eastern edge of the Birrindudu Basin. The other major trend is WNW, which appears to be less well developed, and reflects a common structural trend in region typically associated with structures such as the Trans-Tanami Fault. The Trans-Tanami fault, is a late-stage structure (D6) and is known to control gold mineralisation at Coyote, and the Callie gold deposits

Mineralisation in the most significant gold prospects is hosted by the McFarlane Peak and Tanami Groups, Mount Charles Formation and Nanny Goat Volcanics, as well as the Winnecke and Granite Suites. Recent drilling by the NTGS indicates that the Coomarie Suite is also anomalous in gold. The most common controls for gold localisation in the Tanami/Granites areas are brittle faults and late shear zones within favourable host units and rock contacts; for example, the Callie Host Unit, Tanami Mine Basalts, basalt/sediment contacts (Tanami) and reactivated fault contacts (The Granites). Iron-rich horizons (BIF) and carbonaceous shales are also important hosts.

Figure 2 shows the outcrop geology of the project area taken from the NTGS 1:250,000 scale geological mapping of the area, and Figure 3 is based on the NTGS solid geology interpretation of the Tanami 1:250,000 map sheet.

4 PREVIOUS EXPLORATION

Gold was first discovered in 1900, at both The Granites and Tanami, in small, rich, transgressive quartz veins. From 1947 to 1948, a program of costeaneing and drilling by Anglo Queensland Mines Ltd outlined a probable resource of 250,000 t grading 11.5 g/t Au. In 1960, New Consolidated Gold Fields (Australia) Pty Ltd discovered
uranium in the Killi Killi Hills area, near the Western Australian/Northern Territory border. The uranium was hosted in radioactive sediments of the Middle Proterozoic Gardner Sandstone. During the 1970s, exploration involved the search for vein-unconformity type uranium mineralisation, with a number of companies active on the Northern Territory border. However, no deposits of note were located during this period.

In 1980-81, the ‘Mineral Reserves Group’ of Canada undertook a major evaluation of the Tanami/Granites region, with most of the work performed on tenements in Western Australia. Of special significance was their discovery of polymetallic, vein-related uranium, gold, nickel and cobalt minerals in the Gardiner Range, within an area now covered by Washington’s ELA 23932.

During 1983-84, Otter and Cultus Pacific NL held title to large areas of land in the Northern Territory but did very little work prior to relinquishment in 1984.

In 1983, North Flinders carried out drilling in The Granites area, delineating a reserve of 718,000 t averaging 5.4 g/t Au. The gold occurred in transgressive quartz veins and as strata-bound, layered disseminations within the mineralised host unit, which comprised Lower Proterozoic metamorphosed sediments of the Mount Charles Formation.

Between 1985 and 1992, detailed exploration of the Tanami area was carried out by Western Mining Corporation Limited (“WMC”) and PNC Exploration (Australia) Pty Ltd (“PNC”). Their work covered a relatively small portion of Washington’s Northern Territory project area, close to the Western Australian/Northern Territory border within ELAs 24174, 24177 and 23932.

Exploration by PNC involved regional studies of aeromagnetic and radiometric data, followed by lineament studies related to uranium and, to a lesser degree, gold mineralisation.

WMC’s exploration, which was primarily for gold, included regional studies and compilation of all available published and open-file data, regional and detailed geochemical and geological surveys and limited ground geophysical studies. This exploration program resulted in the discovery of gold geochemical lag anomalies that, at the time, were not drill-tested. Other areas of interest were defined on the basis of geophysical data integration and interpretation.

WMC reported that the most significant analytical results to emerge from the area were the presence of abundant, low-level auriferous anomalies; namely, 47 samples with greater than or equal to 0.01 ppm Au and 20 samples greater than or equal to 0.05 ppm Au. The maximum assay was 1.05 ppm Au from a vuggy quartz vein, while the average assay value for all samples was 0.08 ppm Au.

In 1991, Zapopan NL (“Zapopan”) acquired the Tanami joint venture and continued mining until 1994. Total production was reported as 26.54 tonnes Au. In 1995, Zapopan’s tenements and plant were transferred to the Central Desert Joint Venture,
comprising Acacia Resources Ltd and Otter Gold Mines Limited (“Otter Gold”). By 1994, a resource of 3.4 Mt grading 3.2 g/t Au had been identified at the Jims Find, Dog Bolter and Redback Rise deposits. Mining, which commenced in 1995, produced 11.8 tonnes of gold from 3.87 Mt of ore.

Since 2003, under the control of Newmont Australia Limited (“Newmont”), the gold resources at the Tanami operation – including Groundrush, Callie and Dead Bullock Soak – were 17.87 Mt at 4.8 g/t Au Proved/Probable Reserves for 2.72 Moz Au, 1.18 Mt at 2.9 g/t Au Measured/Indicated Resources and 3.54 Mt at 5.8 g/t Au Inferred Resources.

Polaris/Northern Uranium has completed a detailed review and compilation of historical uranium exploration from within the region. A summary of this work is given below in Section 5.1.

5 CURRENT EXPLORATION

Polaris/Northern Uranium had planned to undertake programmes of geological mapping and airborne geophysics in the current reporting year. However delays in the listing of Northern Uranium meant that funds allocated for exploration did not become available until mid-November 2006. The Company has been unable to complete the planned exploration for the current year.

The following is a summary of exploration activity undertaken on the Supplejack Project area during the reporting period:

- Compilation, integration and review of all available exploration data in the context of developing an unconformity-style exploration model, involving the digital capture of historical exploration data, development of a spatial database and a comprehensive geographical information system.
- Geophysical studies (including re-processing, imaging and interpretation) of available airborne magnetics, radiometrics and gravity results
- Geological studies of all available geological and geochemical data with the aim of identifying unconformity-style exploration targets
- Remote sensing studies (including the purchase, processing and imaging) of ASTER data
- Development of exploration targets and exploration programs
- Planning and development of exploration programs for the 2007 field season.

5.1 COMPILATION OF HISTORICAL URANIUM EXPLORATION DATA

Interest in the mineral potential of the area was first focused on base metals and uranium. The first record of commercial exploration in the Northern Territory Geological Surveys Mineral Industry Report Management System (IRMS) is in the late 1960’s by Anaconda Australia. Throughout much of the 1970’s the area attracted the attention of a small number of uranium explorers. During the 1980’s the focus
switched to gold, and by the 1990’s only one company is recorded as exploring for uranium in the area.

The following is a summary of the more significant historical uranium exploration programs:

1971-1973, Trend Exploration (CR1971-0100, CR1973-0205, CR1973-0092, AP 3223, EL 334, 533, 568-572): Airborne radiometrics were completed in the Mt. Winnecke area (Breaden 100K mapsheet, west of the project area). Follow-up ground radiometrics and soil sampling was completed over several of the airborne radiometric anomalies. No soil sampling anomalies were reported and all radiometric anomalies were found to be related to superficial iron-rich rocks. All radiometric anomalies are reported to be “near the unconformable or faulted contact between Lower Proterozoic basement rocks and younger sandstone”.

1974, PKW/Pechiney Australia (CR1974-0151, 0152, 0153, EL904, 905, 907, 908, 956): An airborne radiometric survey in an area on the Pargee 100K mapsheet, was followed up with ground radiometrics and mapping over anomalies. One significant anomaly termed “Tan-1G” was detected. Soil and rock chip sampling (167 samples) was carried out with no significant results recorded. The airborne radiometric anomalies were attributed to contrast effects between Quaternary cover and rock outcrops or ferruginous loose gravel.

1978, Otter Exploration (CR1978-0166, 0184, EL1274, 1280): This is the first significant uranium exploration in the area (Mallee & Pargee 100K mapsheets). Airborne radiometrics detected 6 significant anomalies which were checked with a ground radiometric survey. The “Tan-1G” anomaly was not detected by the airborne survey but was detected by the ground survey. This area is referred to as Boulder Ridge, and is hill with outcropping Pargee sandstone (within EL23932). Two significant anomalies were defined in this area, 1km apart. Initial rock chips from Boulder Ridge returned assays up to 490ppm U. Uranium is reported to occur within rare earth minerals (xenotime) which appear to be concentrated along two sets of joints trending 010-030 degrees (NNE) and 130 degrees (WNW). Later rock chips and thin section work “indicate that high uranium values (400-1100ppm) are contained in hydrothermally introduced xenotime”.

Also reported was the “Copper Prospect” in the south-east of the area (and south-east of Boulder Ridge), where a small shaft and two costeans were located. Penta-pyrite crystals were noted in cherts and rock chips returned assays up to 200ppm Cu.

1988-1992, PNC Exploration (CR1988-0105, 0053, CR1989-0071, CR1991-0102, CR1992-0153, 0240, EL4832, 4825-4827, 4829, 4831, 4833, 6417): A major uranium exploration program was implemented over a large area covering the Mallee and Pargee 100K mapsheets. This program was the most significant uranium exploration completed in the region. Regional geological mapping, rock chip sampling and airborne magnetics and radiometrics were completed over the entire area. From the regional work numerous target areas were defined for further follow-up work. The work carried out on these areas is as follows:
EL 4827 – Area 19 (Larranganni Bluff): In an area adjacent to the WA border, radiometric anomalies were defined throughout the BIF sequence. The BIF sequence graduates from a lower greywacke/shale to a true BIF. The sequence is 100m thick and folded into plunging anticline-syncline structures trending 260 degrees. The linear radiometric anomaly is 550m in length and subparallel to the axial trace of the major anticlinal structure. The anomaly appears to be structurally controlled within a major anticline. Rock chip samples along the linear radiometric anomaly returned up to 1100ppm U and are associated with a BIF and tuffaceous sandstone/greywacke contact. Assays of 1060ppm U, 160ppm As, 965ppm Pb were also returned. Three other samples from the linear anomaly returned 235, 530, 425ppm As. Significant Mo assays (up to 805ppm) are also associated with anomalous U. Later work in this area focused on the gold potential of the BIF. The magnetic response of the BIF is strong except to the NW of a major structure (trends 050/230), where the magnetic response is weak to absent (magnetite replaced by hematite?).

EL 4828 – Area 22 (Boulder Ridge): This is the same area as Boulder Ridge as defined by Otter Exploration. An outcrop of Pargee sandstone was found to host xenotime mineralization. The xenotime mineralization is found in vuggy quartz veins within brecciated sandstone.

EL 4828 – Areas 23 & 24: In the western half of EL 4828 within Killi Killi beds, a radiometric anomaly is associated with shale and felsic volcanic units. Another radiometric anomaly is related to a granitic body. No anomalous uranium assays were returned from rock chip samples. At Area 23, four RAB holes were drilled on an east-west line and intersected a granitic body.

EL 4829 – Area 30: A faulted slice of Gardiner and Pargee sandstone unconformably overlies Killi Killi beds, in an area south of the GR-TA project.

EL 4833 - Area 14 (Browns Range Dome): This area lies in the north-east margin of EL 4833, where Middle Proterozoic granite is unconformably overlain by Pargee sandstone. Two types of granite were identified – 1) Foliated gneissic granite, 2) Massive granite. The gneissic granite may be a high metamorphic grade equivalent of a feldspathic sedimentary rock. Pegmatites are common throughout. The Pargee sandstone dips gently (5-10 degrees) away from the centre of the dome. Two radiometric anomalies were defined within Area 14. Anomaly A is within locally silicified, unfoliated granite and bands of hematite and Fe staining are coincident with the radiometric maximum. Anomaly B is similar to Anomaly A, but has Pargee sandstone adjacent to the radiometric zone. The silicification, minor brecciation, and hematite rich zone associated with both radiometric anomalies suggest a hydrothermal origin. Geochemical samples from Anomaly A returned assays up to 125ppm U and up to 515ppm U from Anomaly B. Anomaly B also has elevated Pb (up to 295ppm) and elevated Y (up to 710ppm).

At the Browns Range Dome area, a heliborne gravity survey was carried out to better define the different types of granitic intrusives. RAB drilling in the core of the dome
intersected an older granite (correlates with the magnetic response), and a second granite – the granitised feldspathic sandstone with a weak magnetic response.

**EL 4825/4826 – Area 17c (Mt. Junction):** An area of outcropping Killi Killi bed, comprising quartzitic sandstone, overlaid by tuffaceous sandstone and volcanics, passing up into shales, felsic volcanics and greywackes. The strike of lithologies is N-S, but in the south is 300 degrees. Numerous dykes and sills of porphyry intrude the area. The area was defined as a radiometric anomaly, and costeans were dug over the anomaly. The costeaning revealed ferruginous joints/shear zone within a porphyry dyke. Follow-up shallow RAB drilling (10m deep) was completed with 28 holes on 6 lines. Samples were only assayed for gold.

**EL 4825/4826 – Area 18 & 18a (Mt. Junction):** A small radiometric anomaly was defined within a thick sequence of cherts in Mt.Charles Beds. The chert sequence consists of steep dipping banded ferruginous and massive chert. The source of the radioactivity appears to be related to small black crystals in vugs within the chert. RAB drilling was completed at Area 18a, with 2 holes drilled into magnetic shale with BIF zones. No anomalous U results were returned.

**EL 4825/4826 – Area 18b (Mt. Junction):** Two magnetic anomalies were RAB drilled, with 8 holes drilled into magnetic siltstones/shales. No anomalous U assays were found from the BOH samples.

**1993-1994, PNC Exploration/WMC (CR1993-0500, 0012, CR1994-0644, EL7423, 4827-4829, 6457, 7423):** WMC entered into a joint venture with PNC in order to explore for gold in the area, while PNC continued with limited uranium exploration.

**EL 4833, 4825 – Areas 10, 11 & 15 (South Browns Range Dome):** Area 10 is a radiometric anomaly, with rock chip assays up to 1000ppm U. The area is underlain by Browns Range arkose sequence and Archean meta-sandstones, which are unconformably overlain by basal Gardiner orthoconglomerate and Pargee/Gardiner sandstone. Four drillholes tested the quartz vein (a total of 40m), with no anomalous U results. A further 5 holes were drilled (for 243m) to test the anomaly and shear zone geometry. It was concluded the anomaly was caused by surface enrichment from locally enriched source rocks.

At Area 11 radiometric anomalies were defined within ENE trending shear zones within an arkose. Folded arkose/shale/amphibolite of Lower Proterozoic are intruded by pegmatites of Middle Proterozoic, which are unconformably overlain by Pargee & Gardiner sandstone.

In Area 15, strongly folded Lower Proterozoic rocks with east-west trending major shearing/faulting, are unconformably overlain by Pargee sandstone. An EM survey was conducted in order to locate conductors. Four RAB drill sections were completed in addition to 900m of diamond drilling (as a geological/stratigraphic mapping tool). In the RAB drilling results, the eastern margin of the Archean granite core was found to have elevated U values. A correlation between chlorite and U mineralization was noted (drawing comparisons with alteration seen at Jabiluka and Ranger). Further percussion drilling with BOH samples assayed, failed to locate any significant U
assays. Evidence of near-surface leaching was used as a possible explanation of these results. Geological similarities were highlighted between the Upper Browns Range Dome (BRD) beds and the Lower Cahill of East Alligator River. It was however noted that there is a lack of biological activity in the BRD beds, when compared to the Lower Cahill, with the absence of a facies change from carbonate to graphitic rocks being highlighted.

**EL 4831 – Area 31:** This area is underlain by a small window of Lower Proterozoic metsediments, within Middle Proterozoic cover rocks. An airborne magnetic anomaly indicated a BIF within Lower Proterozoic volcanics/sediments. The area was mostly explored for its gold potential with 4 RAB holes (156m) drilled, within magnetite-chlorite schist.

**EL 4833/EL 6417 – Area 32 (Northern Browns Range Dome):** On the boundary between EL 4833 and EL 6417 a radiometric anomaly was defined from an airborne survey. Follow-up ground radiometrics defined a discontinuous linear anomaly, 250m long, trending 160-340 degrees. Two RAB holes were drilled, one into Gardiner sandstone, with weakly anomalous U intersected. Another 7 holes were drilled (275m), with weakly anomalous U results within saprolitic Gardiner sandstone, beneath the water table. The depth to the unconformity was estimated to be 100-150m and occurring 1.5km to the south.

**EL 4827 - Area 20:** Metatorbernite (hydrated copper uranium phosphate - torbernite) occurrences were found in this area in 1986, within the hinge zones of folded cherts (torbernite is a secondary mineral formed by the alteration of pitchblende). Metatorbernite occur as veinlets and disseminated within a banded chert horizon, 0.5-2m thick. In addition saeleite (magnesium uranium phosphate) has been noted locally within veinlets. The folded cherts trend 340 degrees, with a box-shaped anticline. Middle Proterozoic Gardiner Sandstone, dipping 5-10 degrees to the NW, outcrop to the west and NW of the area. In 1988, RAB and diamond drilling were completed and costeans were dug over radiometric anomalies. Rock chip samples returned assays up to 1.5% U. Fifteen RAB holes for 240m were drilled along the inferred unconformity between Mt.Charles Beds and Gardiner sandstone, as well as the chert outcrop. End of hole samples were assayed for U and Th, but no anomalous results were returned. One diamond drill hole targeted the hinge zone mapped in the cherts, but was abandoned at 27m. A second diamond drill hole, drilled vertically, intersected black, graphitic shale from 39-121m. A proposal to further drill the chert-carbonaceous shale contact was not implemented due to budgetary constraints. Four more rock chips returned elevated U (110, 225, 240, 575ppm) and elevated As (100, 105, 210, 460ppm).

**EL 4827 – Area 21a:** PNC completed mapping, ground radiometrics and laterite sampling, over an area of interbedded and massive cherts with minor mudstone. The ground radiometrics gave an anomalous response from the chert outcrops. No anomalous results were found from the laterite sampling.
EL 4828 – Area 21b: Several radiometric anomalies were defined. Follow-up rock chip sampling returned assays of up to 130ppm U. WMC targeted this area for gold exploration.

EL 4828 – Areas 23 & 24: A surface radiometric anomaly was defined and is associated with shale and felsic volcanics. Laterite sampling gave no anomalous results. RAB drilling comprising 4 holes for 171m was completed, which intersected granite and contact aureole. No significant results were returned from the RAB drilling.

EL 4828/4829 – Area 28: This area was mostly targeted for gold, with rock chip sampling returning anomalous Au (up to 1.05ppm), As (up to 2900ppm) and Se. No anomalous U was found.

Area 29: This area occurs well south of the project area. RAB and diamond drilling was completed and rock chips returned assays of up to 2100ppm U.

5.2 Uranium Exploration Target Rationale

Unconformity-related deposits constitute approximately 33% of the World Outside Centrally Planned Economies Area (WOCA)'s uranium resources and they include some of the largest and richest deposits. The main deposits occur in Canada (the Athabasca Basin, Saskatchewan and Thelon Basin, Northwest Territories); and Australia (the Alligator Rivers region in the Pine Creek Geosyncline, NT and Rudall River area, WA).

Unconformity-related deposits occur immediately below and above major unconformities that separate crystalline basement from overlying clastic sandstones of either Proterozoic, or less commonly Phanerozoic age (McKay & Miezitis, 2001). Most of the Saskatchewan uranium deposits are associated with graphite-bearing pelitic schists which underlie the Athabasca Formation (Middle Proterozoic sandstones) and a similar association with many of the Alligator River uranium deposits has been noted.

The Supplejack Project area shares a number of geological similarities with known geological provinces that host significant uranium mineralisation, including the Athabasca Basin in Canada and the Alligator River region in the Northern Territory. These world class uranium provinces are compared with the Birrindudu Basin below in Table 1. Within the project area highly deformed Lower Proterozoic or Archean Granites-Tanami complex–related Dead Bullock Formation are unconformably overlain by plateau-forming flat-lying arenites of the Middle Proterozoic Gardiner Range Sandstone, the lower member of the Carpentarian Birrindudu Group. This geological setting has similarities with unconformity environments in the Athabasca Basin of Saskatchewan, Canada and the Alligator River areas of the Northern Territory.
## Table 1: Comparison of World-class Uranium Provinces with the Tanami-Granites region

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<td><strong>SOURCE</strong></td>
<td>Deformed and metamorphosed Archean-Palaeoproterozoic basement (Hearne Province) succession</td>
<td>Deformed and metamorphosed Archean-Palaeoproterozoic basement succession intruded by syn-late orogenic granites</td>
<td>Deformed and metamorphosed Archean-Palaeoproterozoic basement succession intruded by syn-late orogenic granites (Tanami complex)</td>
</tr>
<tr>
<td></td>
<td>Archean granitoids forming the cores of gneiss domes</td>
<td>Archaean granite-gneiss domes, metasediments exposed near Jabiru</td>
<td>Archaean-Palaeoproterozoic granite-gneiss domes e.g. Browns Range Dome</td>
</tr>
<tr>
<td><strong>RESERVOIR/PATHWAY</strong></td>
<td>Mesoproterozoic coarse fluvial to marine clastic sediments – largely undeformed sandstones and conglomerates</td>
<td>Palaeo-Mesoproterozoic fluviatile to shallow marine sandstone and conglomerates – flat-lying succession</td>
<td>Mesoproterozoic coarse shallow marine sediments – flat-lying sandstones e.g. Gardiner sandstone</td>
</tr>
<tr>
<td></td>
<td>Palaeoproterozoic succession unconformably overlain by Mesoproterozoic Athabasca Basin</td>
<td>Palaeoproterozoic succession unconformably overlain by Palaeo-Mesoproterozoic McArthur Basin (Kombolgie Group)</td>
<td>Palaeoproterozoic succession unconformably overlain by Mesoproterozoic Victoria-Birrindudu basin</td>
</tr>
<tr>
<td></td>
<td>Athabasca Basin dimensions – 400km x 200km = 80,000km²</td>
<td>McArthur Basin dimensions – 300km x 600km = 180,000km²</td>
<td>Victoria-Birrindudu Basin dimensions – 600km x 200km = 120,000km²</td>
</tr>
<tr>
<td><strong>TRAP</strong></td>
<td>Reducing Graphitic metapelitic units within basement sequence, associated with structures</td>
<td>Chemically reduced basement with carbonaceous/iron-rich units</td>
<td>Presence of graphitic/carbonate units recorded in historical exploration</td>
</tr>
<tr>
<td></td>
<td>Major deep NW-SE trending structures e.g. Snowbird Tectonic zone, Cable Bay Shear zone post-date Athabasca basin deposition</td>
<td>Faults post-date deposition of cover sandstones</td>
<td>Deformation post-dates deposition of Birrindudu sediments – southeast striking oblique-slip thrust faults e.g. Bluebush fault</td>
</tr>
<tr>
<td><strong>EXPLORATION</strong></td>
<td>First uranium discovered in 1948’s, first major discovery 1968 (Rabbit Lake), ‘Blind’ uranium deposits e.g. Cigar Lake discovered in 1980’s using new deep-sensing geophysical techniques and alteration detection</td>
<td>First uranium discovered in 1953; Ranger, Jabiluka; Narbalek discovered in 1970’s</td>
<td>Minimal exploration between late 1960’s and mid 1980’s, no exploration since mid-80’s (50-60 years behind Athabasca &amp; Alligator Rivers)</td>
</tr>
</tbody>
</table>

The best target areas for unconformity-type uranium orebodies in the Birrindudu Basin are most likely to exist where the Gardiner Sandstones overlie metasediments containing carbonaceous horizons and in proximity to deep seated regional structures. Targets of this nature may very well be concealed with little, if any surface expression in terms of geochemistry and/or radiometrics.

### 5.3 Digital Capture of Historical Data

Publicly available digital and hard-copy drillhole and geochemical data (sourced from the NTGS) from the Granites-Tanami area, have been captured and loaded into the Northern Uranium drilling and geochemical relational database. This data has then
been integrated with other publicly available geoscientific data sets using a GIS in order to develop new exploration targets.

5.4 GEOLOGICAL STUDIES

The geological studies completed on the project area have focused on identifying similarities between the geology and structure of the project area and the Athabasca Basin and Alligator Rivers uranium fields. The study, which is summarized in Section 5.2, shows several geological elements that have been recognized as being essential to the development of unconformity related uranium deposits, are also present in the Athabasca Basin and Alligator Rivers uranium fields, also exist in the Birrindudu Basin (see Table 1).

STRUCTURAL INTERPRETATION

The structural interpretation of the area using the imaged government geophysical data, focused on identifying the Palaeoproterozoic basement rocks (eg. Killi Killi beds or Dead Bullock Formation) and Mesoproterozoic Gardiner sandstones unconformity, regional-scale faults and associated subsidiary structures (particularly reverse faults) and concealed granitic intrusions. The structural interpretation is presented in Figure 3, together with the solid geology interpretation. The interpretation highlights the interpreted outcrop position of the unconformity just to the north of the tenement and the more significant structures. There are a number of subtle WNW trending structures which are interpreted to be the equivalent of the late-stage (D6) regional-scale Trans-Tanami fault, further south of the tenement, which is known to control gold mineralisation in the region. There are also interpreted to be some large NNW-trending structures, which are inferred to be possible D5 structures and similar in nature to the regional Balck Peak fault, which forms the eastern margin of the Birrindudu Basin.

5.5 GEOPHYSICAL STUDIES

Geophysical consultants Resource Potentials were contracted by Northern Uranium to acquire all publicly available airborne magnetic, radiometrics, gravity and digital elevation data. Government data and publicly available historical survey data was processed and merged to produce several images for the Supplejack Project area. The processing and imaging of the magnetic data included the following:

- 1st and 2nd vertical derivatives
- North east sun angle on a pseudocolour image
- North west sun angle on a pseudocolour image
- Grey scale image

The government gravity data was also processed to produce 1st and 2nd vertical derivatives, and northeast sun angle on pseudocolour images.

The digital elevation data was processed to produce colour and greyscale images.
For the radiometric data, Thorium, Potassium, Uranium, Total Count, Red-Green-Blue images and various ratios were produced.

Various combinations of images were also produced such as gravity or radiometrics draped over the digital elevation data, and gravity data draped over the total magnetic intensity image.

Several processed images of the aeromagnetic, gravity, radiometrics and digital elevation data are attached. Figure 4 and 5 show the Total Magnetic Intensity and First Vertical Derivative for the airborne magnetic data, Figure 6 shows the first vertical derivative of the gravity, Figure 7 & 8 the Total count and Uranium channel radiometrics respectively, and Figure 9 the digital elevation data.

5.6 REMOTE SENSING STUDIES

Resource Potentials were contracted by Northern Uranium to purchase, process and produce images of Advanced Space-borne Thermal Emission and Reflection Radiometer Survey data (ASTER). This is a remote sensing technology that measures reflectance data in the visible to shortwave–infrared regions of the electromagnetic spectrum. The data can be used as an aid to geological mapping by providing mineral abundance maps in addition to the detection of hydrothermal alteration. It is possible to identify minerals and mineral groups such as clays, carbonates, silica, iron-oxides and other silicates.

Several images were produced by Resource Potentials, which are listed in the table below.

<table>
<thead>
<tr>
<th>Image Name</th>
<th>Comment (purpose)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTU_Tanami_Aster_L1B_CMYK_mask_m52</td>
<td>Mask vegetation</td>
</tr>
<tr>
<td>NTU_Tanami_Aster_L1B_kaolinite_m52</td>
<td>Kaolinite Abundance – alteration mineral</td>
</tr>
<tr>
<td>NTU_Tanami_Aster_L1B_NDVI_merg_m52</td>
<td>Mapping vegetation</td>
</tr>
<tr>
<td>NTU_Tanami_Aster_L1B_NDVIoverPC1_merge_m52</td>
<td>Equivalent to Landsat RGB432</td>
</tr>
<tr>
<td>NTU_Tanami_Aster_L1B_RGB_321_cb_m52</td>
<td>Equivalent to Landsat RGB432</td>
</tr>
<tr>
<td>NTU_Tanami_Aster_L1B_RGB_742_cb_m52</td>
<td>Enhanced structural features – colour balanced</td>
</tr>
<tr>
<td>NTU_Tanami_Aster_L1B_RGB_742_m52</td>
<td>Enhanced structural features</td>
</tr>
<tr>
<td>NTU_Tanami_Aster_L1B_RGB_AlOHminerals_merge_m52</td>
<td>R: phengitic, G: Muscovite, B: Kaolinite. Also map advance argillic alteration: Alunite/pyrophylite, mica, kaolinite/dickite</td>
</tr>
<tr>
<td>NTU_Tanami_Aster_L1B_RGB_clay-amphibole-laterite_merge_m52</td>
<td>R: Clay, G: amphibole, B: laterite</td>
</tr>
<tr>
<td>NTU_Tanami_Aster_L1B_RGB_Discrimination-for-mapping_merge_m52</td>
<td>Mapping different geological units</td>
</tr>
<tr>
<td>NTU_Tanami_Aster_L1B_water-ind40_merge_m52</td>
<td>Mapping water</td>
</tr>
</tbody>
</table>
Remote Sensing Image Definitions

RGB: Red Green Blue
Psc: Pseudo colour
CMYK: Cyan, Magenta, Yellow and Chroma
L1B: Level 1b Aster data
NDVI: Normalised difference vegetation index
PC1: Principle component 1
Cb: Colour balance

At this stage only a preliminary interpretation of the data has been completed.

Various images are presented as Figures 10 – 16.

6.0 PROPOSED EXPLORATION

From the initial desk top studies and the interpretation of the publicly available geological, geophysical and remote sensing data sets, several target areas have been defined (as shown on Figure 17). These targets are based on favourable structures, possible alteration indicated from the ASTER data, and the uranium radiometrics. As the mineralisation is likely to occur at the unconformity, and hence will be buried by the Birrindudu basin, any surface expressions of mineralisation are likely to be subtle if any. The only currently effective means to map the buried unconformity is to use airborne EM techniques.

In 2007, Northern Uranium proposes a staged exploration program targeting the unconformity beneath the Gardiner sandstone cover. It is proposed to implement detailed aeromagnetics and radiometrics (flightline spacing at 200m) over the entire tenement. This will provide a more detailed structural interpretation of the tenement area. Following the detailed interpretation of this data, a follow-up program of helicopter-based airborne electromagnetics over target areas defined from the aeromagnetics and radiometrics, will be carried out. Subsequent targets from this work will be followed up on the ground by reconnaissance geological mapping and geochemical sampling. The geochemical sampling is likely to be soil, lag and stream sediment sampling. This work will help define potential drill targets for testing in 2008.
Supplejack Project
EL24178
Outcrop Geology
NTGS 1:250,000

Gardiner Sandstone
Talbot Well Formation
Tertiary Laterite
Antrim Plateau Volcanics - Cambrian
Nongra Beds (Tanami Complex)
Coomarie Sandstone
Alluvial and aeolian sediments
Alluvial and lacustrine sediments
Calcrite
Alluvial sediments
Supplejack Project
EL24178
Interpreted Solid Geology
NTGS 1:250,000

Middle Proterozoic Unconformity

Geological Structures
- Major Fault
- Fault
- Structural trend
- Inferred fault

Surface position

NORTHERN URANIUM LIMITED
Interpreted Granites

Middle Proterozoic Unconformity

Geological Structures
- Major Fault
- Fault
- Structural trend
- Inferred fault
- Shear zone

Surface position

Outline

NORTHERN URANIUM LIMITED
Supplejack Project
EL24178
Gravity Data
First Vertical Derivative & Structural Interpretation

Date: 28/2/2007
Scale: 1:250000
Projection: Longitude / Latitude (NAD 83)
Author: RW
Interpreted Granites

Middle Proterozoic Unconformity

Surface position

Geological Structures

- Major Fault
- Fault
- Structural trend
- Inferred fault
- Shear zone

NORTHERN URANIUM LIMITED
Supplejack Project EL24178
Airborne Radiometrics
Uranium Channel & Structural Interpretation

Date: 28/2/2007
Scale: 1:250000
Projection: Longitude / Latitude (NAD 83)
Author: RW

FIGURE 8

Interpreted Granites

Geological Structures

Major Fault
Fault
Structural trend
Inferred fault
Shear zone
Supplejack Project
EL24178
Digital Elevation Data

NORTHERN URANIUM LIMITED

Date: 28/2/2007
Supplejack Project
EL24178
Digital Elevation Data

Scale: 1:250000
Projection: Longitude / Latitude (NAD 83)

Author: RW

FIGURE 9