

THE TANAMI - GRANITES REGION
Exploration History and the Case Study of the
Redback - Dogbolter - Jim's Find Gold Deposit Clusters

Otter Gold Mines Limited 60%
Acacia Resources Limited 40%
In the Central Desert and Tanami Mine Joint Ventures

Lecture to the Key Centre for Mines
The University of New South Wales
Mineral Exploration Project Management Short Course

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Abstract

Gold was first discovered in The Granites - Tanami region in the central west of the Northern Territory by prospector Allan Davidson in 1900. Small scale mining was carried out intermittently, between 1904 and 1961, with a total production estimated at about 18,000 ounces.

Exploration by Harlock Pty Ltd in 1975 led to the recommencement of mining at Tanami in mid 1987. The mining operation, ultimately owned by Zapopan NL, mined 428,000 ounces of gold from 7.3 Mt of ore sourced from 18 pits within a ten kilometre strike length.

About 100 kilometres to the south east of Tanami, North Flinders Mines Limited commenced exploration at The Granites in 1985 and by 1987 had defined in situ ore reserves of 1.9 Mt at an average grade of 8 g/t gold in the Bullakitchie and Shoe deposits. Subsequent additional ore bodies have been defined by NFM at Callie and Dead Bullock Soak. Annual production by NFM from its deposits exceeds 200,000 ounces.

Otter Exploration's involvement in the Tanami extends back to 1975, and a more detailed history will be presented shortly, and involved lodging applications for 28 Exploration Licences throughout the region, three of them surrounding the old Tanami field in 1976. After a long hiatus, related to Aboriginal Land issues, in 1989 exploration commenced and was rewarded almost immediately with anomalous soil geochemical results.

Three multiple gold deposit areas known as Redback Rise, Dogbolter and Jim's Find have been the subject of intense exploration over the past six years. These deposits, whilst only 7, 10 and 20 kilometres south, respectively, from the recently refurbished Tanami Mine and plant, are "greenfields" discoveries. A mineable 380,000 ounces in twelve identified deposits was fast tracked for development, with the first gold pour on Christmas Eve 1995.

The Project area, divided into the Central Desert Joint Venture (CDJV) over exploration licences and the Tanami Mine Joint Venture (TMJV) over mining leases, is controlled by two companies: Otter Exploration NL (Otter) and Acacia Resources Limited (Acacia). Otter is the manager of the joint venture with a 60% share. Acacia holds the remaining 40%.

Location

The deposits are situated within the Tanami Desert, approximately 650km north-west of Alice Springs, in the Northern Territory, and within 75km of the Northern Territory/Western Australia border. The North Flinders-owned Callie deposit lies 40kms to the southwest (Figure1).

Spinifex, acacias and stunted eucalypts provide incomplete ground cover in a semi-arid to desert environment. Average rainfall is approximately 200mm/year, falling in the seasonal wet season from December to March, with annual evaporation exceeding 2,000 mm.

Resources/Reserves

Reserves at 30 September, 1995, total 382,259 ounces contained within 3.4 million tonnes of ore, grading 3.4g/t gold. Total resources now stand at 685,264 ounces of gold from 6.8 million tonnes of material grading 3.1 g/t gold. A history of Ore Reserve and Resource status increases will be presented later in this talk.

Development

An option to purchase the 1.4 million tonne per annum Tanami gold treatment plant from Zapopan was exercised in ^{October} November 1995 at a cost of \$9 million, mine planning at that time was well advanced and mining commenced in December 1995.

Final negotiations with the Central Land Council and Traditional Owners are complete and an agreement has now been negotiated that ensures Aboriginal people have a major input; in particular, into the development of training and employment initiatives and a range of issues including compensation, employment, culture and the environment.

Ore Reserves sufficient for nearly four years production at a rate in excess of 100,000 ounces of gold per year have been defined, and with existing Identified Mineral Resources and recent discoveries, an additional two to three years production, at the same or increased rates is a strong probability.

Geological Setting

Structurally-controlled gold mineralisation is hosted by broadly folded Early Proterozoic, turbiditic greywacke, siltstone and shale lithologies interbedded with basalts, regionally metamorphosed to lower greenschist facies, comprising the Mount Charles Beds. Lithological and lithochemical information suggests a subaqueous, low energy environment of deposition of the Mt Charles sediments, with massive, vesicular and pillowed basalts intercalated. These lithologies are part of the basement Tanami Complex which, in the immediate Tanami area, is unconformably overlain by Gardiner Sandstone, a lower member of the Carpentarian Birrindudu Group.

It is worth noting that a significant metamorphic domain boundary exists between the Tanami area and The Granites area, with lower greenschist facies in the former and middle amphibolite grade in the latter.

The Mt Charles Beds are extensively intruded by Proterozoic to Carpentarian granites. The Coomarie Dome lies to the northwest of the mine and the Frankenia Dome to the east. Minor

rhyolitic-rhyodacitic dykes, probably related to the granite intrusives, cut the Mount Charles Beds.

The regional distribution of the rock types and structure have been mapped using outcrop drill data and a combination of aeromagnetic and gravity data, with the Tanami complex basalts being an excellent regional marker horizon (illustrated in Figure 3).

Overlying Cambrian basaltic lavas, minor pyroclastics and intercalated sedimentary rocks of the Antrim Plateau Volcanics form plateaus, mesas and gentle rises obscuring the Tanami Complex.

Tanami Complex outcrop is generally poor with laterite, silcrete, calcrete and Quaternary alluvium and aeolian sands providing extensive cover over the generally undulating to flat landscape, with occasional prominent ridges and rugged plateaus of Cambrian rocks.

Regolith

The predominant regolith types of the Tanami region have formed during deep lateritic weathering, typical of the semi-arid climate. Unravelling the bedrock geology is hampered by this deep weathering profile which extends from surface generally to about 50 metres, up to 70 metres in depth and consists of:

1-2 metres of pisolitic gravels;

3-6 metres of residual laterite;

up to 15 metres of mottled clays;

up to 70 metres of saprolitic clays and weathered bedrock.

Mineralisation

Mineralisation is hosted within quartz lode and quartz breccia systems, developed within, and adjacent to, steeply dipping fault structures and cross-cuts strike and bedding of the basalt-sediment host rocks. The focus for higher grade mineralisation is provided by dilatant zones on intersecting fault planes and / or stratigraphic contacts. Deformation is brittle rather than ductile. Felsic wallrock alteration accompanying mineralisation is tightly constrained to within 1-2 metres of quartz lodes/vein breccias.

The geology comprises an intercalated basalt-sedimentary sequence containing a well defined marker, the Harley's Greywacke. The sequence becomes sediment dominated to the west, towards the top. It is proposed that the competency contrasts provided by the various units is one important ore control.

The sequence, informally named the Tanami Complex, lies within the Mount Charles Beds, extends along strike, probably for more than 100 kilometres, and is generally about 2 kilometres thick. Within the immediate vicinity of Tanami, say over a 15 - 20 kilometre strike length, both

strike and dip of the sequence remains reasonably consistent at about 030° - 040° strike, dipping between 035° - 060° to the north west. Apart from minor drag folds adjacent to faults, no intense folding or evidence of layer-parallel ductile deformation occurs and it is suggested that the mine sequence lies on the eastern limb of a broad syncline, developed initially during rifting, and further compressed during intrusion of the Coomarie and Frankenia granitic domes.

Mineralisation, within the alteration envelope, occurs within dilatant zones at the intersections of sinistral normal and reverse faults on north-south, 020° and 060° trends, and where brittle deformation, resulting from movement across layers with marked differences in competency, is well developed.

A paragenetic scheme based on observation and petrology is as follows:

Early propylitic alteration of basalt and sediments is dominated by chlorite and calcite (as distinct from the carbonate in the zones of hydrothermal alteration).

The propylitic alteration was overprinted (destroyed?) by hydrothermal alteration associated with veining developed along fracture/fault/shear zones. The early alteration, formed in response to convecting hydrothermal fluids passing through penetrative fractures, is dominated by illite, quartz and pyrite, with localised hydrothermal brecciation and silica cementing.

This is followed by a pervasive carbonate overprint and voluminous carbonate deposition in fractures, interpreted to be recharge of cool bi-carbonate fluids being heated upon mixing with convecting fluids, resulting in carbonate stability at the expense of quartz. Fracturing, hydrothermal brecciation and further silicic cementing before further carbonate deposition is a feature.

Gold mineralisation commenced with the early quartz-illite-pyrite event and appears strongest at the interface between this and later carbonate formation and deposition. Copper sulphide (chalcopyrite) precipitation began during the later part of the quartz-illite-pyrite stage and continued through the carbonate stage.

Supergene Alteration

A feature of the mineralised intervals is the replacement of hydrothermal carbonate by late-stage quartz. This feature appears also to have remobilised some hydrothermal quartz (and, by association, the gold). The supergene quartz contains abundant hematite and is intergrown and continuous with hematite sealing some cavities and late fracturing. It is interpreted that the supergene fluids were of low pH and oxygenated to replace carbonate and simultaneously form hematite.

The general geology and mineral structure is illustrated in the accompanying section (Figure 4).

THE TANAMI STORY PRE 1989 (LICENCING)

In 1975 through to early '76, geologist Henry Mason conducted geological reconnaissance in the Tanami areas. Subsequent conceptual work, chiefly structural, suggested to Henry that there were several then untenured localities that had good potential for uranium, base and precious metals.

As a result of his recommendations, Otter's then Executive Director and Exploration Manager, Dave Kennedy, proceeded to lodge 28 Exploration Licence applications across the whole region. Applications 2, 19 and 24-26 subsequently became EL's 1254, 1271 and 1276 respectively. The applications were lodged on 20/04/76 and acknowledged by the DME seven days later.

In mid 1976, the DME advised Otter of certain difficulties in processing the applications that had to do with Justice Woodward's enquiry into Aboriginal Land Rights. This advice presaged the freeze that was to affect every explorer in the Territory.

The Aboriginal Land Rights (Northern Territory) Act 1976 (ACRA76) received assent in December 1976 and came into full force and effect in January 1977.

Apart from desultory correspondence between Otter and the DME, the 'freeze' (for Otter) lasted from June '76 to mid-1983 (7 years).

On 15/06/83, the NT Minister for Mines gave his consent for Otter to enter into negotiations with the Central Land Council.

In the meantime (during 1977/79), Otter had entered into a joint venture agreement with the Central Electricity Generating Board of the UK, (CEGB), the giant British power authority. The CEGBJV was exclusively concerned with uranium exploration and incorporated the 'Tanami' ELA's along with a host of Otter EL's throughout the Territory. Otter was the initial operator, its programs being run from Darwin. The sticking point with the traditional Aboriginal owners and the CLC was 'uranium'. Following an intensive period of discussion, the CLC and Otter agreed to a meeting with traditional owners at Lajamanu to enable the Venture to present its case for exploration in the Tanami.

In one of the all-time classic cases of bad timing, the meeting was set down for 27/04/86. On the evening of the 26/04/86, the world heard about the Chernobyl disaster, and next morning Peter Pritchard, Nick Byrne and Fred Bichard were to fly to Lajamanu to talk about the possible aspects of uranium exploration.

With all credit to Pritchard and Byrne, the meeting went ahead and they made excellent presentations, but a significant group of traditional owners remained opposed to uranium exploration. This group had made its opposition known well before Chernobyl. This group also indicated, at the meeting, that it might not be opposed to non-uranium exploration. A substantial number of other traditional owners had indicated at the meeting that they had no particular objection to uranium exploration, subject to the nature of any agreement to be worked out between the CLC and the CEGBJV.

The opposition of the uranium opponents, however, proved insuperable and during the next 12-15 months, in spite of a few attempts to regenerate venture programs, the CEGB/Otter uranium joint venture was gradually wound down. It terminated with a disposition of assets in 1988.

Meanwhile, on 05/06/87, the benchmark 'mining' amendments to ALRA76 came into force and effect. This gave Otter three months to put a proposal to the CLC pursuant to Section 41 (2)(b) of the Act. Accordingly Fred Bichard compiled the proposal, lodging it on 04/09/87. This started the negotiation clock ticking.

In order to accelerate the agreement process, it was decided to secure the services of a lawyer experienced in Land Council negotiations. Even better, in spite of the small element of risk involved, would be to engage a lawyer whose past experience lay in acting for a Land Council and traditional Aboriginal owner interests. Accordingly Phil Teitzel was engaged and, along with Fred Bichard, formed the core of Otter's negotiating team. Al Perry, Otter's General Manager, oversaw progress of negotiations and advice was sought frequently from Otter Directors Dave Kennedy and Tony Radford. David Avery, CLC's Legal Manager, had the carriage of negotiations for the traditional owners.

Teitzel produced a draft agreement for Otter, which was substantially modified by the Company to more faithfully reflect its corporate philosophy. This was presented to the CLC and negotiations commenced. As we had hoped, the draft, utilising Teitzel's experience, put us well down the track towards agreement, a vastly preferable situation to fighting tooth and nail for every clause in what was perceived, by conventional wisdom, to be a hostile, adversarial ambience. In fact, the general tenor of negotiations was far from hostile.

Stemming from the 'first meeting' at Lajamanu, a lively and productive affair in late '87, the negotiation process continued in a progressive vein.

Under the Land Rights Act, a "conjunctive" Exploration Agreement was required that gave the Traditional Owners the right to veto the application. However, once the licence was granted Otter would be free to discover resources and mine the resources within the negotiated guidelines without fear of change.

An agreement was finally completed on 06/01/89, almost exactly 16 months after lodgement of the proposal. The signing ceremony was conducted at 2:30pm on 14/02/89 at Basso's Farm, just outside Alice Springs, with Dave Kennedy and Fred Bichard in attendance for Otter.

The agreement was the second exploration/mining agreement executed by the CLC, the first being with North Flinders Mines some 10 months earlier.

Neither the North Flinders nor the Otter agreements, nor indeed the Zapopan agreement (concluded a short while after Otter's), would have been possible without the goodwill, interest and concern showed by the Warlpiri and Kartangarwru-Kurintji traditional owners.

PAST EXPLORATION 1989-1990 (OTTER)

Exploration consisted of gridding, ground magnetic surveys and soil sampling along with examination of a range of remote sensing techniques; principally NTDME airborne magnetics, satellite(TM) and gravity data. However, due to a limited budget, samples were not assayed for some months after collection. This made effective exploration very difficult as there was no way of knowing the effectiveness of the sampling programs.

From a geological perspective, the entire area was mapped at the 1:25,000 scale, with two main target areas identified as being the most prospective:

- strike extensions to the existing mineralisation being mined by the TJV; and
- The Black Hills area where Enterprise Exploration had drilled one diamond drillhole during 1960, targeting Mt Isa-style base metal mineralisation.

Considerable time and resources were spent at the Black Hills as it had been rumoured that the core from the diamond drill hole had been re-assayed during the 1970's and considerable gold had been recorded. Despite all efforts, the core was not located and the rumours could not be substantiated.

A number of analytical techniques were tried and a fairly comprehensive orientation sampling program was initiated immediately along strike (both north and south) from the Tanami Gold Mine.

Again, the results of this sampling program were not known for two months after collection.

It was not until the second to last week of the field season (October 1989) that the results of reconnaissance samples collected from the lateritic Redback Rise area, situated approximately 6km south and along strike from the Tanami Gold Mine, were received. This sampling consisted of approximately 10 samples about 100m apart, with sample results ranging from an astounding 15,300ppb gold to less than 1ppb gold.

The timing of the results of sampling did not allow effective follow-up until April 1990 due to the restricted access provision of the "Deed".

Prior to the restart of exploration in 1990, a 1000ha area surrounding the Tanami Mine but excluding the Redback Rise anomaly was sold to the TJV (Zapopan), allowing a continuation of the Zapopan mining operation until March 1994.

The Redback Rise area was selected as the most significant target area with the best chance of enhancing the project's prospectivity. As a result, a detailed 40m x 40m grid-based BCL soil sampling program was initiated. The results of this work were very successful, defining a major geochemical anomaly approximately 2km long and 1km wide.

The second campaign during the 1990 field season was designed to test the rest of the licence area for anomalism similar to that found at Redback Rise. During this sampling exercise, a GPS regional grid, with sample lines 1km apart and spot samples over 100m, was completed over areas considered to have the same geological and geomorphological setting as that of Redback Rise. The results of this work outlined the areas known as Dogbolter and Jim's Find.

Meanwhile, the Company had begun negotiations with potential joint venturers and agreement was reached with The Shell Company of Australia Limited in September 1990 and Billiton (The Metals Division of The Shell Company of Australia) took over management of the project on 1 September, 1990.

1990-1994 EXPLORATION (Shell/Billiton/Acacia)

Shell Australia entered into the Central Desert Joint Venture with Otter on five Tanami ELs on September 1, 1990, under the terms of which Shell was required to spend \$5 million on exploration to earn a 50% interest in the venture. Shell subsequently managed exploration until the Shell interest was sold to Acacia Resources as part of the divestment by Shell of its metals interests by way of a public float in November 1994. In return for waiving its pre-emptive rights, Otter was granted additional equity of 10%, taking its stake to 60%. Management was then assumed by Otter. At the commencement of the joint venture, the project was essentially at a grass roots exploration stage, but represented an opportunity to access over 2000km² of largely unexplored ground in what appeared to be an emerging gold province. Within the entire joint venture area, only one exploration drillhole, by Enterprise Exploration in 1961, had ever been drilled. Work by Otter in the preceding 12 months had defined anomalous gold in laterite and soil in several areas: viz. Redback Rise, southern extensions of the Tanami Mine Lease held by Zapopan, Black Hills, Apertawonga Ridge, and Wild Turkey. The strongest bulk cyanide leach (BCL) values in soil had been obtained at Redback Rise with several values over 1ppm Au and a peak value of 15ppm Au.

Following the commencement of the JV, a programme of RAB drilling was initiated immediately in September 1990 to test the strongly gold anomalous soil. Two fences of 30 RAB holes were drilled to refusal across the strongest of the Au in soil anomalies. Results were disappointing, with the best intersections being (in separate holes): 4m @ 2.3 g/t Au and 8m @ 0.7 g/t Au.

A programme of RC drilling was commenced immediately afterward, in September/October 1990. 26 RC holes were completed on seven short fences, with holes 40m apart and drilled to approximately 100m down hole. The holes were sited on areas of peak gold-in-soil geochemistry and were aimed to test for mineralisation beneath the surface anomalies and to investigate the geochemical characteristics of the regolith in this region. Two holes obtained significant

intersections, however the remaining holes intersected narrow or low grade mineralisation. Best intersections were: 23m @ 6.4 g/t Au and 10m @ 3.3 g/t Au.

Sections were subsequently drilled to the north and south of the better intersections, and gave generally weak results.

In summary, this first phase of drilling, while providing some well mineralised intersections, returned generally mediocre results from such a well defined soil anomaly.

1991 Programme

In 1991, a field programme was mounted involving airborne magnetics, extensive geochemical sampling, and the drilling of 17,400 m of RAB. RAB drilling was carried out again at Redback rise and also at Dogbolter and Jim's Find. The highlight of the 1991 programme was the location of significant intersections in two new areas: Dogbolter and Jims Find. At Dogbolter, along strike from Redback Rise, soil sampling in 1990 had defined an anomaly with values up to 18ppm Au. While mapping and sampling of this area was being carried out in 1991, a narrow outcropping quartz vein was discovered which returned assays in excess of 5ozs/t Au. Subsequent soil sampling over this defined an anomaly extending approximately 640m along strike. RAB drilling on three sections returned some highly encouraging results, including:

18m @ 3.4g/t Au
18m @ 10.6g/t Au.

Sampling at Jims Find in 1990 had located anomalous gold values of up to 98ppm Au, extending intermittently over 4km of strike. Following infill soil sampling in 1991, 29 RAB holes were drilled on two lines, intersecting a broad zone of weak mineralisation within which several very encouraging intersections were obtained, including:

10m @ 3.0g/t Au
56m @ 3.1g/t Au.

At Redback Rise further RAB drilling in 1991 obtained scattered intersections in what are now known to be the Redback SE, Redback SW, and Funnelweb zones.

1992 Programme

In 1992, exploration focused on definition drilling of mineralisation previously intersected and regional sampling in order to appraise large areas of the ELs to satisfy partial relinquishment requirements.

At Jim's Find, drilling indicated several zones of gold mineralisation of potentially economic grade extending intermittently over 700m of strike. In addition, numerous lower grade zones adjoining these were defined.

At Redback Rise and Dogbolter, drilling delineated several significant zones of potentially economic grade mineralisation with strike extents generally in the range 160-200m.

A programme of Aboriginal employment was successfully initiated during the second half of 1992.

1993 Programme

Despite the intersection of gold mineralisation in several areas prior to 1993, it was in 1993 that the field programme clearly demonstrated the likelihood of gold mineralisation of economic dimensions. This resulted from re-orientation of the grids at Jim's Find, Redback SE and Redback SW once the orientation of the mineralisation was clearer and the drilling of systematic RC holes to approximately 120m depth with cored diamond tails?? below the water table. This work defined a coherent and well mineralised zone extending approximately 400m along strike at Jims Find and smaller zones at Redback. At the end of 1993, the inferred resource estimate was:

Jims South	1.7 million tonnes @ 3.0 g/t Au
Dogbolter	0.7 " 4.7 "
Redback SE	0.6 " 3.5 "
Redback SW	0.8 " 2.2 "
Total	3.8 million tonnes @ 2.9 g/t Au (351,812oz)

In addition, excellent potential for substantial additions had been clearly demonstrated.

1994 Programme

The 1994 programme concentrated on (a) defining the known resources which would form the basis for a feasibility study; (b) outlining additional resources in areas adjacent to the known mineralised pods; (c) gaining a better understanding of the stratigraphic and structural controls associated with the mineralisation by relogging of old core and drill chips; and (d) maintaining a regional effort and perspective so as to generate new target areas.

In mid 1994, a decision was made by the CDJV partners to try and secure an option on the mothballed Tanami plant. With this decision, the focus of the resource delineation work shifted exclusively to those areas closest to the existing plant (ie. Redback and Dogbolter). Definition and outline work consisted of approximately 75km of line drilling. Almost 50% of this drilling was infill, which was carried out to upgrade the resource categories at Redback SE and SW at

Dogbolter Main and in the Jims South zone. By the end of this programme, the resource categories of all these areas had been upgraded from Inferred to Indicated or Measured.

Regional exploration work continued vigorously in 1994 in an effort to find a new mineralising district away from the Redback, Dogbolter and Jims areas to supplement the resource base. Regional work was comprised of (a) post hole RAB sampling over new areas; and (b) angled RAB and/or RC drill testing across pre-existing and newly defined anomalies (mainly within possible trucking distance of the Zapopan plant site).

Most of the regional angled RAB work (comprising 24,700m) was concentrated in the Redback North and Redback South areas, systematically drill testing across surface geochemical anomalies on 160m spaced lines. The Redback North area has since been subdivided into main prospect areas (Carbine and Phoenix) and the Redback South area has since been divided into four main areas (Daddy, Long, Legs and Lynx).

As part of the regional programme, following a review of regional drilling data at Suplejack EL 1254, it was evident that a number of the scattered drillholes in the licence had either stopped short of or in narrow (1-2m) wide zones of mineralisation. To investigate these zones further before the end of the licence period, a programme of approximately 2000m of RC drilling was completed across the known geochemical anomalies, testing new zones and following up drilling which appeared to have stopped short. This work gave encouraging results, including best intercepts of 11m @ 2.68g/t Au and 12m @ 3.19g/t Au.

By the end of 1994, most of the known resources had been upgraded at least one category and an additional 50,000oz had been included as part of the resource statement (from new areas at Dogbolter North-east and Harleys). Identified resources at years end totalled 3.55mt @ 3.6g/t Au (or 408,000oz) including:

Measured	0.34mt @ 6.2g/t Au
Indicated	2.40mt @ 3.6g/t Au
Inferred	0.81mt @ 2.5g/t Au

Significant additional potential had been highlighted by early results from the Redback Central (now includes Katipo, Hunstwoman, Trapdoor and Hunstwoman areas), at Redback South, Redback North (containing Incy and Wincy) to the Zapopan mine lease and Redback Northwest (Funnelweb) area and to the north at Suplejack.

1995 Exploration (Otter)

Exploration during the year has concentrated largely on areas currently under Mineral Lease application and within 15kms of the treatment plant. A combination of shallow geochemical drilling, ultra-detailed airborne magnetics and structural interpretation has led to the discovery of a number of new prospects, nine of which have Identified Mineral Resources.

Four new prospects between the identified Redback Rise and Dogbolter areas (Daddy, Long, Legs and Lynx) highlight the difficulty of discovering moderate size gold deposits under transported cover and in complexly developed weathered terrains. Like the Tanami Mine area (Some 18 pits within a 1000 hectare area producing 430,000 ounces of gold), the Tanami Mine

Complex, a locally derived name for the package of prospective rocks extending at least 15km north and south of the Tanami Mine, the zone from Redback North to Dogbolter is demonstrating the potential to contain the same frequency of gold mineralised structures and with careful attention to structure and lithology, many of the identified targets will convert to identified resources and, hopefully, reserves.

There is justifiable optimism also, given that there is little variation in deposit styles along strike from the Tanami Mine to Jims, that more than 50% of the Tanami Mine Complex within 20km of the Mine Plant remains untested.

Considerable work in further drilling, extending and upgrading existing resources to reserves at Dogbolter and Redback Rise continue to provide encouragement. Intersections beneath Dogbolter Main yielded a best result of 10m @ 29.4g/t Au, from 124m down hole, supported by other good grade and thickness intercepts along strike. Almost all the deposits identified > 30,000 ounces are unconstrained at depth, with a number having high grade results that may provide encouragement to develop underground.

Regionally, the Tanami projects provide additional encouragement with preliminary drilling outlining Inferred Resources containing 108,000 at Crusade, within the Supplejack Licence, some 100kms further north.

Conclusion

The main points to note, which are relevant to this course, stem not so much from the methods and approaches used but in the perseverance and persistence exhibited over twenty years that finally led to production.

Key Issues:

1. Target area, gold-bearing Early Proterozoic sedimentary sequence intruded by large, fractionated granite bodies.
2. Search directed along strike from known mineralisation using conventional BCL soil and later RAB geochemistry. Good for sub-cropping basement and skeletal soils.
3. Later recognition of the complexities of the regolith and the differentiation between transported and in-situ laterite . Essential for covered areas.
4. The recognition of the key structural elements controlling ore deposition and their orientation.
5. The use of regional and, later, detailed areomagnetics to define the Tanami Complex extent, zones of displacement and magnetic destruction.
6. The approach to the Central Land Council, its officers and traditional owners. Establishment of trust and an acceptable agreement for both sides. Sacred sites, sites of significance and Aboriginal employment.