PAN RESOURCES PLC

GEOPHYSICAL REVIEW & RECOMMENDATIONS

WOOLGNI PROJECT, NORTHERN TERRITORY

At the request of KastellCo, AsIs Pty Ltd has completed a brief review, with emphasis on geophysics, of the Woolgni tenement area. This project comprises an area of about 2,050 square kilometres in the southern part of the Palaeoproterozoic Pine Creek Geosyncline. The chief exploration target is gold, base metals, tin, tungsten and uranium. Geoscientific datasets and reports of previous exploration over the project area have been reviewed and options for further exploration presented.

SUMMARY & KEY RECOMMENDATIONS

Synthesis of public domain geological and geophysical information has identified the project area as highly prospective for uranium mineralisation, including unconformity, sandstone, quartz-pebble conglomerate, vein, and IOCGU deposit types.

Interpretation of aeromagnetic data has shown that analysis of subtle magnetic trends can reveal structures and shears that may host gold/base metal mineralisation in the Cullen Batholith.

Recommendations :-

1) **Acquisition of detailed low-level airborne magnetic and radiometric data over 1,300 square kilometres of the tenement area.**

2) **Acquisition of detailed low-level airborne magnetic and radiometric data over the remaining 700 square kilometres of the tenement area.**

3) **Interpretation of the new airborne data to define signatures of existing deposits, and selection of new targets for further geochemical/geophysical investigations or direct drilling.**

4) **Ground spectrometer traverses over the U/Th anomalies on the unconformity at the base of the Depot Creek Sandstone in the north-west corner of EL 23569.**

DATA REVIEWED

The following public domain information sources were accessed:

1) 1:250,000 geology maps comprising :
    a. Fergusson River published by Bureau of Mineral Resources, Geology and Geophysics in 1972.
    b. Katherine published by Australian Geological Survey Organisation in 1994.
    c. Mount Evelyn published by Bureau of Mineral Resources, Geology and Geophysics in 1963.
    d. Pine Creek published by Northern Territory Geological Survey in 1993.

   Horizontal resolution is 25 metres.

2) 1:250,000 scale topographic information from NATMAP topographic series. Horizontal resolution is 35 metres.

3) Landsat7 composite image from Geoscience Australia; RGB bands 1-2-3 and bands 2-4-7. Horizontal resolution is 25 metres.

4) Elevation data from SRTM (Shuttle Radar Topography Mission). Horizontal resolution is 90 metres. Vertical resolution is about 5 metres.

5) Open file gravity data, gridded at200 metres, from NTGS.

6) Open file aeromagnetic and radiometric data from NTGS. This information has been derived from two surveys:
    a. Mary River survey flown by NTGS on 400 metre east-west flight lines at 80 metres height in 2000. Crystal volume for radiometric data is 33.6 litres.
    b. Fergusson River survey flown by BMR on 1,500 metre east-west flight lines at 150 metres height in 1975. Crystal volume for radiometrics is 4 litres.

7) Mineral deposit data from NTGS MODAT database.

8) Open file company reports as supplied per KastellCo.

GEOLOGY

The geology of the tenement area is dominated by granite batholiths, specifically the Cullen Granite, emplaced during the Cullen Event (1850-1820 Ma). Palaeoproterozoic sediments of the Finnis River Group and Tolmer Group outcrop peripheral to the granites in the north, north-west and south-east of the tenement area. There is minor outcrop of Cambrian sediments in the south-western part of the tenement area. A summary map is shown in Interp_on_Geology_01. The geology of the mineralisation is described in open file reports and the Technical Report Summary by P. Kastellorizos (2006). Within the tenement area all mineral deposits occur in shear zones in the Cullen Granite (except for the Copperfield South Au deposit).

Plans of other geoscientific data include Interp_on_Elevation_01, Interp_on_LandSat_01, Interp_on_MinOccs_01, and Interp_on_Topography_01.

INTERPRETATION OF MAGNETIC DATA

The aeromagnetic data is of sufficient detail to enable interpretation of the magnetic lithologies only in the area covered by the Mary River survey. Data over the major part of the tenement area is from the 1975 Fergusson River survey, and is of inadequate quality for this study.

The aeromagnetic data has been analysed using various filters. The images presented here are a colourdrape image using reduced-to-pole TMI in the colour band, and RTP 1VD in the intensity band, and a tilt-angle image of RTP data. Refer plans Interp_on_Aeromag_01 and Interp_on_Aeromag_2.

The Cullen Granite is virtually non-magnetic. Variations within the granite can be observed e.g. in the central north of EL 23569, and in the extreme north-east part of the tenement area. The former response may be due to the Palaeoproterozoic Lewin Spring Syenite (Pew). The latter is probably another granite in the Cullen Batholith.

A prominent, continuous linear magnetic anomaly approximately parallel to the Pine Creek Shear corresponds to an undifferentiated dolerite dyke.

The dominant magnetic expression occurs in the south-east of the tenement area. The pattern is typical of extrusive volcanics. Much of this area is mapped as sediments of the Tollis Formation, which includes mafic tuffs of the Dorothy Volcanic Member. These are the probable source of the magnetic pattern, although further to the east fine-grained volcanics of the Edith River Group are observed to produce the same magnetic expression. It is possible that the vague magnetic relief seen in the area of substandard data is caused by extrusive volcanics.

Synthesis of the aeromagnetic data with the distribution of mineralisation shows there is no obvious correspondence between the two. Specifically, there are no distinct magnetic anomalies uniquely associated with any of the gold/base metal/uranium deposits or occurrences. The major magnetic minerals, in decreasing order of susceptibility, are magnetite, ilmenite and pyrrhotite. With the exception of magnetite as an accessory mineral in the volcanics, it seems these minerals are rare in the project area, either in association with mineralising events or in the general lithologies.

Analysis of the first vertical derivative data reveals weak magnetic trends in the Cullen Granite. These are generally oriented north-north-west. Some of these trends correlate with quartz veins in the granite. These trends are not visible in the area of substandard data. The Tennysons No. 5 and Tennysons No. 6 uranium occurrences are located on two of these trends. A report on the uranium prospects on AP1988 noted “Radioactivity is high where reefs trending north-north-west are cut by cross fractures trending north-north-east.” (Duncan, 1970, p.4). The north-north-east trending fractures are not evident in the aeromagnetic data, although they may be detectable in more detailed data.

Due to the absence of magnetic minerals in association with the vein style deposits, the utility of the magnetic method is largely restricted to definition of the subtle magnetic expressions of the host shears and structures. In this respect the preferred exploration option is to acquire new low-level aeromagnetic/radiometric data on flight lines spaced no more than 200 metres apart, and preferably 100 metres apart.

INTERPRETATION OF GRAVITY DATA

Gravity coverage over the tenement areas is very sparse. Within the tenement area there are less than 40 gravity observations in the Geoscience Australia 2003 gravity database. Observations are commonly ten kilometres apart. The image shown (refer plan Interp_on_Gravity_01) is a subset of the Australian National gravity grid, gridded at 200 metres. For deposit or prospect scale investigations this information is of little value.

Looking at the regional picture, it appears sediments of the Finniss River Group extend into the central part of EL 23569, as evidenced by the broad gravity high. It is possible that the sediments here occur under shallow granite cover. Conversely, the gravity low in the south-east part of the study area corresponds to mapped Burrell Creek Formation. In the extreme north of EL 23569 this unit correlates with a positive gravity response. It is postulated that the sediment package is relatively thin in the former area. Alternatively the prominent gradient oriented about 35 degrees could represent the boundary between tectonic units.

Outside of regional studies, the gravity method is not a primary exploration tool for vein style gold mineralisation. More detailed gravity, for example on a one x one kilometre grid, would assist interpretation of structures on a tenement scale, and could also identify discrete excess density anomalies which may represent iron in iron oxide copper-gold-uranium (IOCGU) systems. This is not a high-priority option at this stage. To cover the whole area would require about 2,100 gravity stations, at an estimated cost of $70 per station.

INTERPRETATION OF RADIOMETRIC DATA

The airborne radiometric data over the study area has been derived from the NTGS Mary River survey, flown on 400m east-west traverses at a height of 80 metres, and from the BMRGG Fergusson River survey, flown on 1,500 m east-west traverses at a height of 150 metres. Crystal volume is 33.6 and 4 litres respectively. Images of uranium and uranium/thorium ratio are included as plans “Interp_on_Uranium_01” and “Interp_on_UThRatio_01”. Neither of these surveys produced high resolution data. The Mary River survey data is semi-regional, although it was flown relatively recently and is adequate for tenement scale interpretation. The Fergusson River data is very coarse and very old.

The known uranium occurrences at Tennysons, YMCA, Hore and O’Connors, Yerberrie and Fergusson River are shown on the interpretation plans. The Fergusson River occurrence coincides with a slightly elevated response in the uranium channel data. There are no radiometric anomalies directly associated with any of the other occurrences, although as mentioned above the existing airborne coverage is inadequate for studies other than at tenement or larger scale. It is noted that the general area encompassing the known uranium occurrences has a slightly elevated uranium channel response. Elevated uranium values are also recorded in the north of EL 23569 and the north of EL 23568. It must be remembered that there is a bias in the data, due to the coarse data spacing over the Fergusson River survey area.

The tenement area is located in one of the world's great uranium provinces. The presence of uranium occurrences in the Cullen Granite indicates this is a potential source rock. The International Atomic Energy Agency recognises 15 main categories of deposit types. Within the tenement area there is potential for the five foremost deposit types, as ranked by economic significance:

1) Unconformity-related deposits. These represent some of the biggest or richest known deposits, including all those in the Alligator Rivers region of the Northern Territory, and all of Canada's mines, including McArthur River (Athabasca Basin, Saskatchewan) with proven and probable reserves of 176 million kg U3O8 at an average grade of 25%.

2) Sandstone deposits. These are often amenable to in-situ leach (ISL) mining. Most uranium mining in the USA is by ISL, as is the Beverley mine in the Frome embayment of South Australia. The fourth Australian mine, at Honeymoon in South Australia, will also be an ISL operation.

3) Quartz-pebble conglomerate deposits. These make up 13% of the world's uranium resources, and include the Witwatersrand gold-uranium deposits in South Africa. Some quartz-pebble conglomerates with low grade mineralisation are known in Western Australia. These are all in the Archaean-Palaeoproterozoic, formed in an anoxic environment.

4) Vein deposits. The major deposits of this type are in the Czech Republic and Zaire. All uranium occurrences known to date in the tenement area occur as veins in Cullen Granite.

5) Breccia complex deposits. This includes the world's largest polymetallic orebody at Olympic Dam in South Australia. Although no mineralisation of this type have been identified in the Pine Creek area, gravity coverage, which is the primary geophysical exploration tool for IOCGU deposits, is inadequate over the entire tenement area.

Specific areas of interest for uranium exploration in the study area are identified below.

Volcanics of the Edith River Group (1780-1650 Ma) crop out in the central east of EL 23569. These are interpreted to unconformably overlay the Cullen Granite. This represents a suitable environment for precipitation of uraniferous minerals in the basal sequence which includes conglomerate and shale.

Sediments of the Mesoproterozoic Tolmer Group crop out in the north-west corner of EL 23569. At the base of this group is the Depot Creek Sandstone, a pebbly quartz sandstone unconformably overlying the Cullen Granite. This presents a suitable environment for uranium precipitation. Dolomites in the overlying Stray Creek Formation are a possible source of sulphates in the precipitation process. A number of elevated U/Th ratio values occur near the margins of the Depot Creek Sandstone. This is illustrated in Figure 1, which shows the radiometrics superimposed on the geology. This is a standout target.

The area of Quaternary cover hold potential for roll-front sandstone deposits. Increased thicknesses of (?Tertiary) or Quaternary sediments may be developed in channels incised

into basement. The setting of this area is similar to that of the Beverley mine, which occurs in Miocene sediments immediately adjacent to Proterozoic rocks of the northern Flinders Ranges in South Australia.

In the extreme north of EL 23568 occurs the highest uranium channel value in the tenement area. This is recorded as 14 on a background of 6-7. It is located near the edge of outcrop of Cullen Granite. Given that the general area encompassing the known vein uranium occurrences shows an elevated response in the airborne radiometrics, this location on the Mount Evelyn sheet is worthy of field investigation.

The possibility of concealed IOCGU deposits exists in the area of Quaternary cover. The history of discovery of three significant breccia complex deposits in South Australia – Olympic Dam, Prominent Hill and Carapateena – indicates the preferred exploration tool is gravity observations on a one x one kilometre grid.

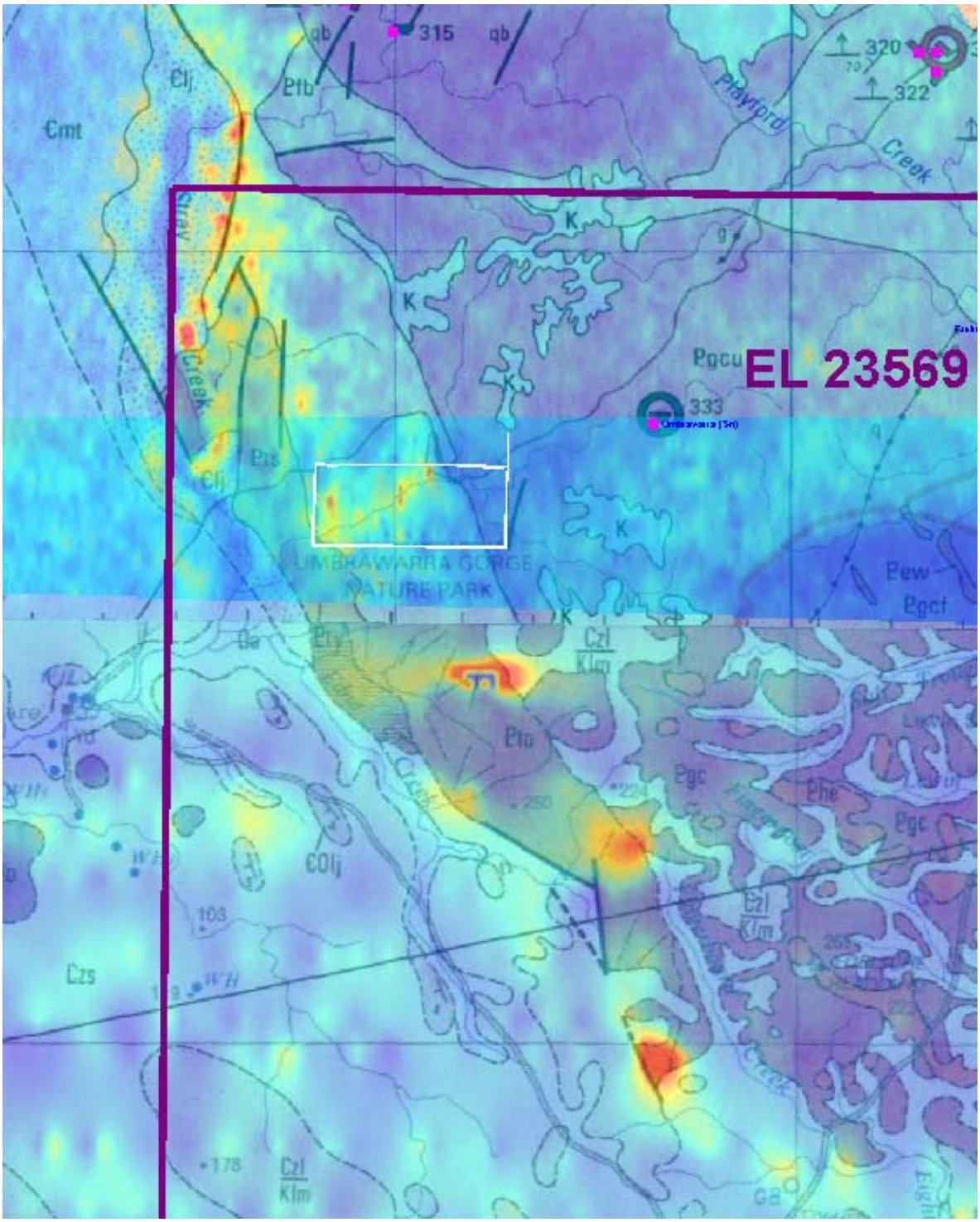

Figure 1. North-west corner of EL 23569, showing a semi-transparent colour image of Uranium/Thorium ratio from airborne survey data, over published geology. The anomalous areas occur close to the unconformity surface at the base of the Depot Creek Sandstone. Image covers an area approximately 12 x 15 kilometres.

RECOMMENDATIONS

In order to fully evaluate the mineral potential of the tenements, and prioritise areas for field follow-up, it is essential that a low-level airborne magnetic and radiometric survey be commissioned. This involves the area covered by the Fergusson River survey, which is 1,300 square kilometres. It is proposed that data be acquired on north-south traverses spaced 100 metres apart, for a total of 14,300 km (this includes orthogonal tie-lines at 1000 metre intervals). Cost of acquisition with a fixed wing system, plus interpretation, is estimated at $180,000. It would be highly desirable to also acquire detailed data over the remainder of the tenement area presently covered with the Mary River 400m line spaced data. This would involve an extra 8,300 line kilometres, costing a further $100,000.

Interpretation of this detailed airborne data would provide:

1) Information to assist geological mapping and definition of units, particularly those under cover.
2) Detailed structural analysis to assist exploration for all commodities.
3) Definition of magnetic/radiometric signature of all known deposits and occurrences.
4) Identification of new prospects based on analysis using the known signatures
5) Possible direct detection of new uranium prospects.

This list covers the basic outcomes of flying a detailed airborne survey. The Fergusson River area has been subject of no airborne surveys, government or private company, since 1975. In this respect it is a new frontier of exploration; an ideal area to apply concepts of ore genesis gleaned in the 30 years since.

It is also worth noting that subsequent to the discovery of the (then) world's largest diamond deposit at Argyle in Western Australia, the major diamond exploration companies considered this area to be highly prospective for kimberlite pipes, The data from the airborne survey should be analysed for possible kimberlite pipe targets.

G. J. Bubner
For Pan Resources PLC
17th August 2006

REFERENCES

Duncan, N, 1970. Report on the Uranium prospects In AP1988, Northern Territory. Unpublished company report. Northern Territory Geological Survey Open file report no. CR1970/077.

Kastellorizos, P., 2006. Pan Resources PLC. Summary Report Gold Float for the AIM Market. Technical Report Summary. Unpublished company report.