TITLE HOLDER	USI NT PTY LTD		
TITLES/TENEMENTS	EL 27343		
	TENEMENT SUMMARY REPORT FOR THE PERIOD 23 <sup>rd</sup>		
REPORTITILE	NOVEMBER 2010 TO 22 <sup>nd</sup> NOVEMBER 2011 FOR EL 27343		
AUTHORS	JENNIFER BIDDLECOMBE & MATTHEW FINN		
TARGET COMMODITY MANGANESE			
DATE OF REPORT	21 January 2012		
DATUM	GCS GDA94		
250 000 K MAPSHEET	HENBURY		
100 000 K MAPSHEET PALM VALLEY, JAMES			
	M FINN & G STREET		
	8 MAY AVENUE		
CONTACT	SUBIACO, WA		
(TECHNICAL DETAILS)	6008		
	08 9388 2839		
	INFO@INTERGEO.COM.AU		
CONTACT (EXPENDITURE	LEEWAY@IINET.NET.AU		
DETAILS)			

# Report prepared by INTERNATIONAL GEOSCIENCE LTD



On behalf of

USI NT PTY LTD



# TENEMENT SUMMARY REPORT FOR THE PERIOD OF 23 <sup>rd</sup> NOVEMBER 2010 TO 22<sup>nd</sup> NOVEMBER 2011 FOR EL 27343

21 January 2012

Report prepared by: Jennifer Biddlecombe Project Geologist

3

Report reviewed by: Matthew Finn Senior Geoscientist

International Geoscience Pty Ltd. ABN 48 424 195 890 8 May Ave. Subiaco, Western Australia 6008 Email: info@intergeo.com.au +61 (08) 93882839

#### DISCLAIMER STATEMENT

This document and the geoscience data presented herein have been provided by qualified and competent geologists and geophysicists using industry accepted principles and scientifically accepted methods and techniques. International Geoscience Pty Ltd does not (and cannot) guarantee or warrant the accuracy of the results as interpretation products are always subject to limitations of the data and information used in creating them. The conclusions and recommendations presented in this document are the results of a comprehensive study and analysis of the available data and theory at the time of this documents creation.



### **EXECUTIVE SUMMARY**

USI NT PTY LTD (USI) hold exploration licen se EL 27343; one of five EL's in the region collectively referred to as the Amadeus project area. The se five EL's have recently been granted group reporting status; therefore this will be the last individual Annual Report for this tenement. This block of tenements is locate d in the southern portion of the Northern Territory, approximately 90km southwest of Alice Springs.

Limited fieldwork has been completed on this tenement during the 2011 field season, due to expenditure commitments to other more prospective tenements. The western region of the tenement was visited during a 2 week field trip to the area. Two rock samples were collected however these were not submitted for analysis.

Due to the tenement being held for 2 years by USI, EL 27343 is curren tly under application to be reduced by 50%, following government guidelines. This will reduce the size of the tenement from 133 blocks to 66 blocks.

Desktop studies suggest that there is still potential for significant manganese mineralisation within the western region of the tenement, and a detaile d sampling campaign has been planned for 2012.

Trace amounts of Mn are recorded throughout the region. A study of the geology indicates that conditions have existed for deposition of Mn in a shallow water environment where the anoxic conditions are disturbed during periods of marine transgression and regression. Both Mn oxide and carbonate mineralisation may be possible. A source of marine Mn is thought to be the Palaeoproterozoic to Mesoproterozoic Madderns Yard Meta morphic Complex of the Arunta Block crystalline basement

Support for this interpre tation is provided by several Mn oc currences clustered within this Formation along strike to the east (eg: Fenn Gap. The Fenn Gap occurrence, averaging 39% Mn, is sub-vertical and consists of pyrolusite-stained brecciated dolostone. The mineralisation is limited to the surface and appears fault-controlled (Ferenczi, 2001).



# CONTENTS

1	Over	view	. 1		
	1.1	Access	.2		
	1.2	Regional Geology	. 2		
	1.3	EL 27343 Geology	.4		
	1.4	Mineralisation	.6		
	1.5	Manganese Mineralisation Potential	.7		
	1.6	Previous Exploration in the region	.7		
2	Expl	pration activity of 2011	. 9		
	2.1	Field Work	. 9		
	2.2	Relinquishment	10		
3	Expl	pration stratergy for 2012	11		
	3.1	Timing	11		
4	4 References1				



## FIGURES

Figure 1: Location of USI's tenements collectively referred to as t he Amadeus project area, with EL 27343 shown in red. Base image is an Ortho-rectified image from Bing Maps. 1

Figure 3: Geology map for EL27343 (and EL27799) derived from NTGS 250 k Henbury digital data 5

Figure 4: Mineral occurrences from the NT database throughout the Amadeu s project Area. 6

Figure 6:	Sampling locations for 3 rock samples, collected in July 2011	9
Figure 7:	Relinguished area of EL 27343 shown in grey hash	10



# 1 OVERVIEW

Universal Splendour Investments (USI) hold exploration license EL 27343; one of five EL s collectively referred to as the Amadeus project area (Figure 1). This block of tenements is located in the southern portion of the Northern Territory, approximately 90km southwest of Alice Springs.

Within the 2011 reporting period, limited work has been completed on EL 27343 due to expenditure commitments to other more prosp ective tenements. A total of four field visits were undertaken to ascertain access to the Amadeus tenements and collect rock samples, however EL 27343 was visited only once.

In addition to field work within the other Amadeus tenements, ground electromagnetic surveys were conducted over two areas and a ground gravity survey over one of these two areas. ASTER data was purchased and processed in an ef fort to identify additional target areas within the southern region of the Amadeus project area

The reason for selecting the Amadeus tenements was the close proximity to a known manganese occurrence at Fenn Gap, located to the nort heast of the tenements. This occurrence is reported to average 39% Mn with a maximum of 50.9%.

Although limited fieldwork has been conducted for this tenement, a detailed desktop study has been completed for the area during 2011. This information has been included within the regional and local geology sections of this report.



Figure 1: Location of USI's tenements collectively referred to as the Amadeus project area, with EL 27343 shown in red. Base image is an Ortho-rectified image from Bing Maps.



#### 1.1 Access

Access into EL 27343 is good for any 4WD vehicle with many minor tracks traversing the area, particularly in the northern region (tracks shown in grey in Figure 1). Helicopter support may be required for future field campaigns to southern regions of the tenement.

Tenement No.	Ownership	Application Date	Grant Date	Blocks Applied	Blocks Granted	Expiry Date
EL27371	USI NT PTY LTD	05/05/2009	23/11/2009	133	133	22/11/2015

#### 1.2 Regional Geology

The majority of the geological information was sourced from Warren and Shaw (1995) unless otherwise indicated.

The regional geology surrounding the Amadeus project area consists of three main tectonostratigraphic subdivisions; a Palaeoproterozoic to Mesoproterozoic Arunta Block in the north (Figure 2); a Neoproterozoic to mid-Palaeozoic Amadeus Basin in the central and south and a veneer of intra-cr atonic Permian and Tertiary to Quaternary sediments.

The Arunta Block is divided into three Provinces (Northern, Central and Southern), only the Central and Southern lie within the Amadeus project area . The Central and Southern Provinces are separated by the WNW trending Redbank Thrust Zone (RTZ). The RTZ is a high-strain zone of anastomosing shears that separate granulite-facies rocks of the Central Province from amphibolite-facies rocks of the Southern Province.

The Amadeus Basin represents a relic of sediments that covered central Australia from the Neoproterozoic to the end of the Devonian. It consists of a basal unit of Heavitree Quartzite with an overlying Bitter Springs Formation. Unconformably overlying these basal units are the Areyonga, Pioneer and Pertatataka Formations. These units are then unconformably overlain by the Arumbera Sandstone. Several units of clastic and carbonate rocks have been deposited from the Cambrian through to the Devonian.

The Heavitree Quartzite was deposited on the eroded surface of the Arunta Block. It forms a prominent ridge marking the northern edge of the basin.

The Bitter Springs Formation consists of carbonates, evaporates and fine-grained clastic sediments. This formation has been developed due to a deepening of the basin and a rapid decline in the supply of terrigenous sediment under anoxic conditions and progressing to high-stand sediments.

The overlying Areyonga Formation consists largely of diamictite and was deposited on the eroded surface of the Bitter Springs Formation. Clasts in this unit were derived from the Arunta basement, Heavitree Quartzite and Bitter Springs Formation.

The Pioneer Sandstone is a shallow -marine to tidal unit confined to the central part of the Amadeus Basin. It rests unconformably on the Areyonga and Bitter Spring Formations.

The Pertatataka Formation was originally thought to consist of two clastic units separated by a dolomitic layer but now only the lower clastic unit is mapped as Pert atataka Formation. The dolomitic layer now belongs to the Julie Formation and the upper clastic unit to the Arumbera Sandstone.

The Arumbera Sandstone represents a prograding delta and marine deposit within elongated troughs. It consists of two coarsening-upwards sequences of siltston e and sandstone. Conflicting information places this unit within the base of the Cambrian Pertaoorrta Group.





Figure 2: 1:2.5 million interpreted geology map from the NTGS digital data. The legend has been mod ified from the original digital data to cor relate with the explanatory notes.



Structurally the region is divided into three tectonic events; the formation and cratonisation of the Arunta Block, the development of the Amadeus Basin and the deposition of cover material and deformation of the Arunta Block and Amadeus Basin.

The formation of the Arunta Block ended with the emplacement of the Teapot Granite Complex and the emplacement of the Stuart Dykes. This period of deformation involved several events, the most important of which were the Che wings Orogeny (1600 Ma) and the Anmatjira Uplift Phase (1500-1400 Ma).

The Chewing Orogeny imposed a regional, predominantly east-west, pervasive foliation in the Southern Province. This event was respon sible for forming the Chewings High-Strain Zones, which are characterised by highly schistose and mylonitic amphibolite-facies rocks.

The Anmatjira Uplift Phase formed the high-strain zones of the RTZ and shows north-oversouth sense of shear and represents a Mesoproterozoic thrusting episode.

The development of t he Amadeus Basin began with subsidence at about 1080 Ma . Subsequent development was influenced by episodes of compression and block tilting. The basin closed with the start of the Alice Springs Orogeny.

The Alice Springs Orogeny was a major compressional event involving folding, thrusting and overall uplift. It affected both the Arunta Block and the Amadeus Basin.

From the end of the Devonian onwards, central Australia has remained stable, with gentle warping and small-scale fault movements. Late Permian sediments were trapped in a depression, probably fault-controlled, at the northern edge of the RTZ. In the Mesozoic and Tertiary, tectonic movements, which generally reactivated earlier faults, caused uplift and gentle tilting.

#### 1.3 EL 27343 Geology

The geology of EL 27343 consists of two anticlines within the Amadeus Basin (Figure 3). The western anticline plunges to the east whereas the eastern anticline (within EL 27343) plunges to the west. Although it is not indicated in the 250K digital data the two anticlines must be separated by a relatively open syncline.

Within the axial trace of EL 27343 one dry petroleum well (HB2) was drilled to a depth of 914 meters.

Quaternary cover is relatively minor within the EL's and only constitutes approximately 10-20% of the surface area





Figure 3: Geology map for EL27343 (and EL27799) derived from NTGS 250k Henbury digital data



#### 1.4 Mineralisation

The Amadeus project area is currently being investigated by exploration companies surrounding USI's ELs for uranium and manganese. In addition to these commodities, Pb-Zn-Cu-Ag mineralisation as well as Cu and Gypsum also appear to be present within and surrounding USI's ELs (Figure 4).

The NT geological survey has an extensive database of geochemical data including rock chip samples, whole rock samples, soil samples and stream sediment samples across the Northern Territory. In addition to this extensive database are 8 samples by Northern Mining Limited which were analysed using XRF method.

Although the Amadeus project area does not have any producing manganese mines in the area there are some encouraging results and potential for follow-up within USI's EL's.



Figure 4: Mineral occurrences from the NT database throughout the Amadeus project Area.

Mn occurrences are recorded throughout the southern area of the Amadeus project area (Figure 5). The stream sediment values within and surrounding EL 27343 (and 27799) appear to be within the core of an anticline which forms a topographic high in the area. This narrows the source of the Mn to a very limited area and effectively identifies the



Larapinta Group as the source within the ELs, most likely the Pacoota Sandstone. The assay values are not considered anomalous and therefore these tenements are not recommended for further work with respect to Mn mineralisation.

#### 1.5 Manganese Mineralisation Potential

Manganese continues to be the target commodity for this tenement.

Trace amounts of Mn are recorded throughout the region (Figure 5). The source of the Mn is unclear but early indications suggest that the Madderns Yard Metamorphic Complex and the Bitter Springs Formation.

The Anmatjira Uplift Phase formed an uplifted area subjected to erosion prior to the development of the Amadeus Basin with s ubsidence at about 1080 Ma. The Heavitree Quartzite was deposited on the eroded surface of the Arunta Block. It forms a prominent ridge marking the northern edge of the basin. The Bitter Springs Formation overlies the Heavitree Formation. Later deposition indicates periods of marine transgression and regression with erosion of the Bitter Springs surface subsequent to the deposition of the Areyonga Formation on the eroded surface of the Bitter Springs Formation.

The Bitter Springs Formation consists of ; dolostone, minor sandstone, siltstone, shale, gypsum and halite clasts. This formation has been developed due to a deepening of the Amadeus Basin following the regression and a rapid decline in the supply of terrigenous sediment under anoxic conditions and progressing to high-stand sediments.

These conditions provide an environment suitable for deposition on Mn in a shallow water environment where the anoxic conditions a redisturbed during periods of marine transgression and regression. Both Mn oxide and carbonate mine ralisation may be possible. A source of marine Mn is indicated in the Palaeoproterozoic to Mesoproterozoic Madd*erns Yard Metamorphic Complex of the Arunta Block crystalline basement.* 

#### **1.6 Previous Exploration in the region**

Despite several companies having prospection authorities or exploration licences over parts of the current tenements very little work has been done. The only significant work was undertaken by Le Nickel who were interest ed in base metals and particularly copper. They completed detailed stream sediment sampling over all of the Cambrian to Devonia n aged rocks exposed by the large anticlines in the area. Their work was unsuccessful from their point of view and whilst several geochemical anomalies were delineated no follow up work was done. Their reports present the data in plan form which could be captured if felt necessary. It is unlikely USI could improve on the sampling work done.

Other companies have looked at the diamond potential of the area without success.



ernational Geoscie

Figure 5: Geochemical assay values of Mn for; rock chip samples, whole rock samples, stream sediment samples and XRF samples from Northern Mining. Assays are over the Ortho rectified imagery (Top) and 250K digital geology (Bottom)



# 2 EXPLORATION ACTIVITY OF 2011

Within the 2010-2011 reporting period, limited fieldwork was completed on EL 27343 due to other significant expenditure requirements on USI's other tenements. Two samples were collected; however these were not submitted for analysis.

Desktop studies have continued during 2011, this work has contributed to the regional and local geology and mineralisation sections included in the Overview section of this report.

#### 2.1 Field Work

During July 2011, EL 27343 was visited during a 15 day field campaign. This trip visited all the Amadeus project tenements in the area, and visited the western region of this tenement during one day.

Two rock samples were colle cted from the same locality (Figure 6 and Table 1) at the western tenement boundary. These samples were not submitted for analysis; therefore no results have been reported.



Figure 6: Sampling locations for 3 rock samples, collected in July 2011.

Sample number	Sample type	Eastings	Northings	Description
579856	Rock	286848	7324925	Weathered sandstone with Mn and Fe staining on fracture planes. Possible boxworks present.
579857	Rock	286848	7324925	Medium grained sandstone with Mn staining on fracture planes.

Table 1: Sampling details for EL 27343	3, co-ordinates in MGA, zone 53.
--	----------------------------------



#### 2.2 Relinquishment

Due to the tenement now being held by USI for 2 years, it is under stood that USI is encouraged to relinquish 50% of the tenement blocks. International Geoscience recommended the following areas to be relinquished (indicated by the hashed areas in Figure 7), reducing the number of blocks from 133 to 66.



Figure 7: Relinquished area of EL 27343 shown in grey hash.

The eastern region was relinquished due to this area being extensively sampled by NTGS, without any anomalous results being reported. The western region has not yet been sampled or mapped in detail and is underexplored. International Geoscience aims to assess the western region's full mineralisation potential in the next field season.



## 3 EXPLORATION STRATERGY FOR 2012

Due to the l ack of previous exploration completed in EL 27343, International Geoscience proposes to undertake a number of prospecting and rock chip sampling traverses across the area. The aim of the work is to identify the manganese outcrops or layers referred to by Le Nickel and to take sufficient samples to get an idea of the grade of the material present. Float mapping of the drainages exiting the rugged hilly a reas will be used to i dentify manganese occurrences in the catchment areas.

To assist in the evaluation a spectrometer will be used to see if there are any unusual radiometric responses present.

In order to complete this work, a 2 week field campaign will be completed, which will include visiting EL 27343 (and the surrounding Amadeus Group tenements).

#### 3.1 Timing

Field work in the Northern Territory is always h eavily dependent on the weather. Normally the summer months in the Central region are dry (average annual rainfall 225mm) but this year an ex-tropical cyclone has passed through the area and caused some flooding. It is hoped that the area will be sufficie ntly dry by March to allow the field work to proceed. Ideally the first phase of sampling will be completed by March so that any follow-up work can be undertaken this year.



# 4 **REFERENCES**

Warren, R.G. and Shaw, R.D., 1995. 1:250 000 Geological Map Series, Explanatory Notes, HERMANNSBERG (SF 53-13). Department of Mines and Energy, Northern Territory Geological Survey.