

**ANNUAL EXPLORATION REPORT ON EL 24987, YEAR ENDING
8 OCTOBER, 2007 AMADEUS BASIN, NORTHERN TERRITORY**

KULGERA 1:250 000

**KULGERA 1:10 0000
VICTORY 1:100 000**

Title Holder: Malik Abrar

SUMMARY

EL 24987 is located about 1740 km south of Darwin and 240 km south of Alice Springs in the Amadeus Basin. The Exploration Licence was granted to Malik Abrar on 10 October 2006 for a period of 6 years which will expire on 9 October 2012. It covers 274 blocks (850.3 km²). The tenement contains three already granted tenements which are AS 6, MLS 148, MLS 22854 and one Exploration Permit for Petroleum (EP 125).

The project area lies in the southern part of the Amadeus Basin, an arcuate, broadly east-trending intracratonic basin bounded by the Warumpi Province to the north and by the Musgrave Province to the south. The project area is located within southern part of the Amadeus Basin which is mainly covered by the Cainozoic sediments that overlie Mesozoic and Palaeozoic sedimentary sequences. In places, isolated Proterozoic inliers are also present in the form of small outcrops surrounded by recent sediments. The sedimentary sequences of the Amadeus Basin which crop out in the project area are typical of the southern part of the Amadeus basin. Majority of the project area comprises playa lake sediments which contains various evaporitic minerals. Previous exploration programs have established a large resource of underground brines at shallow depth which can be harvested for a variety of industrial minerals. In addition, the project area appears to have potential for uranium and base metals.

During the reporting period, main activities included literature review, assessing mineral prospectivity of the area, reconnaissance visit, tenement administration and forward planning. Multi-commodity potential of EL 24987 requires a multifaceted exploration program which can address the full potential of the area. For this reason, a detailed program of exploration has been devised. First of all, available geophysical data of the project area will be reviewed to expand on the uranium potential. Geophysical data may also assist in locating underground brines reservoir to better understand the hydrogeology of the area. A detailed geological mapping program will be undertaken to define calcrete and underlying sand. A geochemical sampling program will be conducted which may follow drilling.

TABLE OF CONTENTS

Summary	2
1.0 Introduction	4
2.0 Location and Access	4
3.0 Tenement Status and Ownership	4
4.0 Geological Setting of the Project area	5
4.1 Local Geology	5
5.0 Previous Exploration History	10
6.0 Mineral Potential of the Project area	12
7.0 Work Completed for year Ending 8 October 2007	14
8.0 Forward Planning for Year Ending 8 October 2008	15
9.0 References	15

LIST OF FIGURES

Figure 1: Location of EL 24987

Figure 2: Geological setting of the project area

Figure 3: Sand Dunes with vegetation in the project area

Figure 4: Playa lake sediments containing evaporite minerals

LIST OF TABLE

Table 1: Expenditure Statement for EL 24987

1.0 INTRODUCTION

EL 24987 is located about 240 km south of Alice Springs. This report documents exploration activities carried out during the reporting period ended on 8 October 2007.

2.0 LOCATION AND ACCESS

EL 24987 is located about 1740 km south of Darwin and 240 km south of Alice Springs in the Amadeus Basin. The tenement can be reached from Alice Springs via Stuart Highway near the intersection of Lasseter Highway (Figure 1). Eastern part of the tenements is situated along the Stuart Highway. From there it can be accessed along the station tracks. Whereas part of the tenement located on the south of the Lasseter Highway can be accessed via station tracks. In both instances four wheel drive tracks are well maintained and access is available through out the year.

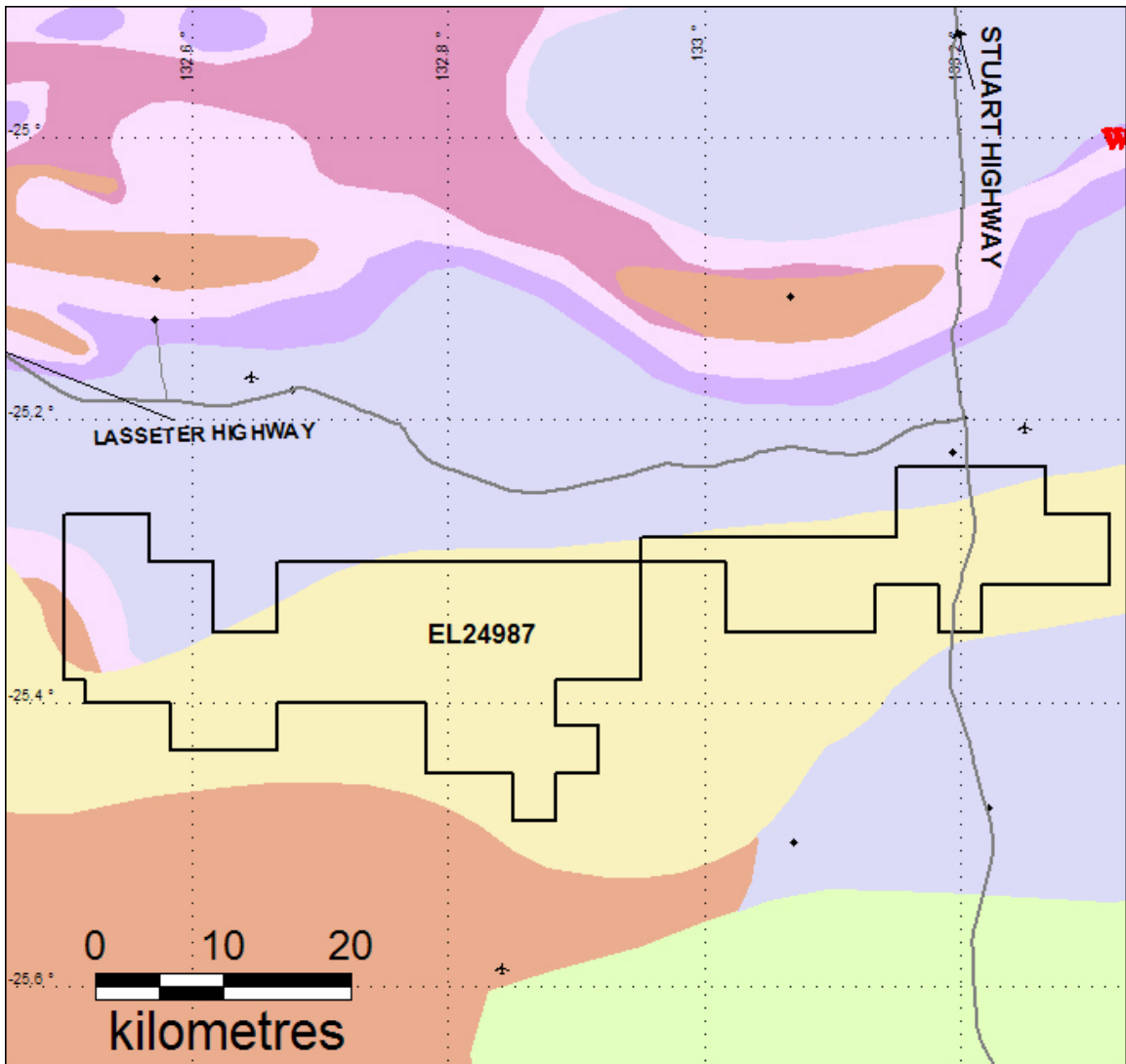
The tenement falls within Kulgera (1:250 000) and Victory and Kulgera (1:100 000) sheets. Underlying Cadastre is covered by Erlunda (PPL 1031) and Mt Ebenezer (PPL 1088) pastoral properties.

Most of the tenement is covered by playa lakes and sand dunes covered by sparse vegetation.

3.0 TENEMENT STATUS AND OWNERSHIP

The Exploration Licence was granted to Malik Abrar on 10 October 2006 for a period of 6 years which will expire on 9 October 2012. It covers 274 blocks (850.3 km²). The tenement contains three already granted tenements which are AS 6, MLS 148, MLS 22854 and one for Petroleum Exploration Permit (EP 125).

Figure 1: Location of EL 24987



4.0 GEOLOGICAL SETTING OF THE PROJECT AREA

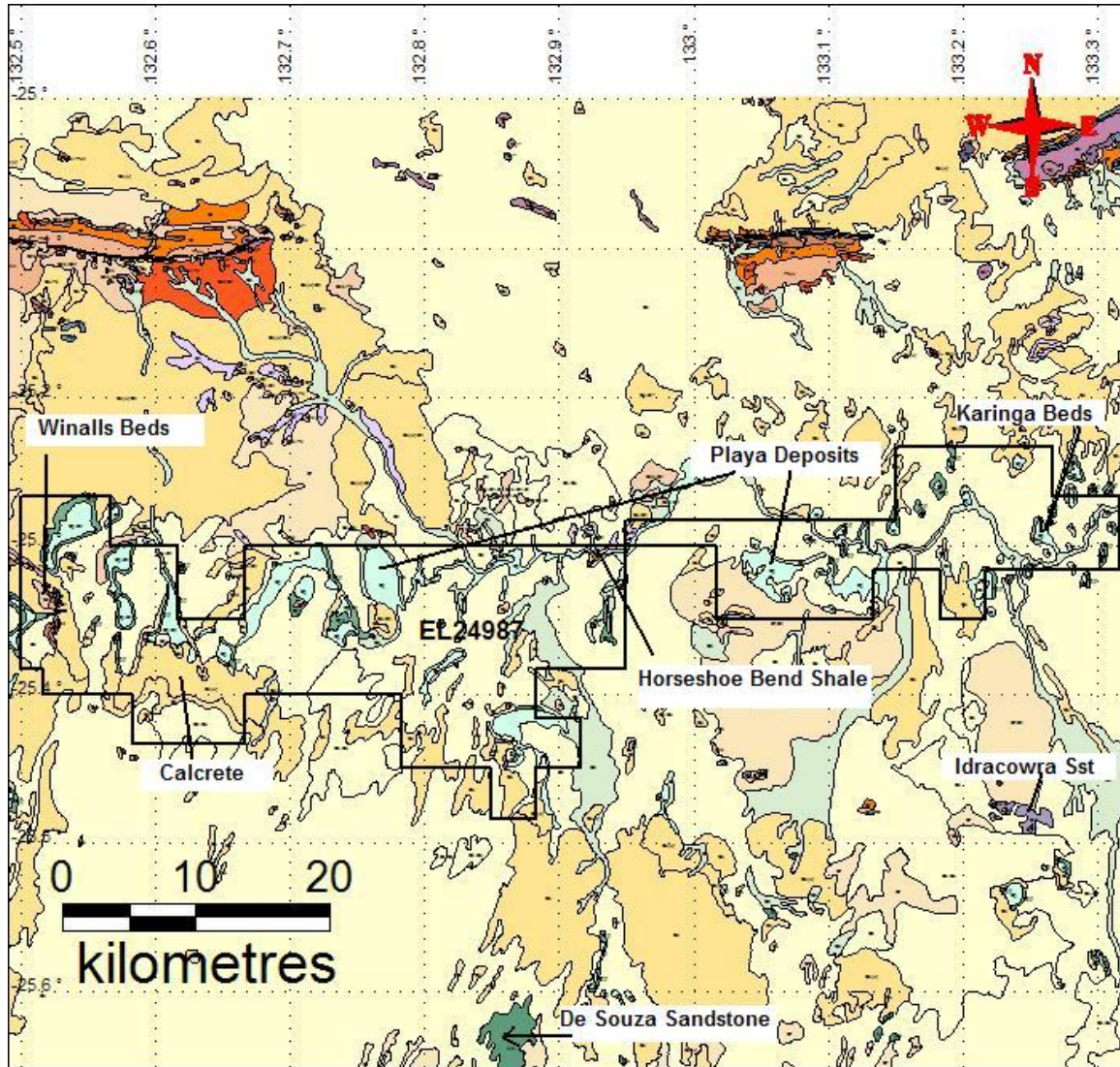
The project area lies in the southern part of the Amadeus Basin, an arcuate, broadly east-trending intracratonic basin bounded by the Warumpi Province to the north and by the Musgrave Province to the south. Sedimentation commenced in the Neoproterozoic, with the deposition of a succession of shallow-marine and continental fluvio-glacial sedimentary rocks, including thick evaporates and minor mafic volcanic rocks. These are disconformably overlain by Cambrian continental and shallow-marine sedimentary rocks, which in turn overlain by Late Cambrian-Ordovician sedimentary rocks in some areas (Wells et al. 1970; Freeman et al. 1990). The maximum total sedimentary thickness in the basin is about 10 km. Deformation occurred in the northern part of the basin during the 400-300 Ma Alice Springs Orogeny and produced broad, open, upright east-west-trending folds and thrust faults. The southern part was similarly deformed during the 580-520 Ma Petermann Orogeny.

During Tertiary, the area was subjected to weathering which led to the development of duricrust over large areas and followed by some consolidated but largely unconsolidated sedimentation. These sedimentary sequences have been classified into silcrete, ferricrete, sandstones and siltstone. Quaternary deposits cover over much of the southern part of the Amadeus Basin. During this period due to the arid climate wind and ground water processes are the major depositional mechanisms that have been operational throughout the Quaternary. The Quaternary units are Calcrete, transported sand, alluvium, colluvium, talus, Karinga beds and playa deposits (Edgoose et al. 1993).

4.1 Local Geology

The project area is located within southern part of the Amadeus Basin which is mainly covered by the Cainozoic sediments that overlie Mesozoic and Palaeozoic sedimentary sequences. In places, isolated Proterozoic inliers are also present in the form of small outcrops surrounded by recent sediments. The sedimentary sequences of the Amadeus Basin which crop out in the project area are typical of the southern part of the basin. These are thin and often incomplete. Geology of the area is shown in Figure 2 and brief descriptions of these units based on Edgoose et al (1993) are given below.

Figure 2: Geological setting of the project area



The pre-Cenozoic sequences are represented by the Bitter Springs Formation, Inindia Beds, Winnall Beds, Langra Formation, Horseshoe Bend Shale and Idracowra Sandstone.

The Bitter Springs Formation does not crop out in the project area but, in places, it has been encountered in drills holes. Small outcrops have been observed in the Erldunda Range (Edgoose et al. 1993) where it consists of dolostone, chert, dolomitic siltstone, stromatolitic dolostone and evaporitic sandstone. The dolostones are generally dark with red or purple colouration often present. About 350 m of the Bitter Springs Formation was intersected in the Erldunda No. 1 exploratory well (Pemberton and McTaggart, 1966). At subsurface the formation consisted of dolostones, sandstone and siltstone, with gypsum and halite concentration increasing with depth.

Small outcrops of the Inindia beds in the central part of EL 24987 have been encountered where they are obscured by calcrete. This subcrop forms a part of the outer ring of the Inindia beds that circle Mt Conner. The Inindia beds are characterised by rubbly and disjointed nature with no evidence of any structure present. The main lithologies are sandstone, siltstone, chert, jasper, conglomerate and limestone. Quartz rich rocks are predominant in outcrop where they are generally well cemented but vary from friable to silicified. In places, strongly hematitised horizons are present

Rocks belonging to the Winnall beds occur in small outcrops or ridges in the project area. These comprise a basal siltstone and fine sandstone (unit 1), followed by more massive sandstone (unit 2), then a siltstone or silty sandstone (unit 3), which is overlain by a medium bedded sandstone (unit 4) as described by Wells et al. (1970).

In the project area upper part of the Amadeus Basin such as Larapinta Group, Pertngara Group together with the Mereenie Sandstone are absent or have not been observed during mapping programs. Rocks of the Finke Group are represented by Langra Formation, Horseshoe Bend Shale and Idracowra Sandstone. The Langra Formation has mainly been observed from drilling and does not crop out in the project area. It consists of pale brown to white, fine sandstone that displays an increase in grain size towards its base. Interbedded with this sandstone are red and green micaceous shales similar to those overlying the Horseshoe Bend Shale. Within the project area, the Horseshoe Bend Shale occurs as poorly outcropping unit. Commonly it forms low scarps

surrounding some of the playas (Figure 2). The shale may also be found at shallow depths (50 cm) below the playas lake sediments where it occurs as hard and stiff clays that break into chips; these shales may also grade upwards into the wet and less dense playas muds. Rare outcrops of the Idracowra Sandstone below the playas are present where it forms cross-bedded white to pale kaolinitic sandstone. The Mesozoic De Souza Sandstone is mainly exposed in the south of the project area.

During Tertiary period, duricrust formed on the basinal rocks, which is present in the form of Silcrete, Ferricrete, Talus and scree, forming scattered out crops in the project area (Figure 2). Silcrete occurs as a fine-grained cream or pale grey rocks with a sub-conchoidal fractures characterised by scattered large quartz grains. The dominant Silcrete types are layered, nodular, columnar, pebbly or candle-wax type. Uncommon Ferricrete deposits generally consist of fine-grained ferruginised sandstone iron stones, heavily ferruginised sandstone and iron oxide cemented breccia. In places, minor Tertiary sediments, Talus and scree deposits may also be present.

The Quaternary sediments cover over 80% of the project area and consists mostly unconsolidated material. They are Calcrete, transported sand, Alluvium Colluvium, Karringa beds and Playa deposits. Calcrete is common in the project area but is obscured by transported sand. It is a ground water precipitation and generally occurs hosting in or replacing older sediments. Some of the better exposures are found surrounding the Playas. Electron Spin Resonance dating gives ages between 22 000 years before present (ybp) and 75 000 ybp for calcretes in the adjoining Curtin Springs area (Jacobson et al. 1988). Two calcrete types are recognised in the sheet area, although on the map (Figure 2) they are shown as single outcrop. An earlier phreatic calcrete formed beneath the water table along drainage lines and basin axes. A later vadose calcrete formed in the zone of evaporation above the water table.

Large area of EL 24987 is covered by transported sand, either as dunes (Figure 3) or sheets. Sand dunes may be up to 10 metres high. Most dunes are relatively stable with small shrubs and spinifex occupying the slopes. Some dunes may partially be active on their crests. The thickness of the sheet sand is unknown but could be quite thick and it rests on calcrete or clay base. Alluvium and colluvium deposits formed as a result of surface drainage are rare. Generally, alluvium is restricted to the beds of some of larger drainage feature such as Karringa Creek. Colluvium is represented by sandy sheet-flood which occurs both as discrete bodies and interspersed with sand sheets. Another

important deposition during Quaternary has been described as the Karinga beds. It occurs mainly in the eastern part of the project area, where outcrops are mainly along the creek courses, and in some case, around the playa lakes. This sequence consists of pebble to cobble conglomerate and coarse sandstone.

The most significant area of Quaternary material deposited is the Playa deposits which generally extend east to west in the central part of the project area. These occur as buff white, chocolate brown or sometimes green mounds commonly containing small crystals of evaporites (dominantly gypsum, overlain by a crust of halite and other soluble minerals (Figure 4). In some instances the crust is absent and the lake floor consists of the evaporate-rich mud. Underlying the muds are the chocolate brown or green shales of the Horseshoe Bend shale. Geological evidence suggests that at least partly, Playa sediments were probably at least partially formed from the Horseshoe Bend shale, which has a spatial association with halite and evaporite rich areas. Gypsum-rich sands also form benches and dunes surrounding some of the playa lakes.

5.0 PREVIOUS EXPLORATION HISTORY

Perhaps the first detailed investigation of the project area was undertaken by Arakel (1991, 1992). At that time, expired ELs 6509, 5689 and 5801 covered the present EL 24987. During this exploration program, investigations were undertaken to establish a data base which could be used to assess the industrial mineral and brine resources for the production of industrial minerals such as evaporites (sulfates, chlorides, and mixed salt of sodium, calcium, magnesium and potassium), dolomite and silica/silicate (zeolites, clays). A particular emphasis was directed towards assessing the brine resources in the playa chains of these tenements. This investigation revealed that regional ground water system appears to be two-layered with Cainozoic sedimentary aquifers (calcretes and clay-sand units) overlying the fractured bed rock. The playa lakes essentially represent outcrops of the shallow groundwater in the region. The playa brines are highly concentrated with respect to sodium, chloride, sulfate, magnesium and potassium ions.

This investigation indicated the presence of large volumes of highly concentrated magnesium- and potassium rich brines whereas playa beds contain significant resource of evaporite, carbonate and clay mineral deposits with direct industrial application.

Figure 3: Sand Dunes with vegetation in the project area



Figure 4: Playa lake sediments containing evaporite minerals



From 1990 to 1991, NT Evaporites conducted further exploration program in the eastern part of the project area then covered by ELs 5689 and 5801 (Arakel, 1991). It also extended some work on EL 6509 which covered the western part of the project area. This investigation was undertaken with the aim of obtaining additional hydrogeological and geological data for assessing the mineral resources identified during previous years. It involved continuation of field mapping, shallow drilling, sediment and water samplings, and chemical analyses of the samples and water. The primary object was to characterise and assessment of brine resources suitable for producing industrial salts with high commercial value. New target areas were also identified during this program for follow-up work.

In 1992, NT Evaporites undertook preliminary assessment of resources to produce salt chemicals from the Karinga Creek drainage system, now covered by the project area. According to this study, a conservative estimate of the brine resources available in playa lakes indicates renewable reserves in excess of 161 million CB (cubic metre). Field investigations identified four drainage areas with high quality brines suitable for the production of a range of salt commodities. Overall, technical investigations indicated suitability of brines for sequential extraction of a range of commercially valuable salts and their derivatives.

After establishing reasonable brine resources, NT Evaporites embarked on the feasibility study and contacted Government and companies to invest into the project. Normandy Commercial Minerals Ltd showed keen interest in the final stages of the project; they were not interested at the exploration level. In 1995, all exploration licences were consolidated into AS 162 so the project could be managed efficiently. From July 1996 to June 1997, company tried to secure financial grant from AusIndustry for a pilot plant. However, it failed to eventuate due to uncertainty in the tenure. Meanwhile, NT evaporite tried to establish gypsum resource which could be mined and sold to domestic industry. From 1997 to 2002, NT Evaporites continued to explore all options to develop this project into sodium sulphate production. However, by that time the market of sodium sulphate has collapsed due to sharp decrease in demand in Australia. Then company changed the strategy and tried to produce Potassium and magnesium salt products. However, due to low interest from investors and uncertainty in the tenure lead to abandoning the project.

6.0 MINERAL POTENTIAL OF THE PROJECT AREA

Industrial Minerals

EL 24987 covers over 850km² and contains lithologies of Amadeus and Eromanga Basins which probably rest on the lithology of Musgrave Block. Since its inception, lithologies of the Amadeus Basin have undergone unique geological processes which have played a major role for the formation of its mineral resources. Amongst these, formation of playa deposits is the most important where a variety of evaporites minerals have been derived from ground waters. The playa lakes essentially represent outcrops of the shallow groundwater in the region.

Investigations carried out so far indicate the possibility of economic concentration of potassium and magnesium sulfates and chloride. There is also potential of zeolite and rare celestite (SrSO₄). NT Evaporites carried out intensive investigation on the playa brines and proved up a large resource which can sustain medium size operation by using cost effective technology to produce a variety of salt products. Perhaps at that time, economic conditions were not right due to considerable down turn in Asian economies and uncertainty in securing the tenure for mining and processing operation. In the last a few years, massive demand for Australian mineral commodities in overseas markets has provided new impetus to resurrect this project.

Uranium

In central Australia, the Amadeus, Eromanga and Ngalia basins have significant potential for sediment-hosted uranium deposits. Lally and Bajwah (2006) classified sediment-hosted uranium mineralisation into two types; 1) sandstone hosted roll-front type and 2) sediment-hosted mineralisation in playa lakes and calcretes. The sandstone-hosted, roll-front type uranium mineralisation is found north of the project at Angela, where sizeable uranium resource has already been delineated. Furthermore, similar type of uranium mineralisation has also been found in the Ngalia basin and elsewhere. In the Ngalia and Amadeus basins, discovery of uranium mineralisation within recent sediments has been made in the past. At present, those prospects such as Napperby and Curinya are being explored aggressively. Here uranium mineralisation is found in the Cainozoic sands beneath calcretes in playa lake environments where uranium mineralisation occurs as pea-shaped or irregular shaped grains mainly of carnotite.

This is the type of mineralisation which appears to have significant potential in the project area. The Playa lake sediments and calcrete have not been tested for uranium mineralisation in the past. A cursory examination of the NT Radiometric Map of the Northern Territory (courtesy of NT Geological Survey) shows considerable uranium anomalous areas along the drainage pattern. Towards north, source of uranium exists which could have supplied metal in ground water system that could have deposited mineralisation below the calcrete under appropriate physico-chemical conditions.

Base Metals

The Bitter Springs Formation thought to be some kind of analogy with the red-bed type base metal mineralisation elsewhere. The Bitter Springs Formation underlies the Tertiary sediments in most of the project area which may have some potential for base metal mineralisation. For this purpose, in the following year, a detail investigation from available drill core will be undertaken to assess the potential of the project area.

7.0 WORK COMPLETED FOR PERIOD ENDING 8 OCTOBER 2007

During the reporting period, a comprehensive literature survey was undertaken to assess the mineral potential of the area. A reconnaissance geological visit was made to the project area to assess the area. It appears that apart from industrial mineral potential, the project area also has good potential for uranium and to some extent base metal mineralisation. In this regards technical resources are put in place to pursue exploration program which can accommodate all possible mineral commodities.

During the reporting period, main activities included literature review, assessing the mineral prospectivity of the area, reconnaissance visit, tenement administration, and forward planning. This activity costed \$16680.00 and detail is given in Table 1.

Table 1: Expenditure Statement for EL 24987

Activity	Expenditure (\$)
Data Search	3500.00
General Research	2880.00
Field Trip	4680.00
Consultant	5620.00
Total	16680.00

8.0 FORWARD PLANNING FOR YEAR ENDING 8 OCTOBER 2008

Multi-commodity potential of EL 24987 requires a multifaceted exploration program which can address the full potential of the area. For this reason, a detailed program of exploration has been devised. First of all, available geophysical data of the project area will be reviewed to expand on the uranium potential. Geophysical data may also assist in locating underground brines reservoir to better understand the hydrogeology of the area. A detailed geological mapping program will be undertaken to define calcrete and underlying sand. This will assist in understanding the distribution of uranium mineralisation if any. A geochemical sampling program will be conducted which may follow drilling program. A minimum budget of \$35000.00 is proposed for this program.

9.0 REFERENCES

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