HALE ENERGY LIMITED

A24766

Final - Surrender Report

15 February 2006 – 24 August 2009

ILLOGWA 1:250,000 MAP SHEET

Distribution: - NT Department of Resources, NT Geological Survey, Darwin
- Hale Energy Limited (GEACC Office, Wembley)
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SUMMARY

This report covers all exploration activities completed by Hale Energy Limited on A24766 for the period 15 February 2006 to 24 August 2009.

Hale Energy Limited a wholly owned subsidiary of Thor Mining PLC was the 100% holder of six granted tenements including A24766 in the Harts Range area on the Illogwa 1:250,000 map sheet SF53-15 in the Northern Territory (figure 1).

No exploration for uranium has been conducted over the area. Several abandoned open cut mines were worked in the turn of the century for pegmatite hosted mica-beryl-copper within the Irindina Gneiss. Vein hosted lodes were excavated by trenches and other small mining methods.

A total of 58 open file reports were acquired and compiled covering all or part of the Harts Range tenements including A24766.

A decision was made to surrender the tenement in 2009 due its small size and limited prospectivity.
1.0 INTRODUCTION

This report covers all exploration activities completed by Hale Energy Limited on A24766 for the period 15 January 2006 to 24 August 2009.

2.0 LOCATION AND ACCESS

Authorisation A24766 comprises 3 SBKS blocks with a total area of 9.47 km$^2$. It is situated approximately 289 km north east of Alice Springs. Access can be gained from the Stuart Highway and via the Plenty Highway (Figure 1).

![Figure 1: Harts Range Tenements on Topographical base showing location of A24766.](image)

3.0 NATIVE TITLE AND SITE CLEARANCE

The Native Title Agreement for all tenements is based on the premise that Hale Energy Ltd is:

- Not to file and register a Native Title Application nor lodge objections in the National Native Title Tribunal to the use of the “expected procedures” in the grant of the six exploration licences; and;

- at the completion of any airborne and handheld radiometric surveys to seek your agreement that you will notify the Central Lands Council (CLC) of the specific areas where you intend to undertake onground disturbing exploration activities such as drilling, so that we can organise clearances of any cultural and heritage sites. This will ultimately provide you with the scared site clearances you will require under the Northern Territory Aboriginal Sacred Site Act.
The proposal effectively divided the exploration program into two phases. The first phase of work did not involve ground disturbing activities and did not involve native title holders and did not interfere with their legal rights.

Follow up exploration work involving ground disturbing activities was not completed on the tenement.

### 4.0 HARTS RANGE GEOLOGY

The project area covers high grade metamorphic rocks of the Proterozoic Harts Range Complex, which are situated in the south-eastern zone of the central Australian Arunta block, in the Entia Domal Structure (Figure 2). The Entia Gneiss (Harts Range Group) forms the core of the Entia Dome, consisting of acid muscovite biotite gneiss overlain by tonalitic quartz/feldspathic gneiss. Granite intrusions form smaller domes within the central structure. Metamorphosed gabbroic and ultramafic bodies are also present within the gneisses. The stratigraphy has been dislocated by numerous faults and shear zones.

![GEOLOGICAL LEGEND](image)

**GEOLOGICAL LEGEND**

- **HARTS RANGE COMPLEX**
  - Granite
  - Gabbro
  - Ultramafic
  - Schist
  - Amphibolite
  - Biotite gneiss
  - Quartzo - feldspathic gneiss

**URANIUM MINERALISATION TYPE**

- Uraninite
- Pegmatite
- Epidote
- Retrogressed

**THOR MINING PLC**

**HARTS RANGE PROJECT GEOLOGICAL MAP**

*Figure 2:* The Harts Range Project tenements including A24766 and the distinct styles of uranium mineralisation outlined by PNC Exploration.
5.0 PROSPECT GEOLOGY

The project area lies on the southern margin of the Entia Dome (Figure 3). The Bruna Gneiss and the Brady Gneiss form the western and eastern part of the tenement, with the Entia Gneiss (Harts Range Group) situated in the central area. These rocks consist of acid muscovite biotite gneiss overlain by tonalitic quartzfeldspathic gneiss.

![Figure 3: A24766 Regional Geology Map](image)

6.0 PREVIOUS EXPLORATION

The tenement area has been covered by modern radiometric and magnetic airborne surveys. The first, in 1993, was over the southern portions of the area. It was flown for PNC Exploration (Australia) Pty Ltd (PNC) at a 200m line-spacing. The second, in 1997, was over the remaining northern portion. It was flown for the NTGS at a 400m line-spacing. The surveys identified three clusters of radiometric anomalies within the tenements. The largest clusters were located within the Entia Gneiss, in the southwest and south of the Entia Dome. The third cluster, marginal to the dome, is spatially associated with a zone of northwest orientated shears.

Exploration for uranium was conducted over the area between 1992 and 1995 by PNC, which carried out regional reconnaissance sampling and discovered occurrences of uranium mineralisation in a number of locations, which were followed-up by prospect scale mapping and sampling. Although some of the occurrences contained high-grade mineralisation, none were of sufficient size to warrant drill-testing. PNC reported four separate types of uranium mineralisation, based on mineralogy:
• Uraninite-type: Uraninite occurring as mm to cm sized crystals, crystalline aggregates, or nodules. The mineralisation is associated with felsic phases in amphibolite and gneiss. At the Yambla Prospect the mineralisation is within quartz veining in an altered fault zone. At the Ryoma Prospect it is associated with haematite-altered fractures within gneiss. Grab samples from this prospect gave analyses of up to 8.5% U.

• Pegmatite Type: Uranium bearing rare earth oxide minerals within or immediately adjacent to a suite of pegmatites. At the SNAF Prospect, and the latest rock chip sample site for Mt Mary, on EL24734, grab samples from the contact zone between pegmatite and gneiss produced analyses to 0.26% U. At the Kelly Prospect parts of the contact between a 3km long pegmatite and surrounding altered amphibolite is anomalous in uranium.

• Epidosite Type: Sub-microscopic uraninite and uriniferous allanite grains occur in veinlets and vugs, on epidote grains, and in quartz-apatite-sulphide pockets. The mineralisation is associated with epidote and epidote-garnet metasomatic alteration in shear and fault zones.

• Retrogressed Type: Finely disseminated uranium mineralisation associated with clay-silica alteration along faults.

7.0 EXPLORATION COMPLETED BY HALE ENERGY LIMITED

Exploration Expenditures on A24766 for Year 4 up until 24 August 2009 are included in the attached standard NT DOR form.

No exploration for uranium has been conducted over the area. Several abandoned open cut mines were worked in the turn of the century for pegmatite hosted mica-beryl-copper within the Irindina Gneiss. Vein hosted lodes were excavated by trenches and other small mining methods.

A total of 58 open file reports were acquired and compiled covering all or part of the Harts Range tenements including A24766.

Later exploration in Year 3 and Year 4 included additional compilation of all known open file reports and further review of all open file data. Location of several open file prospects in the field has proved difficult and in some cases errors in excess of 200m have been noted.

A decision was made to surrender the tenement in 2009 due its small size and limited prospectivity.