



# **ANNUAL REPORT**

**GELs 244, 245, 246, 247 and 248**

**Licence Year 3**

**15 November 2009**

**to**

**14 November 2010**

# **ANNUAL REPORT**

## **Upper Spencer Gulf Project**

### **GEL 244, 245, 246, 247 and 248**

**Licence Year 3**

**15 November 2009**

**to**

**14 November 2010**

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## 1. INTRODUCTION

### 1.1 Background

The proposed work within the area of the five Geothermal Exploration Licences granted is designed to ascertain the geothermal energy potential of these areas.

### 1.2 Period

Geothermal Exploration Licences GEL 244 (246 km<sup>2</sup>), 245 (341 km<sup>2</sup>), 246 (391 km<sup>2</sup>), 247 (470 km<sup>2</sup>) and 248 (490 km<sup>2</sup>), were granted on 15 November 2007 for an initial term of 5 years each.

This report covers the activities in respect of the above five GELs for year 3.

### 1.3 Licence Data

There was no change in the area of the licences during the year.

### 1.4 Licensee

GELs 244, 245, 246, 247 and 248 are held solely by Green Rock Energy Limited.

There was no change in working interests for any of the licences during the period.

## 2. WORK REQUIREMENTS

The exploratory operations required to be conducted in GEL 244, 245, 246, 247 and 248, are as follows:

Year	Minimum Work Requirements
1	<ul style="list-style-type: none"><li>• Geological and geophysical studies.</li></ul> <p><i>Note: Year 1 work program to be conducted anywhere within the boundaries of GELs 244, 245, 246, 247, and 248</i></p>
2	<ul style="list-style-type: none"><li>• Geological and geophysical studies.</li><li>• Re- entry (if possible) and geophysical logging of existing drill holes to measure in-situ rock temperatures.</li><li>• Conduct thermal conductivity measurements on existing core samples</li></ul> <p><i>Note: Year 2 work program to be conducted anywhere within the boundaries of GELs 244, 245, 246, 247 and 248</i></p>
3	<ul style="list-style-type: none"><li>• Economic studies.</li></ul> <p><i>Note: Year 3 work program to be conducted anywhere within the boundaries of GELs 244, 245, 246, 247 and 248</i></p>
4	<ul style="list-style-type: none"><li>• Drill or deepen an existing well to a depth of 2,000 – 3,000 metres.</li><li>• Evaluate temperatures, stress regimes and rock properties at depth.</li></ul> <p><i>Note: Year 4 program to be conducted anywhere within the boundaries of GELs 244, 245, 246, 247 and 248</i></p>
5	<ul style="list-style-type: none"><li>• Economic studies.</li><li>• Geological and geophysical studies.</li><li>• Design of a pilot program.</li></ul> <p><i>Note: Year 5 program to be conducted anywhere within the boundaries of</i></p>

### **3. WORK CONDUCTED**

The following work was completed for GELs 244, 245, 246, 247 and 248 for the year ended 14 November 2010 (year 3 of the licences).

Field work was completed on the GEL's during October 2010. Work comprised of measuring sub-surface temperatures in previously drilled mineral exploration holes and observation bores using a low cost water temperature probe.

#### **3.1 Field Reconnaissance**

Reconnaissance geothermal temperatures were measured in the Eastern Spencer Gulf Project area. This area comprised GEL's 246, 247 and 248 and lies southeast of Port Augusta, and surrounds the Port Pirie town site in South Australia.

The field programme was carried out in two phases during October 2010. Phase 1 consisted of checking core from previously drilled exploration holes at the Primary Industry and Resources of South Australia (PIRSA) core library in Adelaide and Moonta. Core chosen from representative lithologies within the eastern Spencer Gulf GEL's were sent to Hot Dry Rocks Pty Ltd (HDR) for thermo-conductivity testing. Results are attached in Appendix 1.

Phase 2 work comprised of testing existing, open water bores currently under observation by the Department for Water (Water for Good) in South Australia. Testing included down-hole temperature profiling using an In-Situ Troll 500 down-hole temperature/ pressure probe, which was lowered to the end of each hole. At each hole, a water level measurement was taken using an Aqua-Dipper-Pro instrument. The water level was used to determine the depth of the probe in combination with the recorded pressure readings. In total, 4 temperature profiles were measured over the reconnaissance survey period (Table 1).

**Table 1: Surveyed water bores: maximum temperature, Electrical Conductivity (EC) and Lithology**

Hole ID	BTA029	BTA032	NAP002	NAP005
GEL	247	247	247	247
Date	20/10/2010	20/10/2010	19/10/2010	19/10/2010
Maximum Depth (m)	130	128	158	138.6
Maximum Temp (°C)	22.7	26	24.6	22
EC (µS/cm)	1348	6568	3293	1445
Lithology	Thick, interfingering clay and gravel sequence 0-102m; Sand 102-108m; Clay 108-123m; Sandstone 123-126m; Clay 126-132m	No Lithology available	No Lithology available	No Lithology available

EC measured at top of water level in bore hole; down hole lithology taken from SARIG website.

### **3.2 Data Results**

Results from thermal conductivity tests performed on core taken from historic exploration drillholes are pending. Temperature gradients varied widely across the project area and appear to be influenced by basement lithologies as well as varying basin lithologies and their thermal conductivities.

### **3.3 Forward Work Commitment**

During the next licence year Green Rock Energy will conduct an analysis of the results of the work carried out in the GELs during year 3 . This has to be assessed first in year 4 before the Company can determine whether or not a suitable drilling location or well to deepen can be identified which is considered suitable for this purpose. The Company also proposes to carry out economic and marketing studies to indentify where the best market opportunity would be in order to aid the Company in selecting a suitable location for drilling or well deepening.

## **4. COMPLIANCE WITH PETROLEUM ACT**

### **4.1 Regulated Activities**

Field work carried out within the GELs included measurement of reconnaissance temperatures and core collection for thermo-conductivity tests.

### **4.2 Compliance**

No instances of non-compliance were noted during the reporting period.

### **4.3 Management Systems**

Green Rock Energy is committed to implementing the highest standards of corporate governance. In determining what those high standards should involve, the Company has been guided by the ASX Corporate Governance Council's Principles of Good Corporate Governance and Best Practice Recommendations.

The Company has in place a detailed Health, Safety and Environment Management Plan, Occupation Health and Safety Procedures and Emergency Response Procedures to cover the activities of the Company, contractors and site visitors.

No significant changes were made to these procedures during the reporting period.

**4.4 Relevant Reports and Data**

See Appendix 1 for relevant reports.

**4.5 Reportable Incidents**

There were no reportable incidents during the reporting period.

**4.6 Foreseeable Threats**

No material threats have been identified during the reporting period.

# **APPENDIX 1**

**Thermal Conductivity of core specimens GRK044 – GRK064**

**Prepared by Hot Dry Rocks Pty Ltd**

**December 2010**