

*Panax Geothermal Limited*

ABN 89 122 203 196

Annual Report

Licence Year 3

*24 July 2008 – 23 July 2009*

*Geothermal Exploration Licence 220 and 221*

**CONTENTS**

**Page No.**

1 Introduction..... 4

2 Permit Summary ..... 5

3 Regulated Activities ..... 6

4 Non-regulated Activities ..... 8

5 Compliance Issues ..... 9

5 Expenditure Statement ..... 10

APPENDIX 1 Expenditure Statement..... 10

## 1 Introduction

Geothermal Exploration Licences (GELs) 220 and 221 were acquired by Panax Geothermal Ltd (“Panax”) on the 5<sup>th</sup> December 2008 when it acquired 100% of the issued capital of Osiris Energy Ltd. The licences are located in the Cooper Basin of South Australia (see Figure 1).

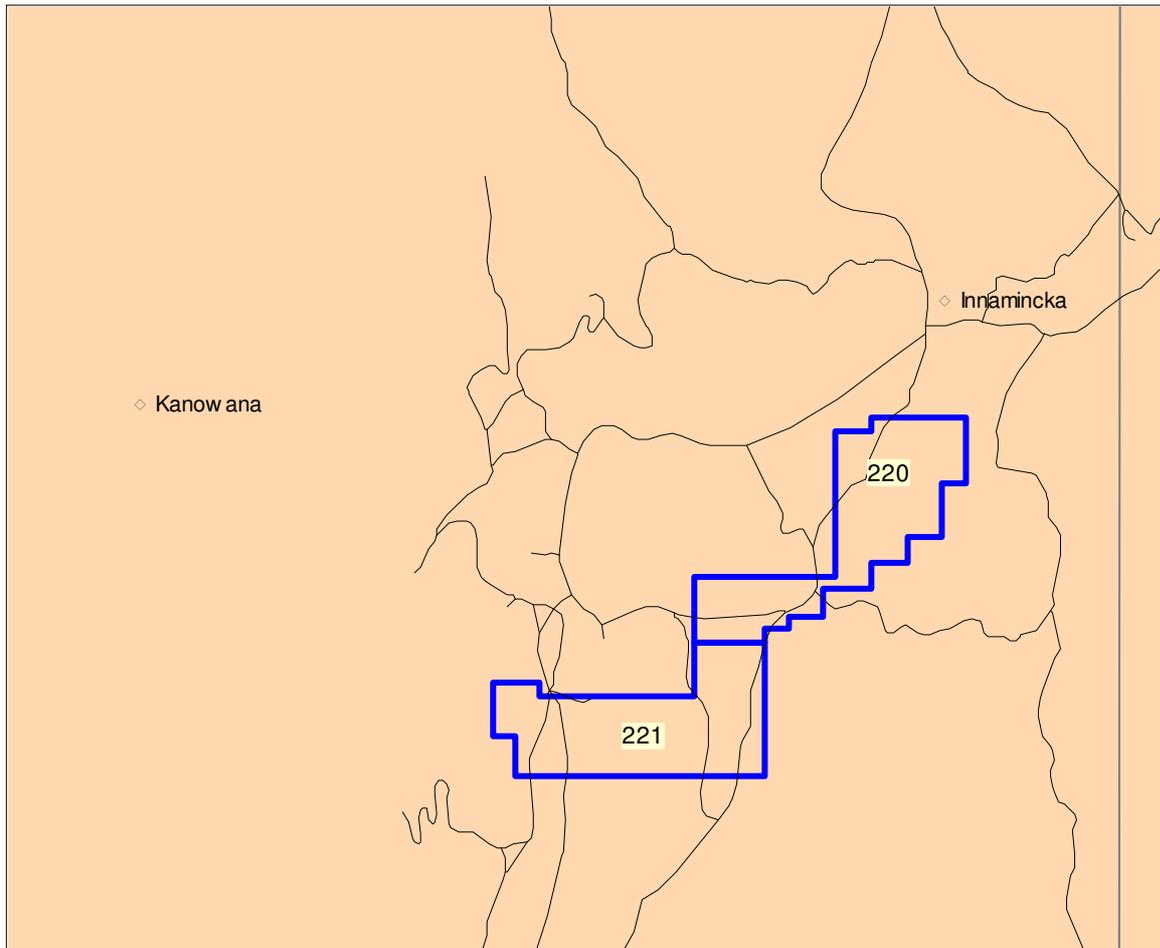


Figure 1. Location of Panax GEL's in the Cooper Basin of South Australia. GELs are annotated on yellow background and localities are in black. The width of the map is about 160km.

This report details the work conducted on GEL 220 and 221 during the year 24<sup>th</sup> July 2008 to 23<sup>rd</sup> July 2009 (licence year 3) in accordance with Section 33 of the Petroleum Regulations 2000.

## 2 Permit Summary

For the duration of the licence year, the licensee for the Geothermal Exploration Licences (GEL's) were:

Licence	Owner/s	interest
GEL 220	Osiris Energy Ltd	100%
GEL 221	Osiris Energy Ltd	100%

Osiris Energy Ltd is 100% owned by Panax Geothermal Ltd.

GELs 220 and 221 are referred to as a Group of Licences and have a combined work programme.

A variation of the second year work programme was requested during Year 1 and was agreed to on the 11<sup>th</sup> September 2007. The variation of the work programme meant that Years 2 and 3 minimum work requirements were merged. The following table displays the minimum work program (after all variations) and the actual work completed up until the end of the current licence period.

Table 1. Licence work programme (after variation) by licence year.

Year of Licence	Minimum work commitments
1	<ul style="list-style-type: none"> <li>Review geological and geophysical data.</li> </ul> <p><i>Note: Year 1 work programme to be carried out within the combined area of GEL 220 and 221</i></p>
2 & 3	<ul style="list-style-type: none"> <li>Measurements of detailed geothermal gradients in relevant and accessible water wells;</li> <li>Conduct infill geophysical surveys if required;</li> <li>Seismic re-processing;</li> <li>Geological and geophysical studies</li> </ul> <p><i>Note: Year 2 and 3 work programme to be carried out within the combined area of GEL 220 and 221</i></p>
4	<ul style="list-style-type: none"> <li>Conduct shallow pilot drilling and measure detailed geothermal gradients;</li> <li>Design and plan a demonstration heat exchange plant.</li> </ul> <p><i>Note: Year 4 work programme to be carried out within the combined area of GEL 220 and 221</i></p>
5	<ul style="list-style-type: none"> <li>Drill one deep well;</li> <li>Measure detailed geothermal gradient.</li> </ul> <p><i>Note: Year 5 work programme to be carried out within the combined area of GEL 220 and 221</i></p>

Table 2. Final work program and work completed (as of end of current reporting period) by licence year.

<b>Licence Year</b>	<b>Minimum Work Program</b>	<b>Actual Work</b>
Year 1	<ul style="list-style-type: none"> <li>Review geological and geophysical data.</li> </ul>	<ul style="list-style-type: none"> <li>Review geological and geophysical data.</li> </ul>
Year 2 & 3	<ul style="list-style-type: none"> <li>Measurements of detailed geothermal gradients in relevant and accessible water wells;</li> <li>Conduct infill geophysical surveys if required;</li> <li>Seismic re-processing;</li> <li>Geological and geophysical studies</li> </ul>	<ul style="list-style-type: none"> <li>Given wealth of data, it was considered not required to acquire additional measurements of geothermal gradients.</li> <li>Given data available, it was considered not required to collect additional geophysical data at this stage.</li> <li>Seismic re-processing (see report by Hot Dry Rocks Pty Ltd)</li> <li>Geological and geophysical studies (see report by Hot Dry Rocks Pty Ltd)</li> </ul>
Year 4	<ul style="list-style-type: none"> <li>Conduct shallow pilot drilling and measure detailed geothermal gradients;</li> <li>Design and plan a demonstration heat exchange plant.</li> </ul>	<ul style="list-style-type: none"> <li>Not yet due.</li> </ul>
Year 5	<ul style="list-style-type: none"> <li>Drill one deep well;</li> <li>Measure detailed geothermal gradient.</li> </ul>	<ul style="list-style-type: none"> <li>Not yet due.</li> </ul>

### **3 Regulated Activities**

#### ***Drilling and Related Activities***

No regulated activities undertaken in the licence reporting period.

#### ***Seismic Data Acquisition***

No regulated activities undertaken in the licence reporting period.

## ***Seismic Data Processing and Reprocessing***

Panax commissioned Hot Dry Rocks Pty Ltd to conduct some specific seismic processing to enhance the 3D seismic data to facilitate its structural and stratigraphic interpretability.

HDRPL undertook the following steps in the post-stack processing.

1. Sourcing of 3D SegY data for the Greater Strzelecki survey from PIRSA. The original SegY data as supplied by Panax as a part of the Kingdom project was incomplete and in part corrupt. The new data were loaded into a Kingdom project and merged with other relevant data provided (2D surveys and wells).
2. The Moomba-Big Lake 3D SegY data, as supplied by Panax, was loaded into the Kingdom project.
3. An interpretation of a reference horizon – the Cadna-owie Formation was used (at approx 1.4 secs).
4. Loading of selected well formation tops and creation of time-depth curves to qualify interpretation of depth to Cadna-owie Fm.
5. The mis-tie analysis was undertaken on the two 3D surveys, in the area of overlap. This analysis comprised the following steps:
  - Bulk (time) shift;
  - Phase rotation/matching;
  - Amplitude scaling.
6. Band Pass filtering was applied both during the mistie analysis and on the vertical seismic displays as an aid to interpretation.

This confidential report will be supplied to PIRSA on request.

## ***Geochemical, Gravity, Magnetic and other surveys***

No regulated activities undertaken in the licence reporting period.

## ***Processing, inversion and Interpretation***

No regulated activities undertaken in the licence reporting period.

## ***Post-survey activities***

No regulated activities undertaken in the licence reporting period.

## ***Production and Processing***

No regulated activities undertaken in the licence reporting period.

## ***Pipeline/Flowline Construction and Operation***

No regulated activities undertaken in the licence reporting period.

## ***Preliminary Survey Activities***

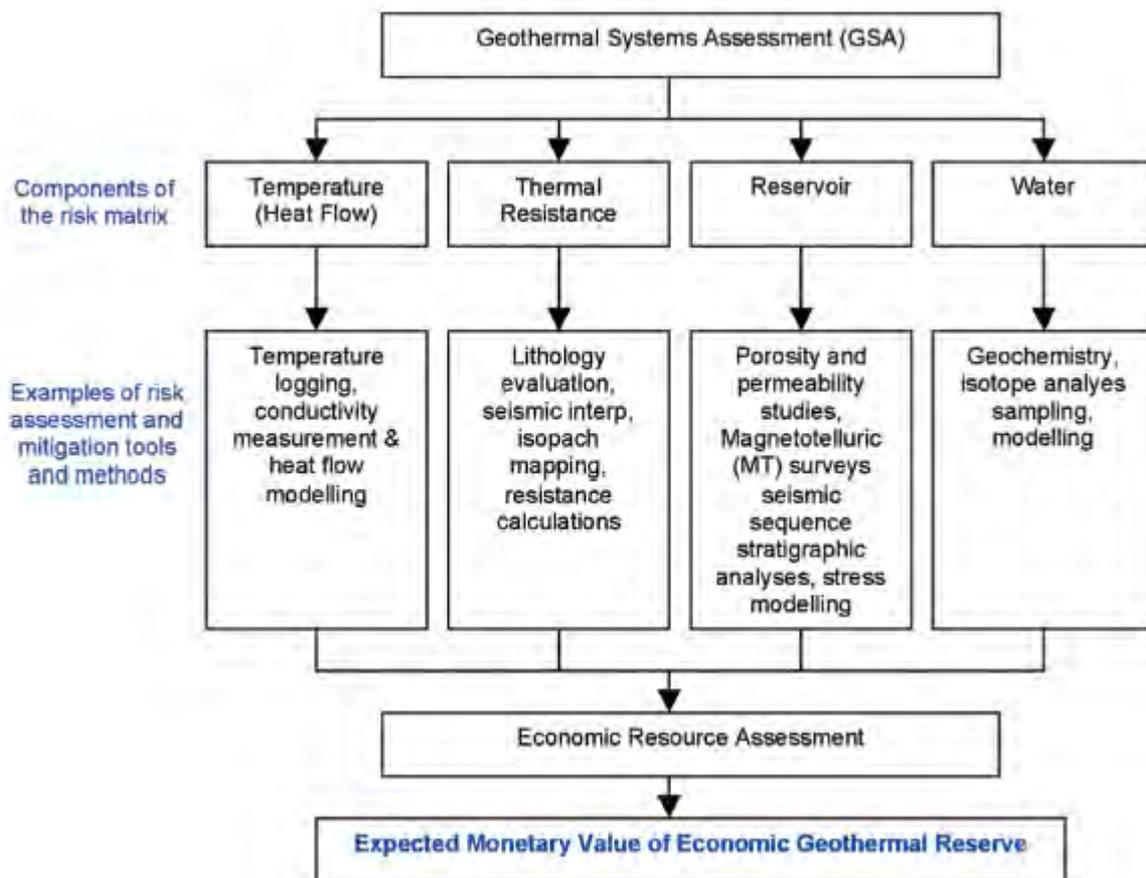
No regulated activities undertaken in the licence reporting period.

#### 4 Non-regulated Activities

Hot Dry Rocks Pty Ltd (HDRPL) was commissioned by Panax Geothermal Ltd (Panax) to undertake a Geothermal Systems Assessment of GELs 220 and 221 in the Nappamerri Trough area of the Cooper Basin, South Australia.

The Geothermal Systems Assessment (GSA) approach is a risk assessment framework developed by Hot Dry Rocks Pty Ltd, see figure 3, that assesses the principal geological risks at basin-scale.

Figure 3. Geothermal Systems Assessment as developed by Hot Dry Rocks Pty Ltd.



This report assesses the principal risks associated with geothermal prospectivity in GELs 220 and 221, namely;

- Presence of an adequate thermal insulating cover sequence and adequate temperatures for geothermal prospectivity;
- Presence of a suitable reservoir unit; and
- Availability of water.

## **5 Compliance Issues**

### ***Licence and Regulatory Compliance***

All material and significant licence, regulatory and SEO requirements have been fulfilled.

#### **Regulatory Non-Compliance**

No regularly non-compliance

### ***Management System Audits***

The activities in the period have been desk top studies only no management system audit has been undertaken.

### ***Report and Data Submissions***

	<b>Report/Data</b>	<b>Due Date</b>	<b>Date Submitted</b>	<b>Compliant?</b>
1	Year 3 Annual Report	24 <sup>th</sup> Sept, 2009	7 <sup>th</sup> Oct, 2009	Compliant (extension granted)

### ***Incidents***

There were no reportable incidents that occurred during the permit year.

### ***Threat Prevention***

There are no foreseeable threats to report in the permit year.

### ***Future Work Program***

Panax intends to continue to assess the most appropriate geothermal model from technical and commercial perspectives as detailed in the work programme for the licences. The GSA assessment outlined a few geothermal systems that will be further assessed in the next period. The results of these studies will formulate the details of the work programme for Year 4. This assessment will assist in detailing the location of the shallow pilot drilling that will be undertaken in the period, followed by measurement of detailed geothermal gradient.

Panax will also design and plan a demonstration heat exchange plant.

**5 Expenditure Statement**

Please refer to Appendix 1 for the expenditure statement for the current reporting period.

***Commercial in confidence***