



Annual Report of Geothermal Exploration 2011, SEL 57/2008, Arthurs Lake, central Tasmania

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Introduction

KUTh Exploration Pty Ltd is exploring for geothermal energy in Tasmania via its primary licence SEL 26/2005 which covers 12,360 km² of eastern Tasmania, extending from Beaconsfield to Hobart. As a result of that exploration further licences were granted where results suggested extensions of geothermal energy targets extended beyond the boundaries of SEL 26/2005. These new licences comprise SEL 45/2007, SEL 57/2008 and most recently SEL 15/2010. All licences are for geothermal substances (category 6).

KUTh Exploration Pty Ltd is a 100 % subsidiary of KUTh Energy Ltd (ASX: KEN) for which Tasmania is a major project. KUTh Energy also has geothermal exploration tenements in Queensland and Vanuatu.

The subject of this report, SEL 57/2008, was granted on 13 May 2009 for an initial period of five years and originally comprised 3,980 km². As a result of exploration during the first year most of the licence area was relinquished and it now comprises 1,070 km² in the Arthurs Lake area, adjacent to the western boundary of SEL 26/2005.

SEL 57/2008 was comprehensively described in the 2010 Annual Report and associated Partial Relinquishment Report. Since then most of KUTh's exploration activities were focussed within SEL 26/2005 and there was little work specifically on exploration targets within SEL 57/2008. The following information briefly reviews the status of geothermal exploration in SEL 57/2008.

Work Program Review

KUTh's geothermal exploration in Tasmania is based on the concept that a commercial geothermal reservoir can be constructed within a hot body of rock at some depth in the earth. In its simplest form the concept envisages the hot body of rock as a large volume of granite which has become hot, around 200 °C, as a result of the decay of naturally-occurring radioactive elements over a long period of time, combined with the insulating effects of overlying rock sequences. KUTh believes that it has identified this scenario, and more, in the central part of SEL 26/2005.

While undertaking the surface heat flow exploration that led to this discovery KUTh found that an area of possibly high heat flow extended beyond the western boundary of SEL 26/2005. The possibility that the this apparent high heat flow was caused by a granite body at depth outside SEL 26/2005 prompted the application for SEL 57/2008.

Consequently, in 2009, a 3D MT survey designed to identify sub-surface resistivity structures in SEL 26/2005 was extended to include the northwestern part of 57/2008. Legacy geological data, including open-file regional seismic sections obtained during hydrocarbon exploration, were also compiled and re-assessed.

The results of that work indicate that a relatively thin insulating cover sequence, up to about 1 km thick, is present within SEL 57/2008 but that a hot granite body at depth is unlikely to be present. Instead, the basement appears to composed of juxtaposed slices of Precambrian and Palaeozoic sequences which form a complex terrane in which both west- and east-facing thrusts are present.

The basement is most likely a mixture of meta-sediments and meta-volcanics which are not expected to contain significant amounts of radiogenic elements and it is therefore unlikely to be a suitable source of heat.

In this case the apparent extension of anomalous heat flow westwards from SEL 26/2005 remains unexplained and it is possible that the most likely explanation lies within SEL 26/2005. Until this is determined, however, KUTh retained that area of SEL 57/2008 in the immediate vicinity of the apparent extension of the heat flow anomaly and relinquished the remainder.

The 2010-11 work program items foreshadowed in the 2010 Annual Report were not able to be achieved for various reasons. The suggested honours project to collect new magnetic and gravity profile data was determined to be impractical after discussions with University of Tasmania geology research staff. The possibility of modelling heat flow measurements in existing HEC boreholes was abandoned after it was determined that the boreholes are now over 50 years old and unlikely to provide easy access for temperature measurements. In addition, a detailed gravity/magnetic/seismic interpretation along existing seismic lines from hydrocarbon exploration has not been possible due to the unavailability of a key external consultant.

Lastly, the suggested modelling of the single heat flow measurement in SEL 26/2005 which is responsible for the apparent extension of anomalous heat flow into SEL 57/2008 has not been possible due to higher priority tasks in SEL 26/2005 in preparation for drilling.

Conclusions

Little work was possible in SEL 57/2008 during 2010-11 after most of the tenement area was relinquished. The origin of the apparent heat flow anomaly in the retained area is still not clear and further work relies on progress within SEL 26/2005. The focus of the work program in that licence area is currently preparation for deep drilling and it is not yet clear when an explanation for the high heat flow close to the boundary with SEL 57/2008 can be addressed.