

Geothermal Drilling Risk Well Output Insurance



- **Improved Risk / Reward Profile**
- **Greater Certainty for Developers**
- **Reduced Downside for Investors**
- **Improved Project Financing Prospects**

Output certification by
GeothermEx
A Schlumberger Company

Background

The Parhelion Geothermal Development Drilling Aggregate Well Output Insurance is a product based on the interest shown by a number of geothermal developers and associated financiers. The uncertainty surrounding the success of initial development drilling for geothermal reservoirs combined with substantial drilling costs has made many good-quality geothermal projects difficult to finance, with lenders being unwilling to lend and project developers often having insufficient equity.

The insurance product developed by Parhelion and GeothermEx is designed to fill this gap by reimbursing drilling costs over a 5+ well programme if insufficient aggregate geothermal capacity is achieved. It is designed to be flexible enough to work efficiently and economically in a number of different scenarios.

Key Benefits of the Insurance

By removing reservoir output risk during the initial development drilling phase, the Parhelion product can:

- Encourage the influx of private equity and other 3rd party capital to finance the development stages of geothermal reservoirs by substantially improving risk-adjusted returns.
- Enable project developers to receive greater certainty that their drilling programme will be sufficiently de-risked to allow the second stage-financing of the associated power plant to commence.
- Provide protection for project developers' and other 3rd parties' equity, allowing it to be recycled into additional opportunities.
- Help monetise the value created by project developers' investment in both the exploration and development phases.

The Insurance Product

The policy will protect against the risk that insufficient aggregate geothermal capacity will be obtained under a development well drilling programme consisting of 5 or more wells.

This insurance product is backed by at least A+ security.

Insured Value & Success

- Insured value will be the lower of agreed and actual well drilling costs on unsuccessful wells under the drilling programme after adjusting for any agreed salvage, subject to a pre agreed aggregate limit (likely to equate to the cost of drilling 4 wells in a 5 well programme).
- Threshold for individual well success is one that is sufficiently productive to warrant connection to a power plant and will be a combination of pressure, enthalpy and flow rate and will be pre-agreed.
- Threshold for an insured payment is based upon successful wells where the aggregate capacity achieved for the insured drilled wells is below the pre-agreed aggregate capacity insured success level.
- Budgeted well drilling costs will be pre-agreed with project developers and will incorporate a budget for possible well remediation costs.
- Salvage will include the possibility of a well being capable of being used as an injection well or observation well, the extent to which salvage being possible (eg injection:productive well ratio) being pre-agreed with project developers.

There will therefore be significant variations in the exact method for calculating the insured value and the threshold for success ie it will be tailored to the specific project and developer requirements.

Policy Period

The policy will cover a pre-determined number of wells with a pre-agreed drilling and testing schedule with a likely maximum of 6 months thereafter to allow agreement on final well disposition. It is therefore designed to be flexible to an individual project's needs.

Insurance Availability

There are several issues that will be considered in determining the availability and applicability of the Geothermal Well Output insurance, including prior drilling experience in the geothermal field(s) under consideration, and the nature of the wells to be drilled. The following guidelines apply:

- At least two successful wells shall be drilled before the insurance commences.
- Insurance can be provided for a minimum of a 5-well programme, although a smaller number of wells may be considered in specific circumstances.

- All 5 insured wells are to be located and designed as production wells.
- All 5 insured wells are expected to be drilled in the same geothermal field, although a portfolio of geothermal fields (and their wells) may be considered in specific circumstances.
- The drilling programme will typically target a single reservoir/producing horizon, although multiple horizons may be considered in specific circumstances.
- Well depths are to be less than 3.5km, although deeper wells may be considered in specific circumstances.
- The cost of each of the 5 insured wells is expected to be the same.

Insurance Cancellation

The insurance can only be cancelled by the insurer in the event that 3 consecutive unsuccessful wells are drilled. There will be no return of premium. There will also be no return of premium if the insured wishes to cancel early.

Deductible/Co-Insurance

For each covered well, there will be a deductible or co-insurance of at least 10% of the total well cost.

Next Steps

To keep premiums low, this insurance is intended to be as standardised as possible. However, the specific parameters for a given policy will be flexible and project-specific enough to meet the particular needs of project developers and their financiers. By working closely together, the most cost-effective coverage will be formulated for the particular project concerned.

Contact us to reduce geothermal resource risk, improve your project and enhance your financial returns.

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