Underwriting geothermal risk and the experience of Munich Re

March 02, 2015
Risk of failure: Not a residual risk
Database: IFC 2012 (2.613 wells)

Probability of failure for geothermal wells: worldwide; regardless if exploration or development, all resources

![Graph showing probability of failure for geothermal wells. The x-axis represents the probability of failure, and the y-axis represents productivity in MWe. Key data points include 2 MWe at 20%, 3 MWe at 25%, 5 MWe at 35%, and 6 MWe at 40%. The database used is IFC 2012.]
Risk of failure: MR is closing the Gap

- High risk requires high returns
- Traditional capital markets are limited available to geothermal developers
- The capability to quantify and manage the risk through insurance and cooperation programs:
  - Increases the bankability of geothermal projects
MR insurance structure for **High Enthalpy**

- **Premium for wells 1-2**
- **Premium for wells 3-4**
- **Premium for wells 5-8**

Possible Stepout MR

Possible Stepout MR

Possible Stepout Policyholder with Performance Bonus

- **Well**
- **SW**
  - Stimulation well if necessary
  - Deepening if necessary
  - Sidetrack if necessary

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Thank You Very Much For Your Attention!

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Blueprint of the insurance structure for **High Enthalpy**

- **Premium for wells 1-2**
- **Premium for wells 3-4**
- **Premium for wells 5-8**

Possible Stepout MR

Possible Stepout MR

Possible Stepout Policyholder with Performance Bonus

Legend:
- **Well**
- **SW** Stimulation well if necessary
- Deepening if necessary
- Sidetrack if necessary

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