Ormat Technologies, Inc.

3D Geologic Modeling Improves Well Targeting in Glass Buttes, Oregon

Presented to GSA Annual Meeting
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Patrick Walsh
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We will not update these forward-looking statements, even though our situation will change in the future.
Ormat Technologies, Inc.

- A pioneer and world leader in Organic Ranking Cycle (ORC) technology, with a focus on Geothermal and Recovered Energy Generation REG® power applications
- Listed on the New York Stock Exchange (NYSE: ORA)
  - Market cap: UPDATE
  - Sales 2010: UPDATE
  - Over 1,150 employees worldwide (~ 500 in U.S.)
- Supplied 1,370 MW of geothermal and recovered energy power plants in 24 countries, owns and operates 553 MW generation worldwide
- Vertically integrated
- R&D, engineering, manufacturing, installation, support & O&M
- Equipment Supply, EPC, BOT or IPP

110 MW geothermal Combined Cycle Plant, New Zealand

10 MW Geothermal modular binary unit, San Miguel Island

145 MW of REG power plants in North America

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Project Objectives

- Combine a suite of high-resolution geophysical and geochemical techniques to reduce exploration risk by characterizing hydrothermal alteration, fault geometries and relationships.
- Combine geologic observation, modern remote sensing and geophysical techniques to analyze and structurally model this area prior to siting and drilling.
Ormat-DOE Joint Project

- Principal investigator
  Patrick Walsh (Ormat)

- Co-investigators
  - John Dilles (OSU)
  - Ian Madin (DOGAMI)
  - Brigette Martini (Ormat)
  - Paul Spielman (Ormat)
  - Ezra Zemach (Ormat)

- DOE
  - GTP - DOE Golden Office

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Geologic Field Work

Previously disturbed areas

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Temperature Logs

Johnson et al.
Phase I – Exploration

- Characterize fault geometries and relationships
- Characterize mineral assemblages (indicating hydrothermal alteration)
- Geologic field work
- Geophysics
  - Gravity
  - High resolution aeromagnetic
- Remote sensing
  - LiDAR (Light Detection and Ranging)
  - Hyperspectral
- 3D geologic model to site slim wells
Exploration Program

- **Phase II & III– Drilling & Flow Testing**
  - 2 slim holes ~3500 feet
  - 1 production well ~5000 feet
  - Wells Flow test
  - Reservoir properties (permeability, temperature)
  - Project economics
  - Power plant estimation

- Evaluation of methodology
Progress

- Geologic field work (OSU) ~ 90% complete
- Widely spaced gravity (~700 m) with 3 dense lines (200m)
- Hyperspectral data
- Aeromagnetic data
- LiDAR
- MT (~ 1 km spacing)
- 3D model – 75% complete
- Well permitting in progress
Midnight Point LiDAR Slope Shade with Interpreted Faults