

# **GEOHERMAL PLAY FAIRWAY ANALYSIS OF A POTENTIAL BLIND GEOHERMAL SYSTEM IN SOUTHERN GABBS VALLEY, WESTERN NEVADA**

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## **ABSTRACT**

The southern Gabbs Valley geothermal prospect is a blind thermal anomaly located 5 km north of the Gabbs Valley Range, and 17 km east of the Don A. Campbell geothermal power plant owned by Ormat Technologies, Inc. A blind geothermal system is an area of geothermal activity with no surface features. The discovery of this blind thermal anomaly was initiated from the development of a detailed geothermal potential map covering 96,000 km<sup>2</sup> of the Great Basin region (Faulds et al., 2016). This map synthesizes about 9 geologic and geophysical parameters and showed high geothermal potential in southern Gabbs Valley. Subsequent geologic reconnaissance identified areas of favorable structure for hosting a blind geothermal system. Areas displaying complex fault relationships were then targeted for further exploration utilizing a shallow 2 m thermal survey. The first 2 m survey incorporated 60 data points in the basin, with one anomalously high temperature point located in the southern portion of the basin. Water samples were taken from the Diamond A ranch 7 km northwest of the thermal anomaly. These samples yielded a geothermometer of 140°C. Further shallow 2 m thermal survey work has been completed constraining the extent of the thermal anomaly and establishing a 10 km<sup>2</sup> area with elevated 2 m temperatures. Subsurface data generated from new gravity survey show that the 2 m thermal anomaly corresponds to a significant gravity gradient that probably reflects a subsurface fault and possible fault intersection. Exploration of the system is ongoing, and further detailed mapping of bedrock and Quaternary exposures in the area will aid in understanding the structural controls of this geothermal system. The integration of geochemical, geophysical, and geologic datasets in this area will elucidate the prospect of this geothermal resource and produce a conceptual model to be used in the selection of potential drill targets.

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