PLAN OF OPERATIONS
MAGNETOTELLURIC (MT) SURVEY
DESERT QUEEN GEOTHERMAL EXPLORATION
PROJECT

NOTICE OF INTENT

Prepared for:

Bureau of Land Management
Bureau of Land Management
Winnemucca District Office
5100 E. Winnemucca Blvd.
Winnemucca, NV 89445

Prepared by:

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Proposed Operations

Under this Notice of Intent Magma Energy (U.S.) Corp. intends to contract services to perform a magnetotelluric survey consisting of 30 stations of variable station spacing over the existing Soda Lake Participating area and to the north of the participating area on federally leased and private lands. The footprint of each station is approximately 1.5 yards-square. Station sites will be accessed using a combination of the following: 1) 1/2-ton or smaller pick-up trucks restricted to well established dirt roads, and 2) necessary off-road traverses to stations will be made using lightweight ATVs using low tire pressure (with gross weights less than 550 lbs.) restricted to dry soil that does not compress to leave tire tracks, however, dry wash sands and blown sand may show ephemeral tracks. Identified sensitive areas, soft or wet ground will be bypassed or accessed by foot. Each installed MT station will be left to record for approximately 12 to 20 hours, after which time it will be removed and the surface smoothed to original contour, so there is no evidence of the MT site occupation. The planned survey will be completed within 30 days of commencing. MT station locations are shown in Figure 1.

MAGNETOTELLURIC SURVEY DESCRIPTION

Magnetotelluric (MT) surveying involves simultaneous, passive measurement of the earth’s natural electrical and magnetic fields. A typical MT survey station, shown in Figure 2, involves two sets of orthogonal magnetic sensors and electric dipoles and a signal conditioning data logging device with battery. The electrical measurement part of the array employs four orthogonal 150 feet-long insulated wires (1/4 inches in diameter) laid on the ground surface and radiating from the station center. Ceramic electrodes (cylinders 4 inches in diameter, 7 inches high) or stainless steel sheets (6 by 12 inches) are buried in eight-inch deep holes at the distal ends of the wires. An electrode is buried at the orthogonal array center to serve as an electrical ground for the measurement system. The four electrode wires are attached to the signal conditioner and data logger box to form the recorded \( E_x \) and \( E_y \) electric dipoles. The orthogonal magnetic field signal components, designated \( H_x \) and \( H_y \), are measured by two tube-shaped magnetic induction coils measuring 50 inches long and four inches in diameter placed near the station center. These are buried in shallow trenches in the soil eight inches to ten inches deep to minimize wind noise. The vertical magnetic field component, \( H_z \), is measured using a shorter length coil (about 30 inches), buried to at least half its depth in an 18 inch deep, post-hole-shovel dug, hole then covered with a plastic wastebasket for wind protection. The three magnetic induction sensors are connected to the signal conditioner and data
logger box. This completes the individual station preparations as shown in Figure 3. The MT method also requires one concurrently operating remote reference station identical to that described above, but located approximately 12 to 18 miles from the main survey area. Project area stations are typically spaced at 500 to 5000 yards and may be distributed or organized on lines. A map showing the station locations for the proposed survey is attached as Figure 1.
Figure 1: Planned MT station locations at the Desert Queen Geothermal Exploration Project.
Figure 2: Field setup for a magnetotellurics recording station. The Remote Reference station uses the same configuration. Diagram: Quan tec Geoscience Spartan MT system.
Figure 3: Photos of an MT site being installed. Photos courtesy Quantec Geoscience.