

Detailed Gravity and Aeromagnetic Surveys GT-16
in the Black Rock Desert Area, Utah

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Aeromagnetic and gravity surveys (over about 2400 km²) made during 1978 in the Black Rock Desert, Utah area, between the north-trending Pavant and Cricket ranges, assisted in evaluating geothermal resources by delineating subsurface geologic features. Data from about 800 gravity stations were reduced (using a modification of the USGS terrain-correction program written by Don Plouff) to provide a complete Bouguer gravity anomaly map. Gravity and aeromagnetic profiles were modeled simultaneously using a joint nonlinear optimizing 2½-D modeling technique to provide a single model satisfying both types of data. Major north-trending gravity and magnetic anomalies dominate the central portion of the survey area and comprise (1) a belt of gravity contours with a total relief of 15-20 mgal over about 8 km; and (2) an elongate magnetic high which corresponds approximately with the gravity belt. These anomalies correspond well with a fault zone (down-thrown to the west about 1 km) which defines the eastern margin of the north-trending Black Rock Desert graben and along which basalt (900,000-600 yr old) has been emplaced. In the eastern part of the survey area, the north-trending Oak City gravity high (20-mgal closure) is terminated on the south by a striking east-west trend along which the Black Rock volcano (cinder cone) is located. In a line directly north of this cinder cone are the Hatton Hot Springs and White Mountain rhyolite dome (400,000 yr old). The hot springs lie about 2½ km east of the north-trending fault zone and on the western edge of a small gravity high (2-mgal closure). White Mountain is located on the eastern margin of the