

Gravity Survey of the Island Park Caldera and Vicinity, Eastern Idaho

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Approximately 1000 gravity measurements have been made to define the gravity field in an area of about 2000 sq miles centered on the Island Park caldera. Simple Bouguer anomaly values range from a high of -150 mgals over Snake River Plain basalts southwest of the caldera, to a low of -210 mgals over rhyolites of the Madison Plateau to the east and northeast.

A circular positive anomaly of 10 to 15 mgals amplitude and about 10 miles diameter is associated with the western half of the caldera. This feature could be explained either by a fill of basaltic lavas in an inner depression, or by a source in the caldera basement. A smaller, negative anomaly is associated with a large rhyolite dome on the western caldera rim.

The Island Park complex is bounded by northeast-trending gravity lineaments that appear to represent the structural margins of the Snake River Plain. A weak northwest-trending positive anomaly intersects the southern caldera rim and may reflect an older structure at depth; a sharp negative anomaly with similar trend north of the caldera coincides with Henrys Lake basin.