

A STUDY OF THE TEPHRA DEPOSITS OF SPLIT BUTTE, A MAAR CRATER OF THE SOUTH-CENTRAL SNAKE RIVER PLAIN, IDAHO

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Split Butte is a volcanic feature of recent origin located in the south-central Snake River Plain, Idaho. It overlies basalts of the undifferentiated Snake River Group of Pleistocene to Holocene age. Split Butte is west of the young Wapi lava flows which slightly overlap it indicating that Split Butte predates the Wapi.

Split Butte consists primarily of a tephra ring approximately 550 m in diameter with a maximum relief of 50 m relative to the surrounding plain. The tephra, which consists primarily of partially palagonitized sideromelane and small lithic fragments, is thinly bedded and dips radially away from the center of the Butte. A series of en echelon basalt dikes cut tagentially across the ash ring on the northwest. The tephra ring is in disconformable contact with the basalt of a lava lake which was confined by the ramparts. The ring is discontinuous and the lava lake appears to have flowed over a section of it on the southwest. An inner pit crater approximately 20 m deep and 450 m in diameter was formed in the lava lake owing to collapse of the central portion of the lake. A small cluster of spatter cones lies on the circular fracture along which the collapse occurred.

A large split, or declivity, is located on the eastern section of the tephra rim of Split Butte. The split is situated at the point of greatest accumulation of ash and is the result of the removal of a large volume of ash from the outer slope of the tephra ring at this point. The actual mode of formation of the split is as yet unknown.

Over 270 samples of tephra, basalt and soil were collected at Split Butte. The tephra samples will be petrographically analyzed to determine the variations in composition throughout the eruptive history of the feature. The basalt will be analyzed to determine the relationships, if any, between the samples of the lava lake, en echelon dikes, and the encroaching surface flows. Presence of variations in bulk composition of the erupting magma will be noted and trends plotted.

A grain size analysis is being carried out on the tephra samples and parameters such as mean grain size vs. distance; sorting; type of distribution; etc., will be used as an estimate of eruptive energy and related processes of eruption. An analysis of maximum diameter of basalt throw-out blocks vs. distance from the vent is planned and should give an additional estimate of eruptive energy.