MELT INCLUSIONS IN COMPOSITIONALLY ZONED TUFF, SOUTHWESTERN
NEVADA VOLCANIC FIELD,

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The Tiva Canyon Tuff is a thick, compositionally zoned welded tuff in the southern part of the southwestern Nevada volcanic field in which as much as 60 m of crystal-rich quartz latite caps up to 140 m of crystal-poor rhyolite. A distinctive horizon in the Tiva Canyon Tuff contains light-gray round inclusions of rhyolite within the dark brownish-gray crystal-rich quartz latite. The chemical composition of these rhyolitic inclusions differs from the composition of the rest of the Tiva Canyon Tuff. This zone of inclusions ranges from 4 m to less than 1 m thick over a distance of 3 km in the proximal part of the ash-flow sheet. Within this zone the rhyolitic inclusions compose from 20 to 90 percent of the rock, range in diameter from 1 to 15 cm, and exhibit sharp contacts with the enclosing tuff. The inclusions contain 3 to 6 percent phenocrysts and no pumice fragments, whereas the enclosing quartz latite contains 10 to 12 percent phenocrysts and abundant red and dark brown pumice fragments. The similarity in vapor-phase minerals, cooling textures, and devitrification textures indicates a similar cooling history for both the quartz latite and the rhyolitic inclusions. Textural and petrographic data indicate the inclusions were emplaced as unmixed, non-^yvesiculated blobs of melt within the ash flow-tuff. Geochemical data and phenocryst content of the rhyolitic inclusions more closely resemble the composition of post-Tiva Canyon bedded tuff than of the Tiva Canyon Tuff itself.

The rhyolitic inclusions ^{may} ~~may~~ represent a batch of melt unmixed and distinct from the parent Tiva Canyon Tuff magma. That this separate magma ^{may have been} ~~was~~ injected into the magma chamber just prior to eruption of the Tiva Canyon Tuff seems apparent from its stratigraphic position and distinct unmixed character, and it may represent the trigger mechanism for the original eruption. The preservation of these unmixed melt inclusions in the Tiva Canyon Tuff

provides field evidence confirming experimentally derived “beaded” flow of unmixed magma within volcanic conduits during eruption.

SW Nevada volcanic field, Tiva Canyon Tuff, unmixed magma, chilled blobs, conduit flow