

Valle Grande Obsidian

Oct73 News Nuggets
by Pete Modreski

Retracing, on a map, the route to the Valle Grande Ranch Obsidian locality, I found that the obsidian occurs on the northern end of the hill known as Cerro del Medio. About a million years ago a cataclysmic eruption and collapse destroyed the crater of the large volcano that we call the Jemez Mountains. This eruption deposited the layer of rhyolite ash and pumice, up to 900 feet thick, known as the Bandelier Tuff. It left behind the "Valles Caldera", a depression some ten miles across, bounded by a ring of fractures. The grassy valley we know as the Valle Grande is one small part of this caldera. After the eruption, new masses of viscous rhyolite lava pushed up to form domes (some 2000 feet thick) along the fractures which rim the caldera. Cerro del Medio is one of these domes.

According to Northrup's "Minerals of New Mexico", the white minerals filling or lining the gas vesicles in the Jemez obsidians have been found to be a mixture of cristobalite and orthoclase. Possibly the grey-white balls, a fraction of a millimeter in size, on the vesicle walls are relatively pure cristobalite. The vesicles in the obsidian we collected also contain numerous microscopic magnetite octahedra.

The youngest volcanic formation in the Jemez is the Banco Bonito obsidian flow, another of the lava upwellings along the fractures of the Valles Caldera. It is exposed in roadcuts along highway 4, between the LaCueva picnic ground and the Valle Grande. This obsidian is full of mineral inclusions, fractures, and layers in which the glass has crystallized (devitrified). Some pieces do, however, have an attractive black and red mottling. Evidently only the obsidian at Cerro del Medio erupted and cooled under just the right conditions to maintain the solid glassy texture that makes it valuable for polishing and carving.

*Geologic Map of the Jemez Mountains, N.M. & U.S.G.S. Miscellaneous Geologic Investigations Map I-571.