HYPOTHEtical Tectonic Evolution of the La Sal Mountains and the Uncompahgre Plateau Based on Upper Mantle Tomography

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Introduction and Purpose of the Project

The La Sal Mountains (Fig. 1) are a complex fold, crack, and fault belt located in the northwestern Uncompahgre Plateau (uplifted in the Laramide Orogeny). These tectonic features are the result of compression, extension, and volcanism occurring in the basin and range province of southeastern Utah and western Colorado (Oligocene to Late Cenozoic). The study area is relatively small in size, spanning the northwestern Uncompahgre Plateau (Fig. 2) where WNW-ESE striking left-lateral oblique-slip are the most common faults (Fig. 3), possibly a result of extension along the region as passive hot spots from upflow upper mantle plumes. East of the La Sal Mountains is the NW-SE trending Uncompahgre Plateau intrusions during the Mid-Tertiary time (Cass et al., 1963, and Ross, 1997). The igneous rocks in the La Sal laccolith are well exposed and have been dated (Oligocene to Late Cenozoic) (Fig. 8). The laccolith has a certain age relation to the faulting and folding (as the magmatic intrusion is postdating the Laramide compressional stresses). The faulting and folding are the results of Laramide compressional stresses. The intrusions are the result of upwelling in the mantle.