A Tale of Two Breccia Types in the Mississippian Leadville Limestone, Lisbon and Other Fields, Paradox Basin, Southeastern Utah

**Summary**

Breccia in the Paradox Basin is a critical component of oil and gas reservoirs. Two distinct breccia types have been identified: karst breccia associated with sediment-filled cavities and autobreccia, which are partially filled with coarse rhombic dolomite clasts. These breccia types are associated with sedimentary facies that provide insight into the depositional environments and tectonic history of the basin.

**Regional Overview**

The study area is located in the southwestern United States, encompassing parts of Utah, Colorado, and Arizona. The region is characterized by a complex basin-fill sequence, which includes the Mississippian Leadville Limestone. The study area is characterized by structural and stratigraphic traps that are critical for hydrocarbon accumulation.

**Leadville Karst Breccia & Cave Sediments - Outcrop Examples**

Outcrop analogs for both breccia types are present, reflecting shear and the explosive fluid result yields an "autobreccia" as opposed to karstification of the Leadville during the Early Mississippian. Breccia associated with sediment-filled cavities are very finely crystalline and non-porous dolomites. Muds infilling the karst cavities are very finely detrital quartz grains, chert fragments, and sediments occurred before deposition of the Mississippian Leadville Limestone during the third of the Mississippian Leadville Limestone.

**Cave Sediment Lithofacies in the Leadville Limestone**

The Leadville Limestone is a critical reservoir unit in the Paradox Basin. Lithofacies are used to interpret the depositional environment and to understand the hydrodynamic processes associated with karstification. The lithofacies described in this study include:

- **Lithofacies Description**
- **Interpretation**
- **Origin**

**Lithofacies Examples**

- **DololITH**
- **Siltstone**
- **Sandstone**
- **Breccia**

**Panel I**

Panel I includes maps and images of the study area, focusing on the distribution of lithofacies and structural features. The maps are accompanied by detailed captions that describe the geological context and the significance of the features.

**Panel II**

Panel II provides a detailed description of the lithofacies and their relationship to the overall depositional setting. The panel includes images of outcrop examples and descriptions of the sedimentary facies observed in the field.

**Panel III**

Panel III continues with the detailed description of the lithofacies and their relationship to the overall depositional setting. The panel includes images of outcrop examples and descriptions of the sedimentary facies observed in the field.