**INTRODUCTION**

The Purgatory Saddle quadrangle is located in the north central portion of the Snake River Plain, Idaho, and includes parts of the southern Seven Devils Mountains. The area is characterized by a complex geologic history that includes Jurassic to Cretaceous plutons, Paleogene volcanic rocks, and Quaternary deposits. The area is of interest to geologists due to its diverse geology and potential mineral resources.

**PREVIOUS INVESTIGATIONS**

Previous investigations in the Purgatory Saddle quadrangle have focused on the geology and mineral potential of the area. Early work by Ettle et al. (1920) reported on some of the earliest copper ores mined and other mining activities in the southern Seven Devils Mountains. These plutons, trending predominantly northeast-southwest, are parallel to a major thrust fault within the area.

**STRUCTURAL GEOLOGY**

The structural features of the Purgatory Saddle quadrangle are dominated by thrust faults and fault-bounded blocks. The faults are associated with a network of secondary shear zones and cataclasites. The dominant structural style is a series of northeast-trending fault blocks and northeast-southwest-trending shear zones. The faults and shear zones are characterized by a variety of deformational fabrics, including foliations, lineations, and schistosity.

**MINERALOGY AND GEOCHEMISTRY**

The plutons in the Purgatory Saddle quadrangle are composed of quartz, plagioclase, and biotite. The mineral assemblage is indicative of a medium to high pressure environment. The geochemistry of the plutons is characterized by high silica contents and low trace element concentrations. The plutons are thought to have formed in a supra-subduction zone setting.

**CONCLUSIONS**

The geology of the Purgatory Saddle quadrangle provides important insights into the evolution of the Snake River Plain and the surrounding region. The area is of potential economic importance due to its mineral resources and geothermal potential.

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