



# GEOGULF2021

A U S T I N  
October 27–29, 2021

## Recent Rock Discoveries at Pilot Knob Volcano, Austin, Texas

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### ABSTRACT

Recent housing developments surrounding Pilot Knob volcano in southeastern Austin, Texas, include considerable excavations. Numerous studies and field trips have been conducted since 1890 in hope of better understanding related subsurface volcanic features commonly referred to as "serpentine plugs," from which nearly 50 million barrels of oil have been produced. The excavated rocks have provided a rare and more extensive view of the subsurface than was previously accessible, offering the opportunity to better understand the geology on these features.

The discoveries were made while preparing for geology conference field trips in 2019 and 2021. Construction crews stockpiled boulders in staging areas for transport and eventual landfilling. These rocks included basalts, breccias/peperites, agglomerates, conglomerates, various tuffs, and contact metamorphosed crystalline limestone. Subsequent research indicated the diversity of rocks may be unique not only in Texas, but worldwide, and was deserving of further study. Research of some of the most diverse submarine to subaerial volcanic environments had very few photos and rock varieties were more limited than at Pilot Knob.

Previous studies of Pilot Knob classify it as a submarine to subaerial Surtseyan phreatomagmatic or hydroclastic eruptive volcano of the Upper Cretaceous Austin Chalk Group (~80 Ma). The volcano began as submarine eruptions in a shallow sea of the ancestral Austin Chalk and is estimated to have been relatively near the ancient shoreline, with the volcano eventually forming an island. These changing environments are hypothesized to explain the complex rock assemblage. The diversity of rocks indicates numerous micro-environments and mixing during explosive eruptions, with some below sea and others above sea level.

The photographic documentation and hypotheses of how these rocks were formed will hopefully provide a new level of understanding and comparison for these challenging geological environments, help in exploration efforts on "serpentine plug" fields, and identification of similar features else-

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## NOTES

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