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U/PB ZIRCON GEOCHRONOLOGY OF THE BALD HILL BENTONITE SUITE AT THE NEW PARIS QUARRY IN SOUTHWESTERN PENNSYLVANIA

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T2. Undergraduate Research Poster Session

Throughout the central Appalachians a series of bentonite layers, called the Bald Hill Bentonites (BHBs), were deposited during the early Devonian; although no absolute ages are currently known, radiometric isotope dating could provide these dates. Three bentonite layers of the BHBs are recognized: BHB A, B, and C (from oldest to youngest, respectively). Fieldwork at the New Paris Limestone quarry, a retired limestone quarry in southwestern Pennsylvania, identified BHB B and BHB C layers to be present and revealed a previously undescribed bentonite layer, BHB B', between them. A reportedly equivalent bentonite unit to BHB A is present in New York, where it returned a 417 Ma date. This led to the previous conclusion that all the BHBs are ~417 Ma, although no work has been done to conclude this. Each bentonite layer (BHB B, B', and C) was sampled and submitted to ZirChron for zircon extraction and U/Pb radiometric isotopic analyses. These data provide age constraints for each of these layers and determines if BHB B' is truly a new layer or if the stratigraphy of these bentonites at this locality was incorrectly identified and needs to be revised. With these dates and geochemical data, correlation across state borders is possible and can provide further information towards finding the source(s) of these layers. Additionally, the rate of sedimentation of the Helderberg limestones can be determined based off the age constraints of the BHBs and the thickness of the material between those layers. From these dates, sedimentation rates, previous geochemical data, and interstate correlations, it provides a clearer image of the tectonic history impacting the region.