Structural and Stratagraphic Age Constraints of the Inskip Formation, East Range, Nevada: Implications for Mesozoic Tectonics of Western North America

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The Inskip Formation, located in the East Range of North Central Nevada, consists of a metavolcano-sedimentary succession interpreted previously to be Mississippian in age. The Inskip could represent a portion of an Upper Paleozoic fringing arc of North America. However, the ages obtained from sparse fossil data are inconsistent, and come from local limestone lenses in the Lower Inskip that may be redeposited (olistostromes). U/Pb zircon geochronology was used to analyze volcanic and volcaniclastic rocks and generate precise ages independent of the fossil data, allowing for more confident interpretation of structural and stratagraphic ages.

New evidence suggests the Mississippian age assigned to the Upper Inskip is incorrect. A volcanic tuff collected from the lower half of the Upper Inskip yielded a U/Pb zircon age of 249.14 +/-0.13 Ma, placing it within the Early Triassic period. Additionally, a sample of volcaniclastic material from the upper portion of the exposed Inskip Formation contained a zircon with an age of 248.8 +/-0.22 Ma, placing a maximum constraint on the age of depostion (i.e., Early Triassic or younger). Therefore, the Upper Inskip is not part of the Upper Paleozoic fringing arc. The Lower Inskip, however, has not been dated radiometrically and may still represent a part of the Carboniferous arc. U-Pb geochronology of volcanic zircon from the Lower Inskip is being conducted to resolve the stratagraphic age and test models of tectonic association. Implications from the new data bear on the timing of Golconda thrusting and final closure of marginal basin(s).