

[Start](#) | [Grid View](#) | [Author Index](#) | [View Uploaded Presentations](#) | [Meeting Information](#)**Cordilleran Section - 119th Annual Meeting - 2023**

Paper No. 9-1

Presentation Time: 8:00 AM-6:00 PM

STRATIGRAPHY AND PROVENANCE OF THE KEKIKTUK CONGLOMERATE AND ASSOCIATED LOWER CARBONIFEROUS UNITS IN THE NORTHEASTERN BROOKS RANGE OF ALASKA

SEHRA, Shaalin¹, GEIER IV, George², LOCKETT, Alec³, GALLOWAY, Peter², MCCLELLAND, William C.³, CONNORS, Christopher⁴ and STRAUSS, Justin², (1)Department of Earth Sciences, Dartmouth College, Hanover, NH 03755, (2)Department of Earth Sciences, Dartmouth College, HB 6105, Fairchild Hall, Hanover, NH 03755, (3)Department of Earth and Environmental Sciences, University of Iowa, 115 Trowbridge Hall, Iowa City, IA 52242, (4)Department of Geology, Washington and Lee University, 204 West Washington Street, Lexington, VA 24450

The Devonian-Carboniferous marks an important transition in the tectonic evolution of northern and western North America, including the termination of long-lived passive margin sedimentation and the onset of subduction along the western margin. In the Arctic Alaska–Chukotka terrane (AAC) of northern Alaska and Yukon, Canada, the conclusion of this transition includes a poorly understood shift from contraction back to extension and eventual passive margin subsidence, most of which is recorded in the Upper Devonian–Lower Mississippian Endicott Group of the Brooks Range and North Slope subsurface. This study provides the first detailed investigation of the Mississippian Kekiktuk Conglomerate of the Endicott Group in the headwaters of the Sheenjek River, northeastern Brooks Range, Alaska. During the summer of 2022, we mapped exposures of the Kekiktuk Conglomerate, as well as an equivalent informal unit referred to here as the Chandalar unit, in three distinct north-directed Brookian thrust sheets. Our mapping reveals that prior reconnaissance work in the Sheenjek River headwaters mis-interpreted the presence of a mafic volcanic unit within the Kekiktuk Conglomerate; rather, this igneous unit represents a fault sliver of unnamed Upper Devonian mafic volcanic rocks well exposed to the west in the headwaters of the East Fork of the Chandalar River. In addition to mapping, we measured stratigraphic sections and collected samples for detrital zircon U–Pb geochronology, palynology, and sandstone petrography in the Kekiktuk Conglomerate and Chandalar unit. Samples of the Kekiktuk depositionally on North Slope subterranean units show minor to major ca. 370 and 415 Ma peaks and a broad Proterozoic–Archean signature with major peaks at 1830–1910 and 2650–2750. Chandalar unit samples are similar but more variable with a notable lack of a 370 peak and presence of a 430 Ma peak in some samples. These data will help shed light on the transition from contraction to extension in the AAC and help clarify models for subduction initiation along the western margin of Laurentia.

Session No. 9--Booth# 38

[T30. Undergraduate Research \(Posters\)](#)

Wednesday, 17 May 2023: 8:00 AM-6:00 PM

[Cargo Room \(The Whitney Peak Hotel\)](#)

Geological Society of America *Abstracts with Programs*. Vol. 55, No. 4
doi: 10.1130/abs/2023CD-387288

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[Back to: T30. Undergraduate Research \(Posters\)](#)[Previous Abstract](#) | [Next Abstract >>](#)