

## THE CANNERY FORMATION: DEVONIAN TO EARLY PERMIAN ARC-MARGINAL DEPOSITS IN THE ALEXANDER TERRANE, SOUTHEAST ALASKA

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The Cannery Formation consists of bedded chert, siliceous siltstone, graywacke-chert turbidites, and volcanoclastic sandstone. It contains Early Permian fossils at its type area at Cannery Cove on Admiralty Island in southeast Alaska, and was originally defined as a Permian stratigraphic unit (Loney, 1964). Similar rocks on Admiralty Island contain Early Permian bryozoans and brachiopods, and Mississippian to Permian radiolarians. Bedded chert with lenses of limestone, basalt, and graywacke near Kake on Keku Strait were initially correlated with the Cannery Formation based on similar lithology, but were later determined to contain Late Devonian conodonts. Conglomerate in Keku Strait contains chert cobbles inferred to be derived from the Cannery Formation that yielded Mississippian and Devonian radiolarians. Based on the fossils from the limestone lens near Kake and chert cobbles in Keku Strait, the age of the Cannery Formation was revised to Mississippian and Devonian (Jones and others, 1981), but this revision excludes rocks in the type locality as well as chert east of Kake on Kupreanof Island that contains radiolarians of Late Pennsylvanian to Early Permian age. The minimum age of the Cannery Formation on both Admiralty and Kupreanof Islands is constrained by the stratigraphically overlying fossiliferous Pybus Formation, of late Early to early Late Permian age. Because lithologically similar cherty rocks on both Admiralty and Kupreanof Islands contain fossils that range in age to Early Permian, the age of the Cannery Formation is herein extended to Late Devonian to Early Permian. The Cannery Formation represents marine deposition in moderately deep water with slow rates of deposition and limited clastic input during Devonian to Pennsylvanian time, and increasing argillaceous, volcanoclastic, and bioclastic input in the Permian.

The Cannery Formation is part of the Alexander terrane. Sedimentary and volcanic rocks that contain Early Permian fossils, and metamorphic and intrusive rocks that have Early Permian cooling ages ranging from 285-265 Ma, form discrete belts within the Alexander terrane that consist of, from northeast to southwest, 1) pillow basalt, bedded chert, siliceous argillite, volcanoclastic turbidites, and limestone of the Cannery Formation and informally named Porcupine Slate, 2) greenschist facies Paleozoic metasedimentary and metavolcanic rocks, 3) silty limestone and calcareous argillite interbedded with pillow basalt and volcanoclastic rocks of the William Henry Bay area and the Halleck Formation, and 4) intermediate composition plutons. These belts represent an accretionary complex, metamorphosed basement rocks, forearc basin deposits, and magmatic roots of a northeast-facing volcanic arc, respectively, and are inferred to represent components of a collision between a structural lower plate of metamorphosed Early Paleozoic arc rocks of the Alexander terrane exposed to the north on Admiralty Island, and a structural upper plate of stratigraphically distinct, unmetamorphosed Early Paleozoic rocks of another arc component of the Alexander terrane exposed to the south on Prince of Wales Island. Early Permian fossil and radiometric ages are inferred to indicate the age of a volcanic arc that formed during the collision and amalgamation of these two components of the Alexander terrane.