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### Cordilleran Section - 116th Annual Meeting - 2020

Paper No. 24-12

Presentation Time: 9:00 AM-6:00 PM

## U/PB AGES OF CONGLOMERATE CLASTS OF THE YAKUTAT GROUP, HARLEQUIN LAKE, SOUTHERN ALASKA

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The Yakutat Group, part of the basement of the Yakutat terrane, contains Upper Cretaceous to Paleocene flysch, mélange, and conglomerate and its origins and history have consequences for the tectonic reconstruction of southern Alaska. U/Pb detrital zircon dates show that the Yakutat Group flysch and mélange were deposited at the same time, and differ from the flysch of the nearby Valdez and Orca Groups of the Chugach-Prince William terrane. Clast-supported conglomerates in the Yakutat Group consist of rounded clasts of sandstone, shale, limestone, marble, granite, chert, quartzite, and greenstone in a coarse sandstone matrix. The conglomerates are interbedded with turbiditic sandstones and a mudstone slope facies, and are generally organized, clast-supported, and horizontally stratified, with both reverse and normal grading and local cross-bedding.

Seven plutonic clasts, one plutonic knocker (> 20 m diameter), and two samples from the sandstone matrix were collected from outcrops near Harlequin Lake, south of Yakutat. Geochemical analyses from three plutonic clasts plot in the granite field on a TAS diagram. Five of the plutonic clasts yield U/Pb crystallization ages of ~90 Ma, ~166 Ma, ~171 Ma, ~175 Ma, and ~193 Ma. Two of the clasts plus the knocker have crystallization ages of ~204 Ma. The sandstone matrix samples have nearly identical maximum depositional ages (MDA) of ~64-66 Ma, as well as component populations at ~70 Ma, ~90 Ma, ~150 Ma, ~1380 Ma, and ~1720 Ma.

The zircon age distributions of the sandstone turbidite samples from Harlequin Lake are a close match to the Yakutat Group conglomerate at Russel Fjord, 40 km to the north, confirming a Middle Paleocene depositional age for the conglomerate in both locations. The ~166-175 Ma ages from the Harlequin Lake plutonic clasts match previously dated clasts from the conglomerate in Russell Fiord. The plutonic clasts come from sources with a distinct range of Mesozoic crystallization ages, from mid-Cretaceous to Late Triassic, and are remarkably similar to ages of volcanic rocks the Western Mélange Belt in Washington State. The grain-age distribution of the matrix has a bimodal distribution of Precambrian ages at ~1380 Ma and ~1720 Ma, characteristic of rocks from the Nanaimo Basin on Vancouver Island ~1300 km to the south.

Session No. 24--Booth# 56

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Wednesday, 13 May 2020: 9:00 AM-6:00 PM

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