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A MID-CRETACEOUS PIN IN THE NORTHERN CORDILLERA LINKING YUKON-TANANA TO CONTINENTAL MARGIN ASSEMBLAGES

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Paleomagnetic studies of Late Cretaceous layered rocks of the northern Cordillera imply that much of the hinterland of the orogen lay 3000 km south relative to North America as recently as 85 Ma. The Carmacks Group is a 70 Ma flood basalt which erupted across Yukon-Tanana terrane (YTT) in Yukon and which extends east to the Tummel fault zone along which YTT is juxtaposed to the east against Cassiar terrane, a miogeoclinal platform that shales out east into Selwyn basin. Paleomagnetic studies of Carmacks Group, including flows from immediately adjacent to Tummel fault zone, imply that Yukon-Tanana terrane was 2000 km south at 70 Ma (Wynne et al., CJES 35, 657-671). The Eocene dextral Tintina fault has displaced Cassiar terrane 425 km north, leaving some 1500 km of displacement unaccounted for. Could the Tummel fault zone have accommodated this missing displacement? The 2-3 km wide Tummel fault zone consists of a northwest-trending Paleozoic (?) oceanic assemblage with greenstone, leucogabbro intrusions, serpentinite and chert. Yukon-Tanana Terrane rocks to the southwest consist of a Devonian to Mississippian siliciclastic assemblage structurally overlain by a Mississippian arc volcanic assemblage of arc affinity and intruded by 348-350 Ma granodiorite / diorite of the Telegraph Plutonic Suite. Cassiar Terrane rocks to the northeast consist of pelite and semipelite with rare amphibolite (Kechika Group). These are overlain by a platform carbonate sequence (Askin Group). The 105 Ma Glenlyon Batholith is a sill-like body that intrudes Cassiar Terrane. A contact metamorphic aureole characterized by andalusite + cordierite is developed adjacent to the batholith and extends across the Tummel fault zone into YTT. This relationship pins YTT to Cassiar terrane by 105 Ma, and limits post-mid-Cretaceous displacement across the Tummel fault zone to <5 km. Therefore, either the paleomagnetic data is not providing an accurate assessment of the paleolatitude of Carmacks Group, or the boundary between the far-traveled terranes and North America lies east of Tintina fault. This latter explanation implies that the Cassiar terrane and at least parts of the more easterly Selwyn basin are also far-travelled and is consistent with a paleogeographic model of the displaced block as a ribbon continent (Saybia ? Johnston, EPSL 193, 259-272).