

U-PB ZIRCON AND TITANITE AGES OF LATE-TO POST-TECTONIC INTRUSIONS OF THE CORTLANDT-BEEMERVILLE MAGMATIC BELT, CT, NY, AND NJ: RELATION TO IAPETAN CLOSURE in THE TACONIAN OROGENY

RATCLIFFE, Nicholas M., MS926A, US Geological Survey, Reston, VA 20192, nratlif@usgs.gov; **TUCKER**, Robert D., U.S. Geological Survey, National Center, Mail Stop 926A, Reston, VA 20192; **ALEINIKOFF**, John N., U.S. Geological Survey, MS 963, Denver, CO 80225; **AMELIN**, Yuri; Research School of Earth Sciences, The Australian National University, Bldg 61, Mills Road, Canberra, 0200, Australia; **MERGUERIAN**, Charles; Geology Department, Hofstra University, 141 Gittleson Hall, Hempstead, NY 11549; and **PANISH**, P.T., Department of Geosciences, University of Massachusetts, Amherst, MA 01003-9297.

Alkaline syenite and alkaline gabbroic to monzodioritic plutons of the Cortlandt-Beemerville magmatic belt intrude NE-SW diagonally across the cryptic Taconian suture (Cameron's Line) between allochthonous eugeoclinal metasediments and autochthonous Laurentian basement and its cover rocks. Timing of intrusion relative to collision and suture formation has been debated. Some workers favor allochthonous emplacement of Brookfield and Mount Prospect complexes whereas plutons such as the Cortlandt Complex, attendant lamprophyres and the Beemerville alkaline complex intrude Laurentian basement and cover. New U-Pb SHRIMP zircon ages (± 2 sigma) are: hornblende diorite of the Hodges Complex 446.0 ± 7.1 Ma, monzonite of the Mount Prospect Complex 450.8 ± 4.7 Ma, monzonite of the Bedford Complex 452.3 ± 4.5 Ma (inherited cores 1.3 -1.1 Ga), monzodiorite of the Peach Lake Complex 449.7 ± 4.3 Ma, and monzonite of the Cortlandt Complex 446 ± 2 Ma. Titanite from the Beemerville nepheline syenite has yielded a TIMS age of 447 ± 2 Ma. Because these contemporaneous plutons intrude foliated autochthonous Middle to Upper Ordovician phyllitic to schistose rocks of chlorite to kyanite grade they determine the minimum ages for the start of Taconian Barrovian metamorphism on the Laurentian margin and for Iapetan closure. Younger ages of granite intrusion and migmatization at sillimanite-K-feldspar grade of about 443 Ma near Milford Connecticut indicate that high grade metamorphism continued after intrusion and collision. Inherited cores of 1.3-1.1 Ga in the Bedford Complex suggest interaction with Laurentian crust. Overlap in age of these plutons with felsic intrusive rocks of the Bronson Hill arc suggest a spatial continuum from near collisional arc to post-collisional sublithospheric tears and mantle upwelling oblique to the suture over a period of about 7 my in the late Ordovician and Silurian. Simultaneous generation of calc-alkaline to alkaline igneous rocks along oblique tears from active subduction zones proposed for Anatolian (Turkish) and Italian volcanic provinces may be analogous.

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