

EARLY MESOZOIC BASALT FORMATIONS OF THE POMPERAUG BASIN, SOUTHWESTERN CONNECTICUT: PETROLOGY AND REGIONAL CORRELATIONS

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Three basalt formations occur in the small (c. 3 km x 11 km) Tr-J Pomperaug basin of southwestern Connecticut. From oldest to youngest these are East Hill Basalt (7 to 10 m thick); Orenaug Basalt (c. 80 m thick); and South Brook Basalt (c. 35 m thick). All appear to be quartz tholeiite, with subhedral augite in a matrix of fine-grained intermediate plagioclase, and variably abundant amygdules filled with secondary minerals. The relatively unaltered Orenaug Basalt is closely correlated by chemistry and petrography with Holyoke Basalt of the Hartford Basin to the east as well as Preakness Basalt of the Newark basin to the southwest. Unlike those basalts, the Orenaug Basalt is divided into lower, middle, and upper flow members, with the middle member being more amygduloidal as well as hydrothermally altered. The East Hill Basalt lies about 40 m beneath the Orenaug. This basalt is everywhere highly altered, but its element ratios allow an origin as a thin distal portion of the Talcott Basalt (Hartford basin) and Orange Mountain Basalt (Newark basin). The South Brook Basalt is also highly altered but could represent the Pomperaug equivalent to the Hampden Basalt (Hartford Basin) and Hook Mountain Basalt (Newark Basin).

Source dikes are absent within the Pomperaug basin, and the local basalts are apparently derived from three regional fissure dike systems that extend across and far beyond the Hartford Basin. The Bridgeport, Buttress, and Higganum dike fissure sources are 20 km to 60 km the east of the Pomperaug Basin, in a sequence of younger to older from west to east. Coarse alluvial fans formed directly above some sections of basalts along fault margins, indicating the onset of uplift and erosion gradually isolated the basins and disrupted their stratigraphic connections.