DISTRIBUTION OF URANIUM AND THORIUM IN CENTRAL NEW ENGLAND AND NORTHEASTERN NEW YORK

McHONE, J. Gregory and WAGENER, H. D., Chiasma Consultants, Inc., 945 Sawyer Street, South Portland, Maine 04106 (work supported by Bendix Field Engineering Corp., Grand Junction, Colorado 81501)

U and Th have been concentrated by several different means in central New England and adjacent New York. Late Precambrian pegmatites in the southeastern Adirondacks contain U and Th in scattered uranium minerals and "nests" of allanite. Some basal channel conglomerates and thin conglomeratic horizons in the overlying Potsdam Sandstone contain radioactive minerals derived from the pegmatites, but are low in U.

Most pegmatites of the Mt. Holly Complex in the core of the Green Mountains anticlinorium are similar to Adirondack pegmatites, but tend to be depleted in U relative to Th. We postulate that U migrated from Mt. Holly pegmatites during Paleozoic metamorphism to form vein-type occurrences in Mt. Holly quartzites. Other deposits of U appear to be stratabound in micaceous quartzites and gneissoid feldspathic quartzites of the Mt. Holly Complex. Enrichment of U in contorted biotite-rich lenses and along shear zones in the gneissoid quartzites suggests partial structural control.

In two-mica granites of the Devonian New Hampshire plutonic series in southern Maine, U, Mo and K-feldspar were deposited along porphyry-type, late-magmatic internal fracture systems and in pegmatoid segregations. In New Hampshire, U leached by groundwater from two-mica granite has been precipitated along Mesozoic fractures. Widespread garnet-biotite schorl pegmatites in New Hampshire and southern Maine associated with the two-mica granites contain small zones of uranitite and thorite. The Jurassic Conway biotite granites of New Hampshire contain minor occurrences of U in biotite-rich segregations, rare quartz-rich veins, and vuggy zones of deuteric alteration. Aplitic dikes in Conway granite and trachytic dikes in southern Maine are enriched in Th.