Mapping the Basement – Assessing the Potential for Hydrothermal Dolomitization in the Paleozoic of Eastern Canada

Denis Lavoie and Nicolas Pinet
Geological Survey of Canada – Quebec Division, Québec, QC, Canada
delavoie@nrcan.gc.ca

Abstract/Excerpt

Hydrothermal dolomites (HTD) host oil and gas accumulations in eastern North America and are actively explored for in the Canadian segment of the ancient continental margin of Laurentia. Hydrothermal dolomitization is a process that implies early burial extensional to transtensional tectonism, efficient and rapid circulation of high temperature fluid along those basement-rooted faults and a major source of Magnesium to sustain the significant dolomitization observed in the world-class reservoirs in eastern North America (Davies and Smith, 2006).

The identification of an efficient source of Magnesium could be one of the major elements to recognize areas with higher potential for extensive hydrothermal dolomitization. The recognition of Mg-rich domains in the underlying basement could provide a first hand tool to delineate prospective areas. The aim of this work is to discuss the relationship between extensive hydrothermal dolomitization in Lower Silurian units in the Gaspé Belt of eastern Canada and the presence of older mafic to ultramafic rocks (Lavoie and Morin, 2004; Lavoie and Chi, 2006).