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OPEN FILE 7858

Geology and petrology of the Schultz Lake Intrusive Complex and its relationship to unconformity uranium deposits: Schultz Lake, NTS 66-A/5 and Aberdeen Lake, NTS 66-B/8, Western Churchill Province

A.R. Miller and T.D. Peterson

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Introduction

In 1994, A.R. Miller, then Regional Metallogenist for the Western Churchill Province, Mineral Deposits Division, Geological Survey of Canada, was approached by Dr. Jean Mondy, then Vice President Exploration Canada for COGEMA Resources Inc. to suggest mineralization-related mapping projects under the Geological Survey of Canada's Industrial Partners Program (IPP) in the Schultz Lake map area on land under exploration permit to COGEMA Resources. A. Miller had devoted parts of eighteen summer field seasons, 1977 to 1994, to mapping the western half of the Schultz Lake map area and evaluating the metallogeny of uranium and other metals.

The project that was selected for the 1995 field work was one proposed by Dr. J. Mondy: the basement terrain south of the Thelon Fault and southwest of Kiggavik in an area that encompassed the Context and Contact exploration grids. The focus of this project was to map the geology of this basement terrain, ascertain its position with respect to the sub-Thelon paleoweathered zone and appraise the potential for basement-hosted unconformity uranium mineralization.

As mapping progressed in the summer of 1995, it became evident that there was little evidence of the sub-Thelon paleoweathered zone; however, a polyphase alkaline-granitic intrusive complex was identified. The size and complexity of this intrusive complex had not been identified by previous GSC mapping (Donaldson, 1966). The first author introduced the term Schultz Lake Intrusive Complex (SLIC) in his 1996 report (Appendix 1).

Subsequently, the term SLIC was informally used during GEM-U activities (Jefferson et al., 2011a,b) and broadened by Tschirhart et al. (2013) to encompass the terrain south of the Thelon Fault as defined by Miller (this document) and a comparable terrain along strike north of the Thelon Fault.

The results from the 1995-1996 collaborative private sector – government geological program have provided a modern data base for recent and ongoing government geosciences programs and

supported basement-hosted uranium and rare earth exploration programs in the greater Schultz Lake area, Nunavut since approximately 2006.

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The report generated by A. Miller in 1996 is Appendix 1 of this Open File - a PDF version of a photocopy of the original Industrial Partners Program (IPP) document. Appendix 1 is an extensive geological, petrographic and geochemical study of a mixed Dubawnt minette – Hudson Suite granitoid complex (see Peterson et al., 2002 for descriptions of these suites). An intrusive unit termed the Martell Syenite by Donaldson (1965) has since been more closely defined by Scott et al. (2015) as frozen magma that was a mixture of the minette and granite melts. The SLIC therefore can now be described as dominated by rocks lying within the Martell Syenite spectrum, with the end member phases evident at some outcrops.

The whole rock analyses and most mineral analyses require no further comment than is given in the original report. The exception is the amphibole analyses. In his report, Miller referred to the amphiboles generically as hornblende, and only performed end member recalculations on the more calcic analyses. Primary calcic amphiboles (in this case, dominantly edenite) are typical of the Hudson Suite granitoids. However, amphiboles in the minettes (Peterson, 2006) and in most Martell syenites are substantially more alkaline and are frequently K-richterite. A substantial number of the amphibole analyses of this report fall within that compositional range. A spreadsheet of recalculated amphibole analyses (after Locock, 2013) is included here as Appendix 2.

T. Peterson

Acknowledgments

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