

**The Davis Lake Pluton: results from recent mapping**

Linda J. Ham and Michael A. MacDonald

*Nova Scotia Department of Mines and Energy, P.O. Box 1087, Halifax, Nova Scotia B3J 2X1*

The southwestern portion of the 370 Ma peraluminous South Mountain Batholith (SMB) is composed of several rock types collectively termed the Davis Lake Pluton (DLP - previously referred to as the Davis Lake Complex). One of these rock types, the East Kemptville topaz muscovite leucogranite, hosts the East Kemptville Sn-Zn-Cu-Ag deposit (56 million tons, 0.165% Sn), North America's only primary producer of tin. The DLP is considered a temporal equivalent of other plutons within the SMB.

Limited outcrop exposure of the DLP necessitated the use of drill core information and till clast lithology to construct a geological map of the area. Consequently, contact relationships are seldom observed between rock types of the DLP and not observed between the DLP and other adjoining plutons of the SMB.

The DLP, a circular intrusive complex with a western extension, consists of five rock types and is dominated by a medium- to coarse-grained, megacrystic leucomonzogranite (Davis Lake leucomonzogranite) with bluish-grey alkali feldspar megacrysts. The remaining four rock types flank the Davis Lake

leucomonzogranite along its northwestern and southern margins and are as follows: (1) Solomon Lake muscovite biotite monzogranite with three variants distinguished by grain size and texture; (2) Sabeans Lake leucomonzogranite characterized by a slightly porphyritic matrix; (3) Dog Lake leucomonzogranite characterized by a porphyritic texture; and (4) the East Kemptville leucogranite, a variably greisenized, medium-grained, equigranular topaz-muscovite leucogranite. Deformational fabrics are pervasively developed throughout all rocks types of the DLP, with the most intense deformation occurring in the extension and lower half of the circular part of the DLP (e.g., the Dog Lake leucomonzogranite porphyry is considered to be a texturally modified version of the Davis Lake leucomonzogranite).

Compared with the plutons in the eastern half of the batholith, the major oxide and trace element chemistry of the DLP indicates elevated A/CNK values, Si, F, Rb, P, Li and depleted Mg, Ti, Mn.

Several radiometric features currently remain unexplained in terms of bedrock or till source. Possible explanations include late or post-magmatic alteration and unexposed porphyry bodies.