

Primary and Secondary Structural Features in the Eastern Portion of the South Mountain Batholith; Implications for Regional Stress Orientations During Intrusion

R.J. Horne, M.C. Corey, L.J. Ham and M.A. MacDonald

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

Schlieren banding, megacryst-xenolith alignment and biotite parallelism, indicative of primary magma flow, displaying concentric, random and linear patterns in the South Mountain Batholith (SMB) reflect intrusive geometry. In the eastern-most part of the batholith patterns reflect differential flowage near intrusive contacts. However, in the east-central portion of the batholith preferred linear trends may, in part, reflect syn-tectonic stress during intrusion.

Statistical evaluation of 3600 joints within the eastern portion of the SMB has identified six distinctive joint sets (trends), all steeply dipping: Trend 1, 040°; Trend 2, 056°; Trend 3, 063°; Trend 4, 128°; Trend 5, 146°; Trend 6, 164°. The dominant joint sets, trends 3 and 5, form a nearly orthogonal pattern and are

ubiquitous to the study area. All other trends are submaxima of one of the dominant trends and do not occur in all areas. Trends 4 and 6 form a conjugate pair about trend 5. Trend 1 is restricted to the east-central portion of the SMB and is related to northeast shearing within the East Dalhousie Fault Zone. Quartz veins and some dyke orientations parallel Trend 5 joints. Trends 3 to 6 are interpreted as resulting from northwest horizontal compression during syn-magmatic deformation.

Mineralization within the SMB is strongly controlled by the regional fracture patterns. Uranium mineralization is generally associated with hematitized Trend 3 joints while polymetallic vein-greisen mineralization is associated with Trend 5 joints.