Stratigraphy and distribution of chromite in the Black Label deposit, McFaulds Lake greenstone belt, Superior Province, Ontario, Canada

K. Mehrmanesh[1], C.M. Lesher[1] and M.G. Houlé[2, 1]

[1]Mineral Exploration Research Centre, Department of Earth Sciences, Goodman School of Mines, Laurentian University, Sudbury, Ontario P3E 2C6

[2]Geological Survey of Canada, Earth Sciences Sector, Natural Resources Canada, Québec City, Québec G1K 9A9

The Black Thor Intrusive Complex (BTIC) is a semi-conformable sill-shaped intrusion that can be subdivided into: 1) a *lower ultramafic series* of basal olivine websterites and lherzolites, interlayered dunites and lherzolites with minor interstitial chromite, and overlying websterites, 2) a *middle ultramafic series* characterized by a lower chromitite horizon (Black Label), olivine websterites, lherzolites and dunites, and an upper chromitite horizon (Black Thor), and 3) an *upper ultramafic to mafic series* of websterites, mela/meso/leucogabbros and lesser anorthosites. A late pyroxenite composed primarily of websterite intruded the lower and middle ultramafic series and locally brecciated Black Label chromitites. Unbrecciated chromite-bearing rocks in Black Label have been divided into 6 textural facies: 1) massive, 2) semi-massive, 3) matrix-textured, 4) net-textured, 5) heavily-disseminated, and 6) lightly-disseminated. Lithologies, textures, contacts, and bedding are similar within the unbrecciated SSW and NNE parts of the horizon, but distinct within the central brecciated part. Massive and semi-massive textures are more abundant near the feeder zone, whereas disseminated and net-textured are more abundant away from the feeder zone (NNE and SSW parts), and disseminated textures are more abundant in the NNE than in the SSW parts. It is possible to confidently make correlations of massive chromitites within the SSW parts over distances of up to 300m, and possibly up to 900m, but correlations are difficult in the NNE part as the chromite layers are very thin. The total amounts of chromite (integrated massive chromite equivalent) are greatest near the feeder, decrease away from the feeder, and are lowest in the NNE part. Mineralogical and geochemical investigations are in progress to establish whether the concentration near the feeder is attributable to mechanical sorting from a slurry or preferential in-situ crystallization.