Ansdell K, Gouiza M, Kyser TK, Brisbin D, Linnen RL, Olivo GR, Perrouty S, and Exploration Footprints Project Team, 2013, Update on the CMIC Footprints project with a focus on the uranium and gold sites, Abstract, SGS Open House, Saskatoon, SK

Discovery of hidden mineral deposits under cover or at depth is becoming more and more challenging as it is considered that the "easy-to-find" deposits have, for the most part, been discovered. The Exploration Innovation Consortium of the Canadian Mining Innovation Council (CMIC) have spearheaded an initiative involving 45 researchers from 24 universities across Canada, with support from 28 exploration companies and service providers, to develop new approaches aimed at improving exploration success. Funding for the 5-year project, "Integrated Multi-Parameter Footprints of Ore Systems", is provided by industry and by the federal government through the Natural Sciences and Engineering Research Council of Canada (NSERC), the latter component being approved in April 2013. The project involves multidisciplinary integrative research on three major ore systems: the Canadian Malartic gold system in Quebec, the McArthur River – Millennium uranium systems in Saskatchewan, and the Highland Valley copper-molybdenum-gold system in British Columbia. The goal is to develop practical applications and approaches to the acquisition, management, integration, and analysis of geological, geochemical, mineralogical, petrophysical, and geophysical data that can be used to identify the ore-system footprint at its most distant edge and at depth. The research at each site will integrate existing exploration data and in-house company knowledge with new data and research insights to advance our capabilities in remote detection of deposits and in mapping geology under cover. The initial work at the uranium site is focused on the development of a GOCAD 3D geological model of the McArthur River-Millennium trend, that will benefit from 30 years of data from over 700 diamond drill holes, most with lithogeochemical, radiometric and mineral spectroscopy data, and from airborne and ground magnetic, electromagnetic, resistivity, gravity, and seismic surveys. This integrated model will provide the framework for focused research work undertaken by thesis students. Their projects will include: 1) the petrophysical, geochemical and mineralogical characterization of the distal footprint; and 2) characterization of the petrophysical and geochemical character of glacial deposits to support removal/suppression of the geophysical signature of these materials, and to constrain interpretation of secondary geochemical dispersion signatures in surficial media. The geological models and associated projects will provide additional constraints on geophysical inversions and improve the resolution of geophysical imaging of important structures. In contrast to the uranium site, the amount of historical data at the gold site is significantly less and so the initial work during summer 2013 was to examine outcrops and drill core on well-chosen sections around the operating open pit. The aim was to understand the macroscopic geological, structural and alteration characteristics, and to obtain representative samples for ongoing petrophysical, mineralogical, geochemical and isotopic analysis. In addition, the potential for using pXRF analyses to efficiently map rock-forming and alteration was examined. The projects at this site will lead to the generation of a geological and geophysical footprint of these low grade high tonnage gold systems. The results of the initial work were highlighted in a field workshop in October 2013, and will be a model for future workshops at the uranium and copper sites.

NSERC-CMIC Mineral Exploration Footprints Project Contribution 002.