NSERC-CMIC FOOTPRINTS

Ansdell K, CMIC Footprint Project Team, 2012, An overview of the uranium component of the CMIC Footprints project, Abstract, SGS Open House, Saskatoon, SK

Mineral exploration in Canada is increasingly focused on concealed and deeply buried targets, requiring more effective tools to detect large-scale ore-forming systems and to vector from their most distal margins to their high grade cores. The Integrated Multiparameter Footprints of Ore Systems (''Footprints'') Project, involves 42 researchers from 24 universities across Canada and 27 industry collaborators from 25 companies in the Exploration-Consortium of the Canadian Mining Innovation Council (CMIC); and is aimed at improving exploration success by developing 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. It will also provide fundamental new knowledge about the unique combinations of geological processes that have been responsible for some of the largest concentrations of metal in the Earth's crust. The first phase of the project will involve multidisciplinary integrative research at three major ore systems: the Canadian Malartic gold system in Quebec, the McArthur River-Millennium uranium system in Saskatchewan, and the Highland Valley copper-molybdenum-gold system in British Columbia. The research at each site will integrate existing exploration data and in-house company knowledge with new data, providing a foundation for technological advances in remote detection of ore deposits and for mapping at depth or under shallow cover. The Uranium component of the Footprints project will focus on the McArthur River- Millennium trend, which is one of the most important structural and mineralized corridors in the eastern Athabasca Basin. The research site is defined by the boundaries of several contiguous joint venture exploration projects operated by Cameco Corporation, and provides the opportunity to unravel the "footprint" of a classic conductor-associated deposit at the unconformity (McArthur River) and an off-conductor basement-hosted deposit (Millennium). Potential access to 30 years of exploration data, including 700 diamond drill holes, most with lithogeochemical, radiometric and mineral spectroscopy data, and comprehensive airborne and ground magnetic, electromagnetic, resistivity, gravity, and seismic data on which to build further research is unprecedented. The research projects will include the identification of the "shallow" exploration footprint caused by both syn- and post-mineralization fluid flow centered on the Millennium-McArthur River trend, defining the outer subtle extent of alteration; and any geochemical, mineralogical and petrophysical zoning that can define vectors towards ore, characterizing the rock property and multiparameter geophysical footprint of mineralized versus barren parts of the corridor, and testing the effectiveness of layered and scaled geophysics and geochemistry in focusing exploration on areas of high potential along the structural corridors. In summary, the goal of the uranium component of the study is to advance our ability to use integrated geological, geophysical, petrophysical, mineralogical and geochemical data to detect blind deposits along these prospective structures in the Athabasca Basin and, ultimately, to determine the most efficient way of detecting and imaging mineralization and associated alteration at depth - the goal of every exploration company!

NSERC-CMIC Mineral Exploration Footprints Project Contribution 001.