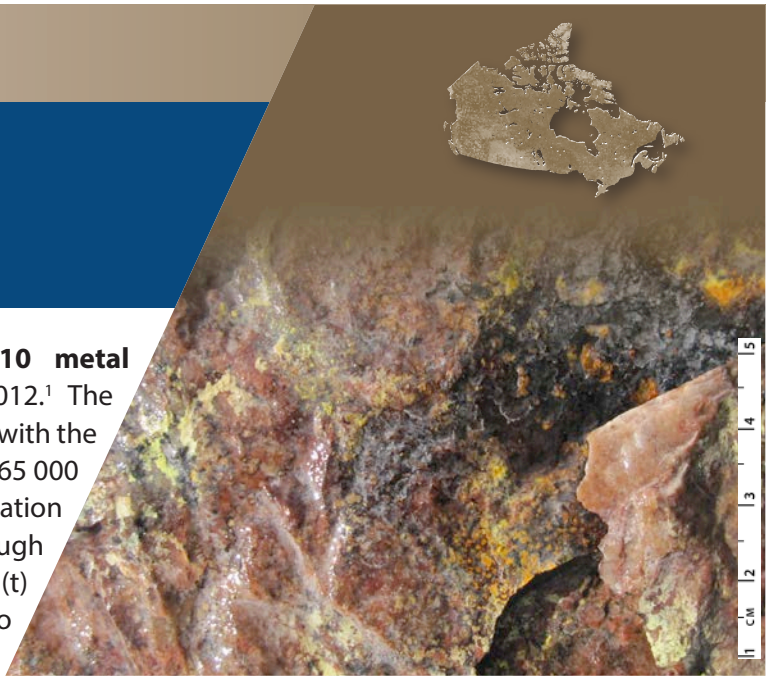
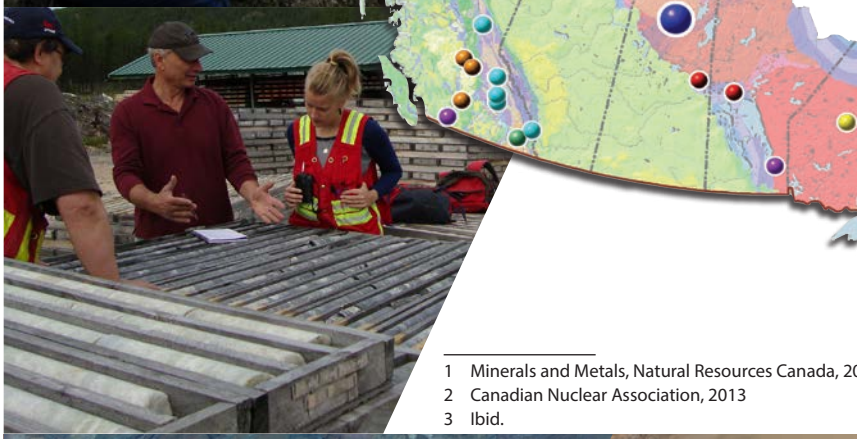
Natural Resources Canada | Ressources naturelles Canada

Targeted Geoscience Initiative 4
Uranium Ore Systems

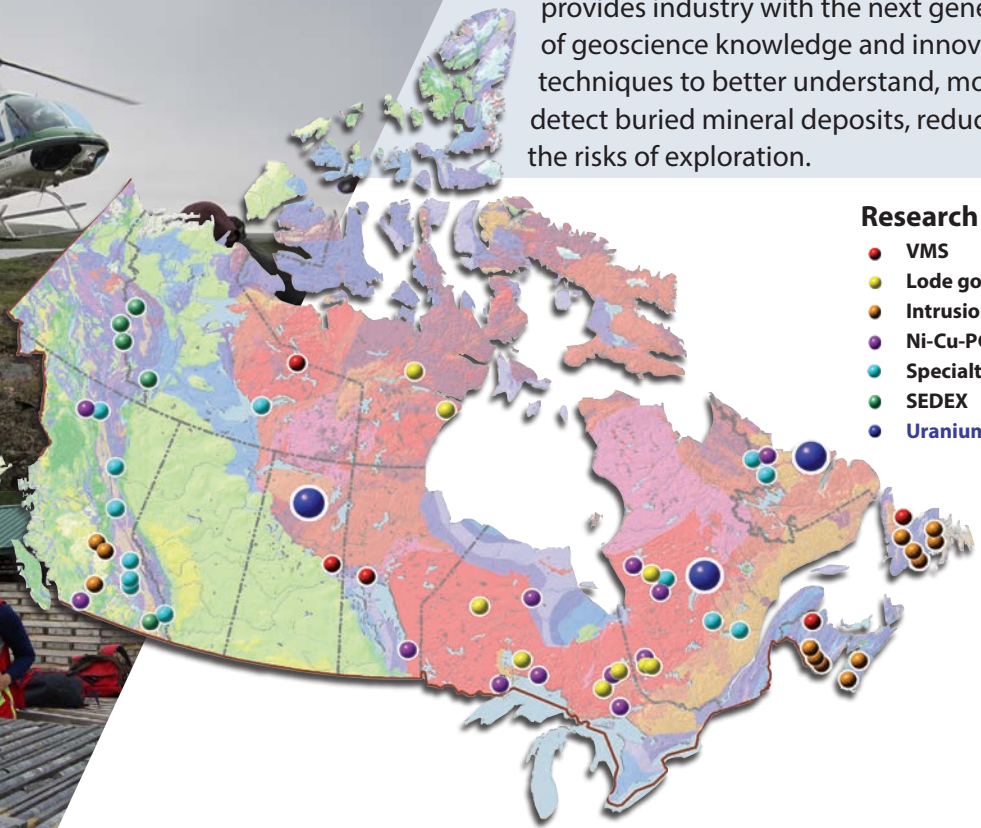


Uranium continues to rank among Canada's top 10 metal commodities – its production totalled $1.0 billion in 2012.[1] The nuclear industry is an integral part of the Canadian economy, with the nuclear energy and mining industries supporting more than 65 000 direct and indirect full-time jobs.[2] Canadian uranium exploration and deposit appraisals were $198 million in 2012,[3] although production in Canada declined from a peak of 14 743 tonnes (t) of triuranium octoxide (U_3O_8) from five mines in 2001 to 10 612 t of U_3O_8 from two mines in 2012.[4]

Exploration in Canada's foremost uranium district, the Athabasca basin of Saskatchewan, is **expanding to deeper depths, and industry requires new exploration knowledge and tools.** Although 96 percent of the known uranium resources are along a limited corridor near the shallower, eastern margin of the basin,[5] exploration successes in the central to western portions of the basin demonstrate a high potential for economically feasible mineralization.



The Targeted Geoscience Initiative 4 (TGI-4) is a collaborative federal geoscience program that provides industry with the next generation of geoscience knowledge and innovative techniques to better understand, model and detect buried mineral deposits, reducing some of the risks of exploration.



1 Minerals and Metals, Natural Resources Canada, 2013
2 Canadian Nuclear Association, 2013
3 Ibid.
4 World Nuclear Association, 2013
5 Jefferson, C.W. et al., in Goodfellow, W.D., ed., *Mineral Deposits of Canada*. Geological Association of Canada, Special Publication No. 5, p. 273–305.

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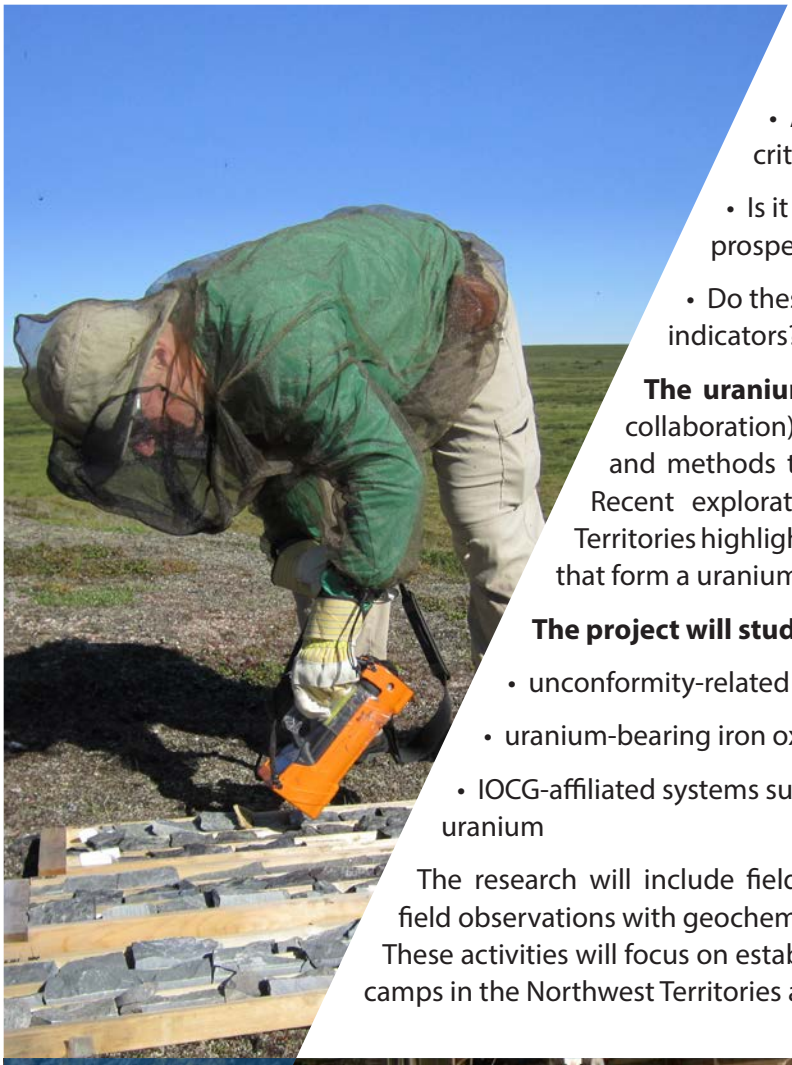

Critical questions about exploration for unconformity-related deposits include

- Are graphite-bearing electromagnetic conductors critical to the formation of these deposits?
- Is it possible to predict and model which faults are most prospective for uranium mineralization?
- Do these deeply buried systems have surficial geochemical indicators?

The uranium ore systems project (with industry and academic collaboration) will focus on developing new exploration knowledge and methods to facilitate exploration for uranium-bearing deposits. Recent exploration in Saskatchewan, Nunavut and the Northwest Territories highlights fundamental gaps in our knowledge of the processes that form a uranium deposit.

The project will study:

- unconformity-related deposits
- uranium-bearing iron oxide-copper-gold (IOCG) systems
- IOCG-affiliated systems such as sodium-metasomatic and volcanic-hosted uranium

The research will include field-based and advanced laboratory studies, combining field observations with geochemistry, isotope studies and three-dimensional modeling. These activities will focus on established mining districts in Saskatchewan and emerging camps in the Northwest Territories and Quebec.

Targeted Geoscience Initiative 4: Increasing Deep Mineral Exploration Effectiveness

For more information about the Uranium Ore Systems Project, contact
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Aussi disponible en français sous le titre : Initiative géoscientifique ciblée 4 : dépliant sur les systèmes uranifères