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## FALCON LAKE INTRUSIVE COMPLEX PROJECT

Date: 13<sup>th</sup>-14<sup>th</sup> (field acquisition) and 17<sup>th</sup>-18<sup>th</sup> (data analysis and report) May, 2015

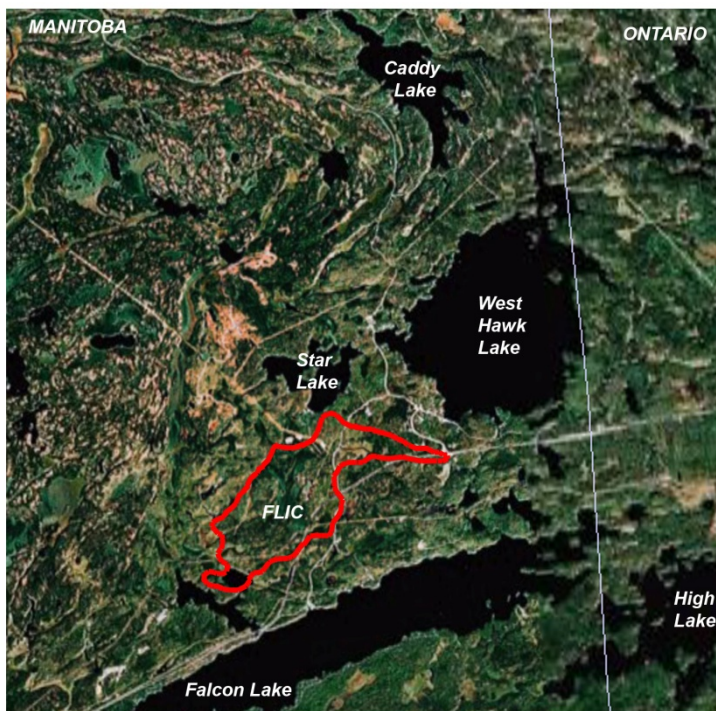
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### OBJECTIVE

The second Precambrian Shield project involves a gravity, magnetic, and radiometric survey of the Falcon Lake Intrusive Complex (FLIC) in the Whiteshell Provincial Park (Figure 1). The FLIC is a layered igneous intrusion lying within the Lake of the Woods Greenstone Belt of the Wabigoon Subprovince. It has a sigmoidal shape with outer lens-shaped bodies of gabbro and diorite in the tails. The main part of the complex consists of an outer zone of granodiorite and an inner zone of quartz monzonite (see title page). The survey will involve a single main profile along a road/bike-path traversing the major geological units of the FLIC followed, if time permits, by the collection of new geophysical data in, and adjacent to, other parts of the complex.

The purpose of the survey is to answer the questions:

1. Can the different geological units of the FLIC and its host rocks be discriminated on the basis of their magnetic and radiometric properties?
2. Can gravity provide constraints on the geometry of the inner or outer boundaries of the FLIC?
3. Can the breccia pipe within the quartz monzonite unit at the Sunbeam Mine site be distinguished by its radiometric response or its GPR reflectivity?



**Figure 1.** Location of the FLIC outlined by the red line. Note the University of Manitoba Department of Geological Sciences Field School is located on the eastern side of Star Lake.

### SURVEYS

Data collection will be done by three groups that will work cooperatively to complete first the collection on the main profile and then the examination of additional targets. It is expected that the main profile work be completed in around 1 day leaving half a day for the remaining targets.

The main profile runs from the near Sunbeam Mine to Waverly Road (Figure 2) and can be extended along the bike path. It will provide an opportunity to examine the response of the host rocks, gabbro D, granodiorite, and quartz monzonite. Data to be collected include gravity,

radiometrics, magnetics, and magnetic susceptibility. Gravity (and elevation) will be collected along the profile at a spacing of 100 m and magnetics will be collected at a spacing of 20 m. Radiometrics and magnetic susceptibility readings can be made on outcrops near the road with the positions of the readings being recorded by GPS. GPR and radiometrics will be done on a small grid over the breccias pipe.

Group 1		Group 2		Group 3	
Neil	1a	Shehryar	2a	Amandeep	3a
Sodiq		Harsimran		Steve	
Gafaar	1b	Qaisar	2b	Easton	3b
Yana		Kevin		Tony	

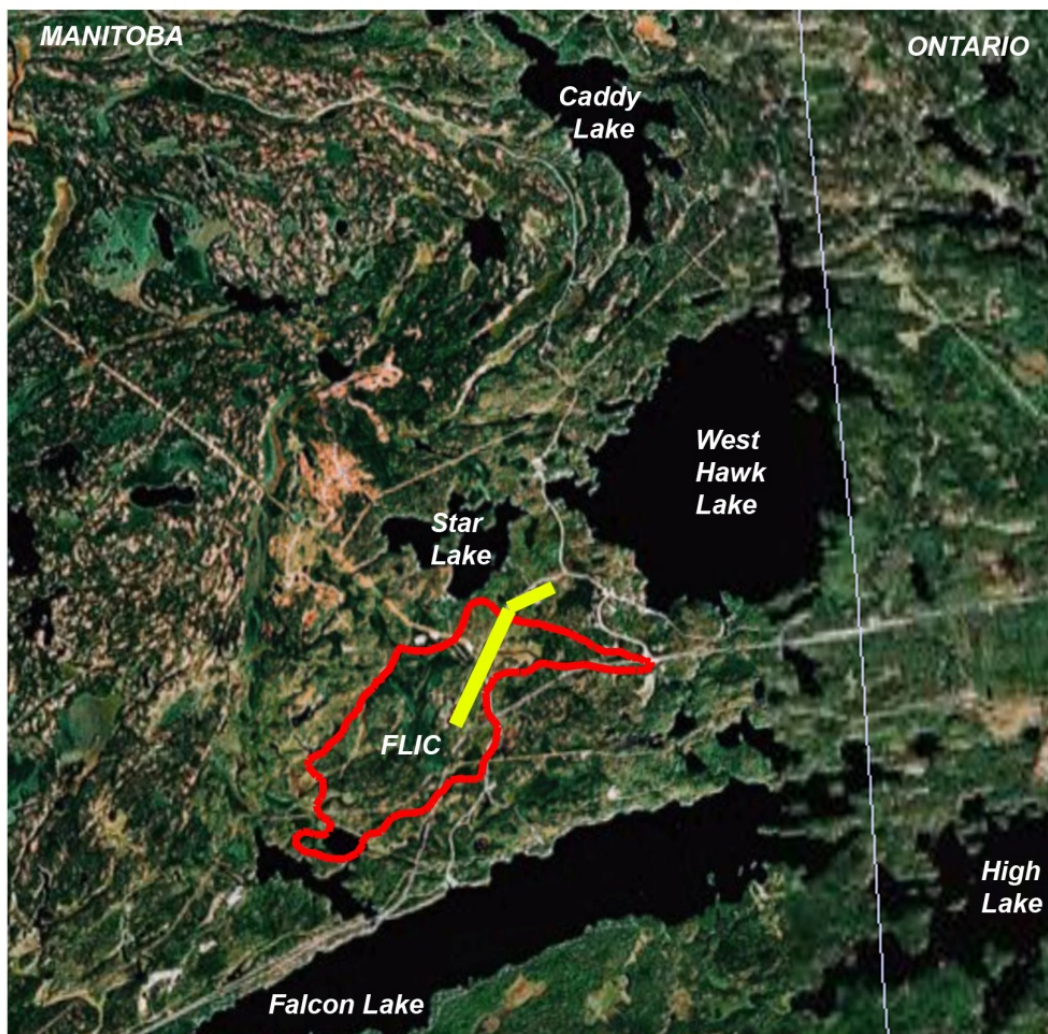
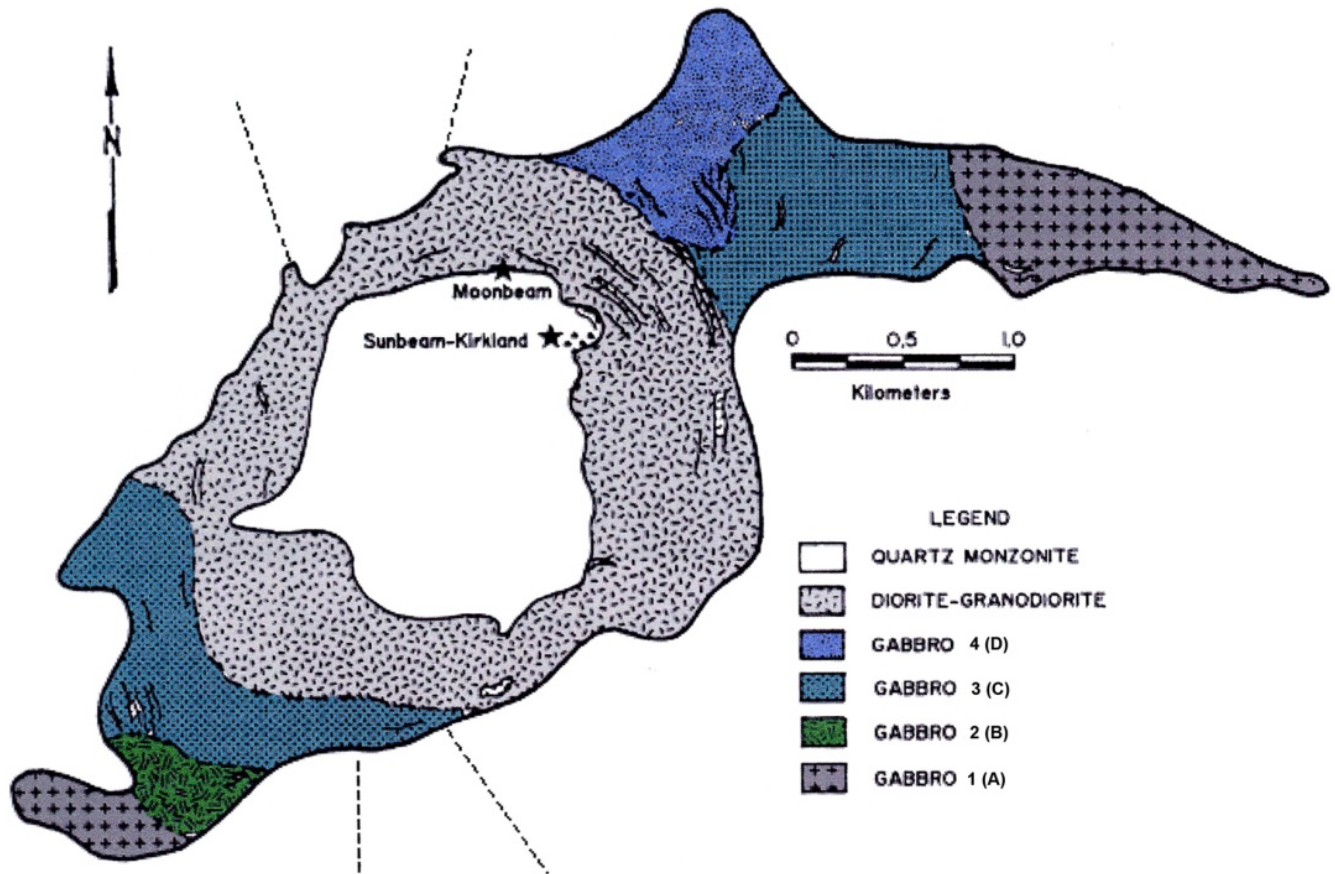


Figure 2. Planned survey location for 2014 Geophysics Field School

Additional targets could include measurements (particularly gravity) along the roads or powerline to the north and northwest of the FLIC, measurements along the road running south from near the Sunbeam mine, or measurements along the pipeline and abandoned powerline route on the southern part of the FLIC.

## DATA ANALYSIS

The FLIC data analysis will be conducted after the completion of the Gundy lake Road analysis. The FLIC project data archiving and reduction will be done for their surveys by each group and made available to the other group. The data reduction, data analysis, interpretation and reporting, for the project will be done in pairs. Final reports describing the results and interpretations are due at 6 PM on Monday 18<sup>th</sup> May 2015. These submissions will complete the field school requirements.



Geological divisions of the FLIC. Modified from Mandziuk et al. (1989).

## REFERENCE

Mandziuk, W.S., Brisbin, W.C., & Scoates, J.R.F., 1989. Igneous structures in the Falcon Lake Intrusive Complex, southeastern Manitoba. *Canadian Mineralogist*, 27, 81-92.

