NORTHEASTERN THELON BASIN URANIUM REGION: GEOLOGICAL COMPILATION FOR GEOPHYSICAL CONSORTIUM PLANNING*

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*This is a legacy compilation of selected data in public domain as of January 2009

Geological Survey of Canada
Commission géologique du Canada

Geo Mapping for Energy and Minerals
GEM : La géocartographie de l'énergie et des minéraux
http://gsc.nrcan.gc.ca/gem/index_e.php

Northeast Thelon Uranium Thoughts

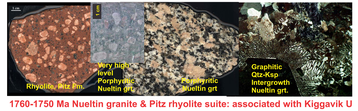
Alteration haloes:
- Illite & chlorite in and around Kiggavik
- Apatite 1670 Ma = distal U system or barren system?
- Difference between regional and deposit specific illite?

Amer Group beneath Thelon Fm:
- Conductors or stratabound U horizons more prospective, or both?
- How many conductors, which are best?
- Black shale: topic for CAMIRO project in Amer?
- Cross-folds may bring Amer into unsuspected places:
  - -down plunge beneath Thelon along strike not beside basin
- Structure outside Thelon will help understand beneath Thelon
- Fault-enhanced U outside basin:
  - -associated with chlorite, carbonate alteration

Favourable geochemical hosts for unconformity U:
- Which Archean strata best?
- Nueltin (1760-1750 Ma) better than Hudson (1840-1800 Ma) granite at Kiggavik & elsewhere?
- Proto U deposits associated with Nueltin contact zones
- Pitz Volcanic associated U (Miller & LeCheminant)

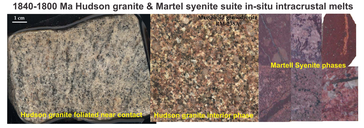
Geophysical markers for RPM:
- BIF in Amer is mag marker for structure
- Oora Lake Fm also magnetic?
  - -(underlies Showing Lake disseminated U)
- Magnetic dykes of several swarms:
  - -Martell syenite (pre-Thelon) high background
  - -McRae Lake diabase (pre-Thelon)
  - -Mackenzie (post-Thelon)
- -Conductors in Amer (which graphite is best for U?)
- -Gravity lows associated with Kiggavik alteration zones

Structural features vis-a-vis unconformity, vein & sandstone U
- Reactivated faults associated with:
  - Depositional features in Thelon Formation
  - Chloritic alteration zones
  - Silicification
  - Fluorapatite alteration zones
  - Surficial lineaments (see DEM)
- Amer Group structures:
  - Host higher grade U showings
  - Deform primary disseminated uranium deposits
  - Affect the configurations of conductors beneath Thelon Basin

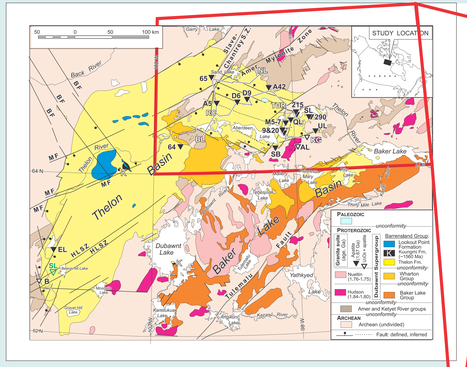


1760-1750 Ma Nueltin granite & Pitz rhyolite suite: associated with Kiggavik U

1840-1800 Ma Hudson granite & Martel syenite suite in-situ intracrustal melts



Geology, Thelon - Baker Lake region


STUDY LOCATION
Thelon Basin
Baker Lake Basin
Baker Lake
Dubawnt Lake
Yathkyed Lake
Aberdeen Lake
Schultz Lake
Back River
Thelon River
Kazan River
Ennadai Lake
Tulemalu Lake
Nueltin Lake
Wollaston Group
Taltson Magmatic Zone
Thelon Tectonic Zone
Snowbird Tectonic Zone
Chipman Dyke
Amer
Kiggavik
Aberdeen
Baker Lake
Dubawnt
Yathkyed
Thelon
Back