

SOME OBSERVATIONS ON THE UPINOR URANIUM PROJECT OF DIOS EXPLORATION & SIRIOS RESOURCES, JAMES BAY, QUEBEC.

The Upinor project is a new uranium discovery in the James Bay region. On June 3, 2008, a short visit was made with the management and geologists of Dios and Sirios to assess a metallogenic diagnostic.

Summary of field observations

The zone is mainly dominated by migmatites with a dominance of regularly distributed neosomes, therefore they are diatextites characteristic of high temperatures environment.

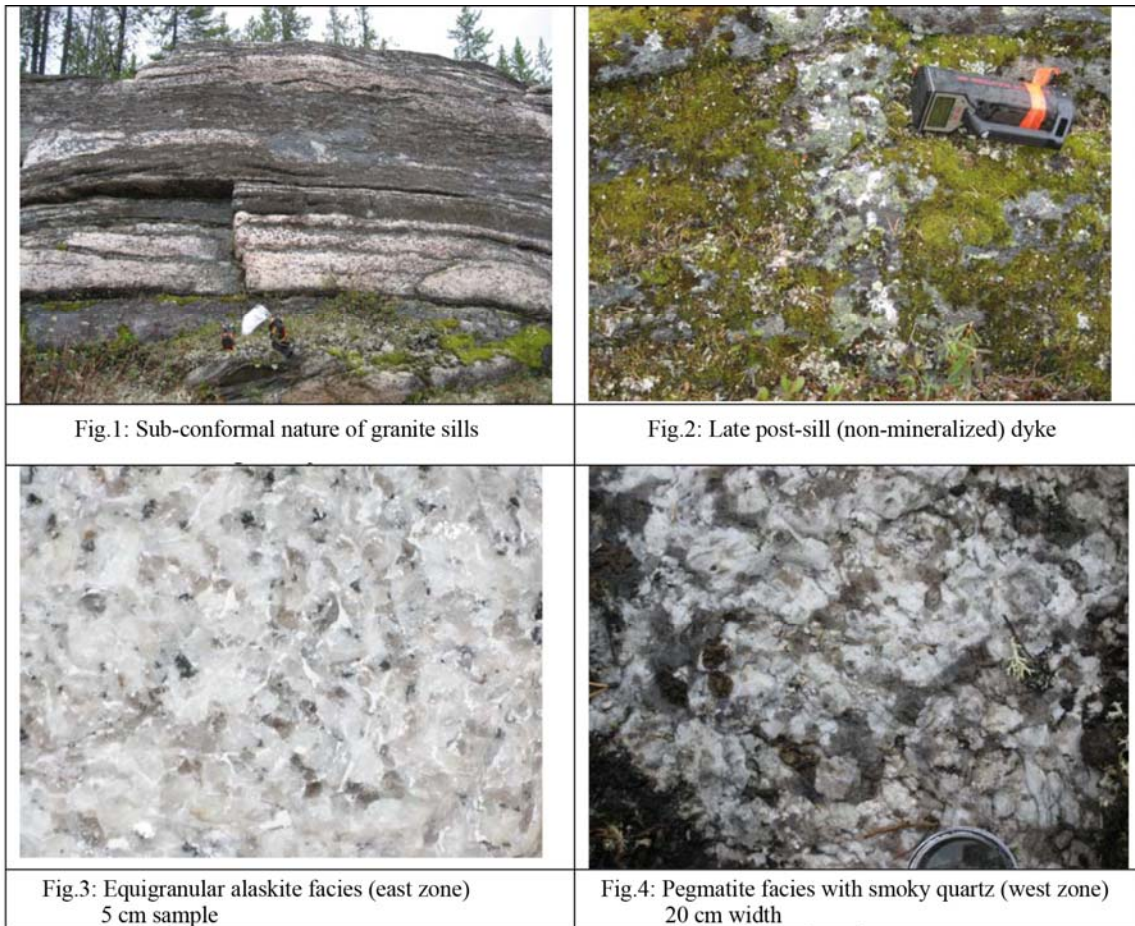
The uranium anomaly extended itself over more than 5 km in length. It is characterized by high U/Th ratios. It contains some zones with weak radiometric signal which are coincidental with lakes, therefore the anomaly should extend under these zones.

The mineralization is associated with sills of granitic composition that are more or less in conformity with the foliation of the migmatites. Sometimes, the sills are lightly folded. They are semi-conformal with the migmatites foliation and their thickness varies a lot (photo 1). They usually dip towards the north with low to steep incline. They may be cut through by decimetric aplite-granite sills or quartz veins (photo 2).

Several facies of sills may be observed:

- A generally non-mineralized pegmatite facies with dominant large feldspar crystals;
- A mineralized feldspar-smoky quartz facies (photo 3);
- A well-mineralized quartz-feldspar-blue apatite facies (west portion);
- A mineralized equigranular alaskite-type facies (photo 4);
- A locally mineralized biotite-rich (schlieren-type) facies (eastern portion).

The sills show great variations of uranium contents with 10-20 cm thick enrichment zones. No uranium enrichment was observed in sill wallrocks.



Interpretation

The mineralization shows close similarities to the ones present at the giant Rössing deposit in Namibia. The following table compares some of the main characteristics.

Criteria	Rössing	Upinor
Host rocks	Syntectonic alaskite dyke in banded gneiss (migmatite) of Khan Fm; at the contact between amphibole-schists and carbonates.	Syntectonic pegmatite-alaskite neosome; Host rocks to define; known presence of granophyre facies.
Age	Paleozoic (458 MA)	Unknown
Mineralization	Uranium (55% uraninite; 40% beta-uranophane; 5% betafite (pyrochlore),	Uranium (uraninite, uranophane, blue apatite, molybdenite, biotite, ...

	biotite, zircon, blue apatite, molybdenite, monazite, brannerite, zircon, titanite, Sulfides and oxides (pyrite, chalcopyrite, bornite, molybdenite, arsenopyrite, magnetite, hematite, ilmenite, fluorite).	
Morphology	Associated with dykes, specially the later two generations	Associated with dykes
Structure	Northern flank of syncline	Northern flank of folded structure (yet to define)

This table strongly shows the similarities between Rossing and Upinor. However the understanding of this showing remains very limited. Among the essential issues to consider, we must mention:

-How many mineralized sills are present? Preliminary, the K/Th ratios may allow some discrimination. It may be possible that some repetitions could be associated with normal faults or isoclinal folds. A dipping south drilling section may answer this question;

-What are the structural criteria that control the sills setting? To better understand that aspect, we need an approach to the prospect scale: i.e. foliation measurements on detailed aerial photos, ground geological mapping. At Rossing, the sills are parallel to the axial plane, P3. There is also a nearby showing (SH showing) associated with a larger granitic mass; the present facies is a coarse-grained alaskite to pegmatite with numerous amphibolite and biotite schist inclusions. It is possible that one or several intrusion of this type may be present nearby the known showings. Sills of type may be associated with wrenching faults.

-The region seems characterized by strong variations in metamorphic grades; the fact that the Rossing deposit that shows different light presentations depending of the metamorphic grade, it would be important to have a regional geological view (teledetection?);

-At Rossing, the mineralization is associated with aqueous fluids, and the barren leucocratic pegmatites are richer in CO₂ (Nex and al., 2002); for the exploration, a simple reconnaissance technique could be developed if leaching is observed in surface, if not, radiometrics are more efficient!



Fig.5: Alaskite gneiss in the central zone of Damara, Namibia, Host-rock of Rossing deposit (from the web-site)



Fig.6: Rossing sills; view from the open pit showing folds in the Khan Fm (MJ photo)

In conclusion, Upinor represents without a doubt a priority uranium target in Quebec. It is important to test (1) the presence of several superposed mineralized sills that would allow a sufficient tonnage. This geometry would also allow a more selective exploitation than the one at Rossing; (2) the lateral continuity of the mineralizations.

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