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Athabasca basin set for exploration boom

Better prices, technology fuel exploration

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Next year could turn out to be a pivotal one for exploration in the Athabasca basin of northern Saskatchewan, as players in the camp use the results of this year's compilation and airborne geophysical work to test new targets.

"Most of the exploration successes over the last year have been by companies that have had established positions for a while," says Gary Delaney, director of the Northern Geological Survey for Saskatchewan's Department of Industry and Resources. "Next year we expect to see a lot more players on the ground."

The activity will not be limited to the eastern rim of the basin, where most of the historical exploration and production has taken place, but will be spread throughout the 100,000-sq.-km area as the potential for mineralization outside traditional mining areas becomes increasingly apparent.

This broader approach to exploration in a camp that is already the largest producer of uranium in the world has been triggered by a combination of more sophisticated technology, better geological understanding, higher uranium prices, and recent exploration success in areas previously thought to have limited prospectivity.

Drilling and compilation work has also revealed that graphitic rocks strongly associated with uranium mineralization occur throughout the basin.

Last year, for example, partners **UEX** (UEX-T, UEXCF-O) and Cogema Resources (a subsidiary of **Areva** [ARVCF-O]) intersected 0.7% U_3O_8 over 4.4 metres, including a maximum grade of 1.96% U_3O_8, at the Black Lake project in the poorly explored northern area of the basin. The project covers the Platt Creek Shear zone, a major north-northeast-trending fault coincident with a graphitic basement conductor with a strike length of at least 18 km.

The Shea Creek project on the western margin of the basin is also a strong focus of attention. During a recent drilling campaign, UEX and Cogema intersected some of the highest grades in the camp over significant widths. Mineralization occurs in two settings: within the sandstones just above the basement unconformity, at about 680 metres depth, and in the basement rocks, 100-150 metres below the unconformity. The basement mineralization returned 5.4% U_3O_8 over 37.7 metres, including 25.5% over 4 metres.

Shea Creek already contains two known deposits: the Anne deposit, which contains 47 million lbs. uranium with an average grade of 3% U_3O_8, and Colette, where drill holes have been too sparse to calculate resources. The new mineralization lies in a previously untested area between the two deposits and has grades and thicknesses rivalling those of McArthur River and Cigar Lake, two of the largest uranium orebodies in the camp.

Another success story in a previously low-priority area is the Virgin River project, where a joint venture between **Formation Capital** (FCO-T, FCACF-O) and **UEM**, owned 50% by **Cameco** (CCO-T, CCJ-N) and 50% by Cogema, drilled the most significant intersections ever encountered in the south-central part of the basin, including 6.4 metres grading U_3O_8 at a depth of 790 metres. UEM, with a 98% interest in the project, is continuing exploration with a $1.5-million program that includes diamond drilling.

"The successes over the past year have been interesting and encouraging and have profiled the potential of new areas of the basin," Delaney says.

These new discoveries, however, tend to be much deeper than the producing deposits on the eastern side of the basin. This presents challenges for explorers, who must use navigational drilling to avoid the crippling cost of poking individual holes from surface. The nature of the deposits, which tend to be narrow, linear lenses, add to the difficulty of pinpointing significant mineralization.

These challenges are offset by strong alteration haloes around the deposits and a strong association with graphite, an excellent electromagnetic (EM) conductor. Geochemical and geophysical techniques capable of detecting these pathfinders have become increasingly refined.

Delaney estimates there are about three dozen companies working in the camp, including about 20 companies on the western side of the basin. Many are trying new exploration techniques such as seismics and airborne gravity surveys to detect pockets of uranium mineralization.

The main players continue to be Cameco, which increased its annual exploration budget by $6 million to $23 million in 2005, Cogema and UEX.

Having spent $13.4 million on exploration in the first nine months of the year, UEX is among the most aggressive. The junior is earning a 49% interest in 10 uranium projects in the western basin from Cogema by funding $30 million in exploration over 11 years and has a mix of other advanced and grassroots exploration projects. Uranium producer Cameco has a 24% stake in UEX.

Partners **International Uranium Corp.** (IUC-T) and **JNR Resources** (JNN-V, JNRRF-O) are focusing on the southeastern edge of the basin, where summer drilling at the Moore Lake project returned a mixed bag of results.

The campaign extended the length and width of a high-grade mineralized lens at the Maverick zone with intersections up of to 5.64% U_3O_8 over 3 metres. Grades were lower along the same structural corridor northeast of the main zone, but comparable to the Maverick discovery, drilled in 2000. The new 527 zone, which will be a major focus of the 2006 drilling program, returned 0.41% U_3O_8 over 6.6 metres.

Maverick is a relatively shallow deposit, occurring at a depth of 260-280 metres. Mineralization is of classic unconformity-style, strongly associated with graphitic pelites, reactivated faulting and extensive clay replacement in the sandstone and basement rocks. The corridor that hosts the zone extends for another 5 km along strike.

Also working in the southeast, **Denison Mines** (DEN-T, DNMIF-O) plans to spend $5 million this year on its five projects there, including Midwest. The company will drill at least 5,000 metres at Midwest to test for basement-hosted mineralization originally detected in the 1970s but never further tested.

Having recently closed a $5.5-million private placement, **Purepoint Uranium Group** (PTU-V, PUMGF-O) will get busy on seven properties in the northeast margin of the basin covering nearly 1,200 sq. km. A 10,000-metre drilling program will test the Red Willow and Turnor properties this winter. The company has also started deep-penetrating airborne electromagnetic and magnetic surveys on the Umfreville, McEwen Lake and South Newnham properties.

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Strathmore Minerals (STM-V, STHJF-O) has completed a geophysical survey on its Davy Lake property, which encompasses 6,000 sq. km in the north central portion of the basin. A ground geophysics and mapping program will follow up conductors detected by the survey, including one that stretches for 51 km.

International Uranium is earning a 51% interest in **Consolidated Abaddon Resources'** (ABN-V ABNAF-O) Huard-Kirsch Lakes property in the eastern basin, where airborne geophysics has detected three untested conductive trends over a 15-km strike length. Meanwhile, **Triex Minerals** (TXM-V, TRXMF-O) is earning a 70% interest in Abaddon's Mann Lake property, 30 km southwest of the McArthur River mine, where a $200,000 gravity, TEM and resistivity survey is ongoing in preparation for a 5,000-metre drill program.

CanAlaska Ventures (CVV-V, CVVLF-O) is completing airborne surveys and detailed ground geophysics in order to establish drill targets for next year. The company has several exploration properties covering 7,500 sq. km.

Eso Uranium (ESO-V, ESOFF-O) recently doubled its landholdings in the eastern basin. The company has flown geophysical surveys over the properties and intends to design drill programs that would commence this winter.

Dejour Enterprises (DJE-V, DJEEF-O), an oil and gas company, has started a $1.5 million winter exploration program consisting of ground geophysics and diamond drilling to follow up on conductors identified by airborne geophysics on its extensive land package throughout the basin.

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