

# Who's Leading the Race for the **Next Uranium Super Deposit?**

There's a race on and the stakes are high. It's a race for uranium and it's happening in a 100,000 square kilometer region known as the Athabasca Basin in Canada's northern Saskatchewan – host to the world's premier uranium deposits.

No stranger to this kind of action, the Basin has witnessed this race three times in the past 50 years. Whenever international demand for an alternative energy source peaks, property in the Basin becomes a hot commodity, because ore grades there are over 100 times greater than anywhere else on the planet. Large finds in the Athabasca Basin are so rich they've been dubbed "super deposits" attracting hundreds of junior explorers like ants to a picnic. They have literally staked the Basin from end to end in the race for the next uranium super deposit.

As well, burgeoning nuclear programs in developing countries such as China and India, combined with worldwide supply shortages, have added to the frenzy by pushing the price of uranium up from \$10/lb to over \$50/lb in just three years, with no end in sight.

This past spring marked the completion of the first winter drill season for some of the junior exploration companies recently established in the Basin. Surprisingly, only 17 drill projects were completed, and very few holes actually drilled. The results vary, however, and not all have been reported to date.

## Explorers that completed Winter 2005/06 drilling projects in the Basin include:

- Canalaska Ventures Inc. www.canalaska.com
- Dejour Enterprises Ltd. www.dejour.com
- Entourage Mining Ltd. www.entouragemining.com
- ESO Uranium Corp. www.esouranium.com
- Forum Uranium Corp. www.forumdevelopmentcorp.com
- International Uranium Corporation www.intluranium.com
- JNR Resources www.jnrresources.com
- Logan Resources Ltd
- NorthWestern Mineral Ventures Inc. www.northwestmineral.com
- Nuinsco Resources Ltd. www.nuinsco.ca
- NVI Mining Ltd.
- Pitchstone Exploration Ltd. www.pitchstone.net
- Purepoint Uranium Group Inc. www.purepoint.ca
- Strathmore Minerals Corp. www.strathmoreminerals.com
- sxr Uranium One www.uranium1.com
- Titan Uranium Inc. www.titanuranium.com
- Trend Mining Co. www.trendmining.com
- Triex Minerals Corp. www.triexminerals.com
- UEX Corporation www.uex-corporation.com
- United Carina Resources Corp. www.unitedcarina.com

So, how does the average investor begin to evaluate and identify which exploration company is on target for a super deposit find? It can be confusing. Simply put, determine whether the uranium reported from the drill hole was found either at the "unconformity", which means the exploration company is in the vicinity of a find, or in the "alteration halo", which means they may have actually hit the uranium jackpot!

Elevated uranium at the unconformity is a possible indication that a super deposit is nearby. However, more encouraging is finding altered rock and anomalous uranium above the unconformity that may be part of an ore deposit's alteration halo. Only when these circumstances are in place, can we say that the site is a good bet for the next uranium super deposit.

#### The Unconformity, Halo, and Trap of a Super Deposit

#### The Unconformity

The process of narrowing in on and delineating an Athabasca Basin deposit begins with extensive surface geophysical work to identify potential drill targets, followed by drilling, which is the only real way to determine what's below the surface. The Athabasca Basin formed within a bowl or depression in the Canadian Shield; in mining terms, referred to as the "basement". Sand began filling this bowl approximately 1.7 billion years ago and over time became sandstone rock. The contact point where the sandstone meets the basement is known as the unconformity. It is near this contact that deposits are formed, hence the term "Unconformity Deposits".

The unconformity itself provides the most unrestricted path for uranium-rich fluids to flow. During a deposit's creation, uranium carried in solution can be deposited well beyond the boundaries of the sandstone alteration halo. This signature will present itself at the unconformity as a very short "spike" in uranium levels, of anywhere from ten to 300 parts per million. While this indication may not be concrete evidence of a deposit, it does indicate that one could be in the vicinity.

Observers should be mindful of the depth to basement – which translates into the depth the explorer has to drill to find an unconformity deposit. The cost of exploration goes up the further down the drill hole has to go. Cameco's super deposit at McArthur River (1989) or example, was struck at 400 meters, however, some explorers today are drilling in excess of 1000 meters.

By analyzing the known deposits in the Basin, we can produce a composite picture of not only the ore body, but of its surrounding environment. These specific elements become the clues or indications that one is closing in on the prize.



#### The Trap

The first common feature of all Basin deposits is a structural trap – an area where mobilized uranium could have "pooled" and deposited uranium minerals. These traps have two notable aspects to them: faulting and graphite. Faults can be created where graphite causes a weakness in the basement rock. They provide channels for mineralized fluids to flow, and can create a "step" where an uplifted block of basement rock forms a trap by blocking the flow of uranium-rich fluids along the unconformity.

#### The Halo

The process of uranium deposition results in another common clue, an alteration halo surrounding the ore body. Hydrothermal or "hot" fluids passing through rock cause an alteration, adding, or removing minerals, which changes the composition of the rock. In the Basin, alteration of the sandstone enveloping a uranium ore body can form a halo that is tens to hundreds of meters thick.

There are two clear indications of an alteration halo. The first is the existence of elevated uranium and indicator metals obtained through geochemical analysis (assay results). The existence of uranium in any common unaltered sandstone sample ranges between one and two parts per million. The outer edge of an alteration halo will have anomalous uranium content greater than three parts per million, and closer to a deposit, uranium within the halo will be enriched in excess of ten parts per million.

The second attribute of an alteration halo is alteration minerals or "cooked rock". At the outer edge of the halo this may be observed as bleaching in the rock, while closer to an ore deposit that same rock will be more intensely altered to form clay minerals and chlorite. The presence of alteration minerals, in conjunction with the elevated uranium in the sandstone, is typically found near significant deposits.

# Athabasca Basin Winter 2005/06 Drill Season Results

Of the 17 Basin drill projects completed by junior exploration companies this past winter, two stand out from the crowd. The first, located on the west side of the Basin, is UEX Corporation's Shea Creek project that hosts the Kianna Deposit. High grade uranium was first discovered at Shea Creek in 1992 by UEX's JV partner Cogema, and drilling has continued since then, culminating in a high-grade intersection of 27.4 percent U308 over 8.8 meters last year. The second project, located at the opposite end of the Basin, is a joint venture between JNR Resources and International Uranium Corporation. Significant uranium was first intersected in 1999 in the Maverick Zone at their Moore Lake project . To date the best intersect has been an impressive 4.03 percent U308 over 10 meters. The success of both ventures was identified prior to the recent boom, and has set the bar for the new entrants.

#### The remaining 15 drill projects from the Basin include:

- 1. Hatchet Lake Project: 50/50 joint venture between Entourage Mining Ltd. And United Carina Resources Corp (operator)
- 2. Turnor Lake Project Turaco Zone: 100% owned by Purepoint Uranium Group Inc.
- **3. Waterbury I Project**: 75/25 joint venture between NorthWestern Mineral Ventures Inc. (operator) and Canalaska Ventures Inc. respectively
- **4. Waterbury II Project**: 100% owned by Strathmore Minerals Corp.
- 5. Waterfound Project: 50/50 joint venture between Pitchstone Exploration Ltd. (operator) and sxr Uranium One
- 6. Darby Candle Project: 50/50 joint venture between Pitchstone Exploration Ltd. (operator) and sxr Uranium One
- 7. West McArthur Project: 100% owned by Canalaska Ventures Inc.

- 8. Costigan Lake Project: 65/35 joint venture between Forum Uranium Corp (operator) and NVI Mining Ltd. Respectively
- **9. Diabase Peninsula Project**: 50/50 joint venture between Nuinsco Resources Limited (operator) and Trend Mining Company
- **10. Sand Hill Lake**: 100% owned by Dejour Enterprises Ltd.
- **11. Meanwell Lake**: 100% owned by Dejour Enterprises Ltd.
- **12. R-Seven**: 100% owned by Dejour Enterprises Ltd.
- **13. Castle North/South Projects:** 100% owned by Titan Uranium Incorporated
- 14. Carswell Project: 50/50 joint venture between ESO Uranium Corp. (operator) and Logan Resources Ltd.
- **15. West Carswell Project**: 100% owned by Triex Minerals Corporation.



## Who's Leading the Race for the Next Uranium Super Deposit?

When investigating as to whether a drill project is on target, there are seven key criteria to consider. Results have been ranked according to success in meeting these criteria and they are:

#### 1. Proximity to an Existing Mine

With the exception of the Cluff Lake Mine in the western region of the Basin, all of the major mines run in a straight corridor along the east. Pitchstone's Darby-Candle Project was the clear winner sitting in between the world's two largest high-grade mines: McArthur River and Cigar Lake. The next six sites all sit nicely within the eastern corridor, while Dejour's three projects to the south lie in yet unproven territory.

Proximity to an Existing Mine					
Darby-Candle Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				
West McArthur Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Turnor Lake Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Waterbury (I) Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Waterbury (II) Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Hatchet Lake Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Waterfound Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Costigan Lake Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Diabase Peninsula Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Carswell Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Sand Hill Lake Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Meanwell Lake Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				
R-Seven Project	$\bigotimes \bigotimes \bigotimes \bigotimes$				

#### 2. Depth to Basement

The depth to the basement identifies the approximate depth of a potential deposit. Some deposits lie above the unconformity, such as Cigar Lake, while others such as Millennium are in the basement. Either way, depth is a key indication of how successful an explorer might be in finding an economic ore body. The chance of repeatedly hitting something as small as a uranium ore body becomes much more difficult at greater depths, and the cost of exploration increases exponentially from 100 to 800 meter holes. Another consideration is the ultimate potential for a mine. Even a small ore body can be economically mined when it is close to surface. The same find, hundreds of meters below the surface, may not be feasible to mine. In the comparison below, high marks go to the Hatchet Lake, Costigan Lake, and Purepoint's Turnor Lake project, whose targets are all less than 200 metres in depth.

Because the cost of exploration increases substantially with every metre in depth, West McArthur's 1,000 metre holes are less desirable targets.

Depth to Basement						
Hatchet Lake Project	75 – 100 m	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$				
Costigan Lake Project	140 m	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Turnor Lake Project	185 m	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Waterbury (I) Project	250 m	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Waterbury (II) Project	300 m	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$				
Diabase Peninsula Project	320 – 435 m	$\otimes$ $\otimes$ $\otimes$				
Waterfound Project	440 m	$\bigotimes \bigotimes \bigotimes \bigotimes$				
R-Seven Project	500 m	$\otimes$ $\otimes$ $\otimes$				
Sand Hill Lake Project	500 m	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Darby-Candle Project	600 m	$\bigotimes \bigotimes \bigotimes \bigotimes$				
Carswell Project	725 m	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$				
West McArthur Project	810 – 1,010 m	$\bigotimes \bigotimes \bigotimes \bigotimes$				

#### 3. Faults/Structure

Offset faults are a prime home for high-grade deposits. Drill results should confirm the existence of faulting and graphite. The McArthur River deposit is tucked within a 70 meter offset fault similar to the one interpreted at Nuinsco's Diabase Peninsula Project. At both of the Pitchstone and Purepoint projects, evidence of significant offset faults have also been identified.

Faults/Structure					
Diabase Peninsula Project	70 – 100 m offset	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Darby-Candle Project	45 m fault offsets at unconformity	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Turnor Lake Project	Fault intersections with 30 m offset	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Hatchet Lake Project	Faulting and fracturing in all holes	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
West McArthur Project	Faulting found in 1 of 4 holes	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Waterbury (II) Project	Fracturing and minor faulting	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			

#### 4. Proven Graphitic Conductors

The early confirmation of a graphitic conductor is key to the validation of any prospective Basin target, and appears to be a necessary pre-requisite to locating a high-grade uranium deposit. The existence of such a conductor was determined in only one-quarter of the drill programs we reviewed.

Proven Graphitic Conductors					
Turnor Lake Project	Yes	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Diabase Peninsula Project	Yes	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Costigan Lake Project	Yes	$\bigotimes \bigotimes \bigotimes \bigotimes$			
Waterfound Project	Yes	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Darby-Candle Project	Trace, conductor not identified	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			

#### 5. Alteration

Explorers know, where there's a deposit, there's alteration. Of the 17 exploration companies reporting results from winter 2005/06-drill season, Purepoint's Turnor Lake Project encountered the most significant bleaching and clay alteration with their first hole returning 50 meters of illite, or clay. Five additional projects, Waterfound, Diabase Peninsula, Costigan, West McArthur, and Carswell have also reported positive signs of alteration.

Alteration		
Turnor Lake Project	Extensive clay alteration	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$
Waterfound Project	Bleaching & moderate clay alteration	$\bigotimes \bigotimes \bigotimes \bigotimes$
Diabase Peninsula Project	Bleaching & moderate clay alteration	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$
Costigan Lake Project	Clay alteration encountered	$\bigotimes \bigotimes \bigotimes \bigotimes$
West McArthur Project	Clay alteration encountered	$\bigotimes \bigotimes \bigotimes \bigotimes$
Carswell Project	Clay alteration encountered	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$
Waterbury (II) Project	Clay alteration encountered	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$

#### 6. Zones of Elevated Uranium (Potential Halo)

Zones of elevated uranium within sandstone can be used to zero in on an ore body. The background concentration of uranium in sandstone is 1 to 2 ppm and, for the table below, anomalous concentrations are considered to be zones at least 5 metres thick averaging > 3 ppm U. Basement rocks have various background concentrations of uranium so anomalous concentrations are sometimes not as obvious.

Zones of Elevated Uranium (Potential Halo)						
Turnor Lake Project	11 of 12 holes	Includes 15 ppm U over 42 m and 34 ppm U over 29 m	$\otimes \otimes \otimes \otimes$			
Carswell Project	1 of 8 holes	1440 ppm U over 7m	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Waterbury (II) Project	1 of 8 holes	>3 ppm U over 5 m	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
West McArthur Project	1 of 4 holes	50 ppm U over 8m (in basement)	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Diabase Peninsula Project	0 of 6 holes	Anomalous U confined to narrow widths in basement	$\bigotimes \otimes \bigotimes \bigotimes$			

#### 7. Uranium Spikes near the Unconformity

The range of maximum uranium values (> = 25 ppm) reported by companies are provided below. Most of these spikes occur over very small widths.

Uranium Spike near the Unconformity						
Carswell Project	2 of 8 holes	8,300 to 10,200 ppm U	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
West McArthur Project	3 of 4 holes	49 to 2,400 ppm U	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Waterfound Project	4 of 9 holes	202 to 1,525 ppm U	$\otimes \otimes \otimes \otimes$			
Turnor Lake Project	11 of 12 holes	38 to 498 ppm U	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Darby-Candle Project	2 of 3 holes	26 to 422 ppm U	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Waterbury (II) Project	4 of 8 holes	29 to 271 ppm U	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Costigan Lake Project	3 of 6 holes	25 to 108 ppm U	$\bigotimes \bigotimes \bigotimes \bigotimes$			
Diabase Peninsula Project	5 of 6 holes	26 to 77 ppm U	$\bigotimes \bigotimes \bigotimes \bigotimes$			
Meanwell Lake Project	0 of 2 holes		$\bigotimes \bigotimes \bigotimes \bigotimes$			
R-Seven Project	0 of 1 holes		$\bigotimes \bigotimes \bigotimes \bigotimes$			
Sand Hill Lake Project	0 of 2 holes		$\bigotimes \bigotimes \bigotimes \bigotimes$			

### Who's Leading the Race for the Next Uranium Super Deposit?

Upon completion of each drill project, exploration companies generally disclose their drill results by publishing their findings via news release, email, or website. Investors can also gather results and information from various sources such as news sites, and annual or quarterly reports.

Investor-beware if results from a previously announced drill project are not available for review or are purposely vague. In the case of uranium exploration drill programs, the truth behind a season's success may be better reflected in what a company does not report as demonstrated in our summary chart.

It is obviously easier to evaluate a drill program when all relevant data is released and it is probably not a coincidence that the properties receiving high ratings also provided detailed descriptions of their findings. Although the encouraging results by Purepoint Uranium Group Inc. from their Turnor Lake project currently have them in the lead, it still is anyone's race and a single drill hole can change things dramatically.

Property	Owners	Proximity to Existing Mine	Depth to Basement	Faults/ Structure	Graphite	Alteration	Zones of Elevated U	Uranium spike	Overall
Turnor Lake Project	Purepoint Uranium Group Inc.	<b>3</b>	<₽	3	∕∕	∕∕	∕∕	3	$\otimes \otimes \otimes \otimes$
Diabase Pennisula Project	Nuinsco/Trend	<b>2</b>	<b>3</b>	2	2	3		<b>2</b>	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$
Waterfound Project	Pitchstone/sxr Uranium One	3	<b>3</b>	N/R	∕∕4	3	N/R	3	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$
Costigan Lake Project	Forum/NVI Mining	3	∕∕4	N/R	2	2	N/R	<b>2</b>	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$
Darby-Candle Project	Pitchstone/sxr Uranium One	2	<b>2</b>	3	2	N/R	N/R	3	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$
West McArthur Project	Canalaska	∕∕4	1	< ⊘2	N/R	2	<b>M</b>	∕∕4	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$
Waterbury (II) Project	Strathmore	3	3		N/R	<b>2</b>	2	3	$\bigotimes \bigotimes \bigotimes \bigotimes$
Carswell Project	ESO/Logan	2	<b>2</b>	N/R	N/R	<b>2</b>	3	∞	$\bigotimes \bigotimes \bigotimes \bigotimes$
Hatchet Lake Project	Entourage/United Carina	3	<₽	3	N/R	N/R	N/R	N/R	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$
Waterbury Project (I)	NorthWestern/Canalaska	3	2	N/R	N/R	N/R	N/R	N/R	$\bigotimes \bigotimes \bigotimes \bigotimes$
Meanwell Lake Project	Dejour	<b>M</b>	N/R	N/R	N/R	N/R	N/R	<b>M</b>	$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$
R-Seven Project	Dejour		3	N/R	N/R	N/R	N/R		$\bigotimes \bigotimes \bigotimes \bigotimes$
Sand Hill Lake Project	Dejour	1	3	N/R	N/R	N/R	N/R		$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$
Castle North/South Project	Titan Uranium	No reportable results				$\bigotimes \bigotimes \bigotimes \bigotimes \bigotimes$			
Carswell West Project	Triex	No reportable results				$\otimes \otimes \otimes \otimes$			

N/R: No reportable results