



# Darby-Candle Project

## Athabasca Basin, Saskatchewan

The Darby-Candle Property comprises 11 contiguous claims located in the eastern Athabasca basin. The property is located within NTS zones 74I-03, 74I-04, 74H-14, and 74H-15 and the UTM coordinates (NAD 83 Zone 13N) of the centre of property are 505 000E and 6426000N. The property is located approximately 20 kilometres south west of Cigar Lake Mine and 25 kilometres north of MacArthur River Mine (Figure 1).

The name Candle has been retained for claim S-104964; the ten other project claims are collectively referred as the Darby claims (Figure 2). Because the claims are all contiguous, they are referred as the Darby-Candle Property.

Currently the ownership of all Darby claims is split ~55%/45% between Denison Mines Corp. (Denison) and Uranium One Inc (UOI). Ownership of Candle is currently 41.3%/33.8%/25% for Denison/UOI/JCU.



Figure 1

Figure 2

### Directors

- Lukas H. Lundin, *Chairman*
- Ron F. Hochstein, *President and CEO*
- John H. Craig
- W. Robert Dengler
- Brian D. Edgar
- Tae-hwan Kim
- William A. Rand
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### Management

- Ron F. Hochstein, *President and CEO*
- David D. Cates, *VP Finance, tax and CFO*
- Michael J. Schoonderwoerd, *VP Controller*
- Terry V. Wetz, *VP Project Development*
- Steve Blower, *VP Exploration*
- Sheila Colman, *Canadian Counsel and Corporate Secretary*

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## Previous Work

### 1978 to 2003

The rights to explore in the Close Lake area, including the present Darby-Candle lands, were first acquired in about 1978 when E&B Exploration Ltd. (E&B) acquired a permit to explore for a period of two years. Cogema Resources Inc. (now AREVA) acquired an interest in the permit, staked the ground as mineral claims and, in 1981, became the operator of the Close Lake Project. This joint venture included the Saskatchewan Mining Development Corporation (SMDC, now Cameco Corporation), UEM, JCU and E&B.

Cogema conducted extensive exploration during the period 1981 to 1998 on the Close Lake Project, including airborne magnetic and electromagnetic (EM) surveys and various ground gravity and EM surveys. It drilled more than 89 diamond drill holes and discovered the Tucker Lake and Dolmen Lake uranium occurrences. In the period 1983 to 1987, Cogema drilled seven holes totalling 4,672.5 metres within the present Darby-Candle Project lands. This latter work is described by Breton, et al (1986); Breton, et al. (1987a); and Breton, et al. (1987b). Unconformity pierce points are displayed on Figures 3.

During the 1988 to 1993 period, land that includes the area of the Darby-Candle Property was allowed to lapse. In 1994 PNC Exploration (Canada) Co. Ltd. (PNC, now JCU) acquired much of this area by staking, which it referred to as the Candle Lake Project. PNC conducted significant exploration programs during 1996 and 1997, including fixed loop EM surveys and completion of 2,627.0 metres of diamond drilling in four holes. This work is described by Shigeta and Shields (1996), Ito, et al. (1996), and Shields (1998).

The Candle Lake Project was re-acquired by JCU in late 2000. JCU subsequently allowed much of the Candle Lake Property to lapse, retaining only claim S-104964 because it remained in good standing without the expenditure of further funds.

The former operators were successful in delineating more than 45 lineal kilometers of EM conductors in eight zones. A total of 7,299.5 metres of core drilling in 11 holes was completed by Cogema and PNC to test these conductors (Figures 3).

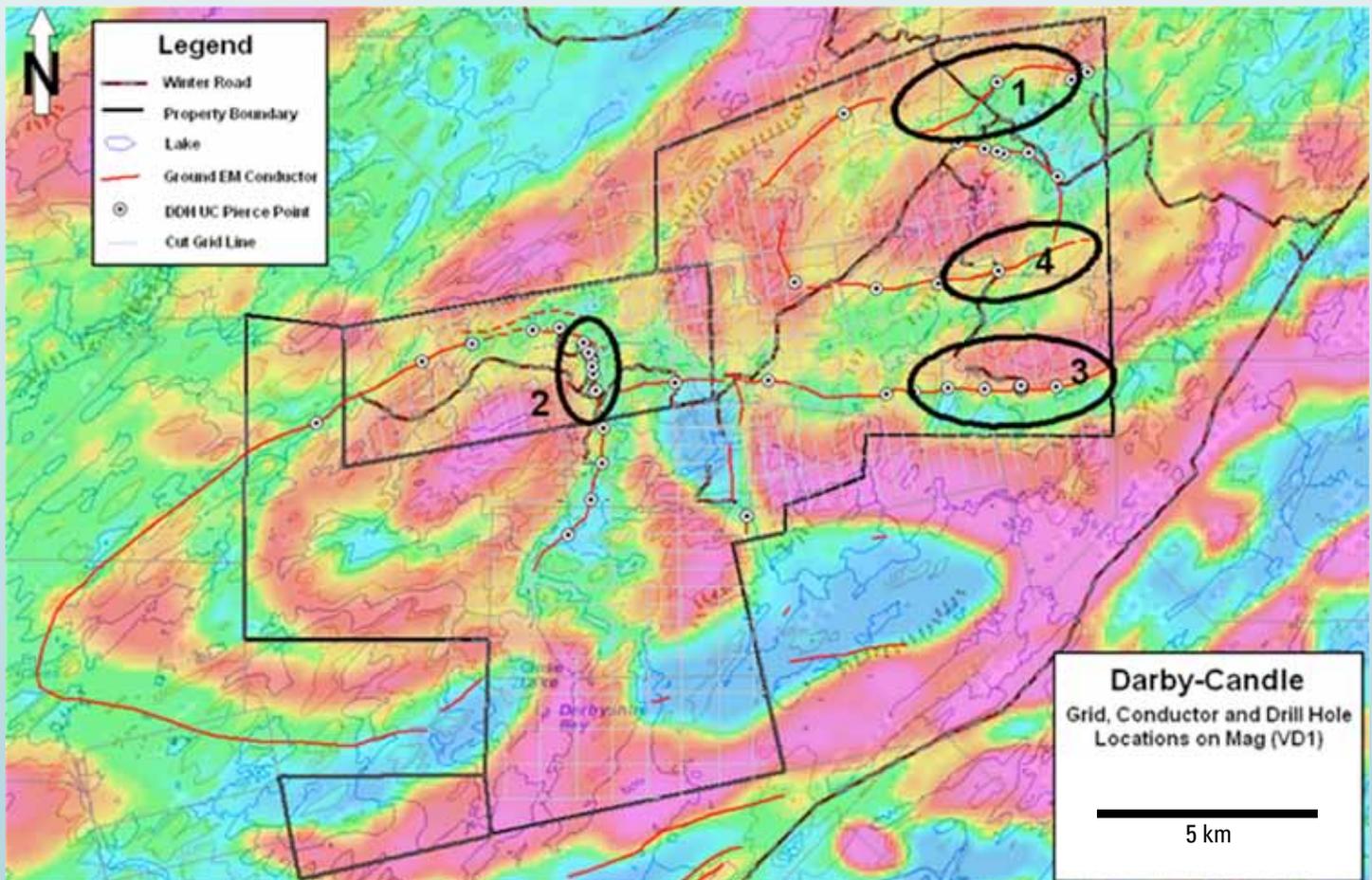


Figure 3

## 2003 to 2009

A detailed summary of work completed by Pitchstone between 2003 and 2008 is presented in Carmichael (2008), from which most of the following is summarized.

In 2003 – 2004 Pitchstone acquired eight of the Darby-Candle claims by staking, one claim as a transfer from International Uranium, and a tenth was optioned. Pitchstone re-established and expanded the local grid in 2003 and 2004 with 84.9 kilometers of line-cutting in preparation for a 95.5 line-km ground electromagnetic survey. Three new conductors, thought to represent graphitic, pelitic metasediments, were identified by the EM survey.

An airborne gravity gradiometer (Falcon) survey was flown in October, 2004 (McLatchie, 2005). The survey was successful in delineating structures relating to the Athabasca Basin and aided in mapping basement lithology.

During the summer of 2005, a program of core re-logging, grid rehab and boulder/twig sampling was completed to further enhance the geologic knowledge of the property and to help provide a focus for future exploration (Andrade, 2006). The most significant undertakings included:

- relogging and resampling of ten previously drilled diamond drill holes
- multi-element analyses of sandstone core
- petrographic studies on selected basement samples
- refurbishing of 2004 -2005 grids.
- prospecting for radioactive boulders
- examination of surficial geology

The work was successful in advancing knowledge of the geology of the property and in sorting the priority of exploration targets associated with the existing drill holes.

In early 2006, Pitchstone completed three diamond drill holes at Darby-Candle in a short winter program during January -March 2006 (Blower, 2006). One of the holes, CD-02, was drilled near the junction of the 95B and 97G conductors and intersected anomalous geochemistry at the unconformity. A composite interval straddling the unconformity returned 130.8 ppm U-p between 597.0 to 600.5 metres.

Between November 1, 2006 to August 3, 2007, Pitchstone re-established a tent camp at Bone Lake and completed fifteen diamond drill holes, plus three failed attempts, totalling 10,957.7 metres in three different drilling campaigns between November 2006 and August 2007 (Blower, 2008). Over the whole period 2,425.0 metres were drilled on the Candle Property and 8,532.7 metres were drilled on Darby. The best intersections were:

- CD-08R: 521 ppm U-p from 627.0 -627.1 metres (0.1 metres)
- CD-14: 283 ppm U-p from 625.3 – 662.7 metres (37.4 metres) -Includes: 2638 ppm U-p from 647.1 -650.3 metres (3.2 metres) -Includes: 6480 ppm U-p from 647.1 – 648 metres (0.9 metres)
- CD-14D1: 850 ppm U-p from 672.7 -673.5 metres (0.8 metres) -Includes: 1810 ppm U-p from 673.25 -673.4 metres (0.15 metres)

CD-14 and CD-14D1 were drilled on the 97G conductor. They intersected strongly altered basement rocks with weak but significant mineralization and the area was named the 97G zone.

Subsequent drilling campaigns between May 2008 and July 2009 split their focus between systematic conductor testing throughout the Darby-Candle Property and follow-up at the 97G zone (Figure 3). Seventeen diamond drill holes were completed and a further five abandoned totalling 12,140.7 metres in three campaigns. Ten of these drill holes targeted the north and south extensions of the significant alteration and mineralization intersected in CD-14 and CD-14D1. Drill hole CD-25, collared 100 metres northwest of CD-14, intersected a thick zone of faulting, clay alteration, quartz dissolution, and secondary quartz within the upper 400 metres of the Athabasca sandstones which was the most significant sandstone alteration to date observed on Darby-Candle. While the basal sandstone was poorly fractured and altered, basement rocks showed ubiquitous clay alteration for 100 metres below the unconformity. CD-25 intersected a narrow vein of strongly radioactive material 24 metres below the unconformity which returned 12,500 cps on the SPP2 scintillometer. Significant mineralized intersections from the campaign include:

- CD-19 144.9 ppm U-p from 691.2 – 694.9 (3.7 metres) -Includes 553 ppm U-p from 691.2 – 691.6 (0.4 metres) -And 451 ppm U-p from 694.6 – 694.9 (0.3 metres)
- CD-25 15,548 ppm U-p from 655.3 – 655.8 (0.5 metres) -Includes 34,000 ppm U-p from 655.5 – 655.7 (0.2 metres)
- DB-27 327 ppm U-p from 535.8 – 537.1 (1.3 metres) -Includes 994 ppm U-p from 535.8 – 536.1 (0.3 metres)
- CD-29 50.3 ppm U-p from 653.2 – 655.2 (2.0 metres) -Includes 254 ppm U-p from 655.1 – 655.2 (0.2 metres)
- DB-31 326 ppm U-p from 578.1 – 578.6 (0.5 metres)

Two campaigns of soil sampling (one in 2008 and another in 2009) were completed on the northeast corner of the Darby property after apparently successful trials (Camiro) were completed over buried mineralization at Cigar Lake 9 km to the east. A total of 202 samples of the A2 soil horizon were collected with a 200 m sample spacing on lines 400 m apart. All samples from both campaigns were combined into a single batch that were analyzed at ALS-Chemex with a weak acid digestion (Sodium Hydroxide) followed by ICP-MS ultra trace element analysis. Local zones of elevated uranium and uranium pathfinder elements are present in the survey area.

## 2010 – Present

One drill hole (CD10-39) was completed on the Candle claim in the summer of 2010 to test a ground gravity low anomaly along the 97H conductor. Nothing in the drill core explains the gravity anomaly or the EM conductor.

In the winter of 2011, a total of 21.9 line-kilometers of Moving-Loop Transient Electromagnetic (MLEM) surveying was completed; three lines at Darby (17.1 line kilometers) and three lines at Candle (4.8 line-kilometers). The survey employed a JD HT Squid B-field sensor instead of a standard induction coil and was designed to improve upon old interpreted basement conductor locations.

At Darby, reviews of the old Fixed-Loop Electromagnetic survey data in the northeast corner of the property suggested the transmitting loop may have been located above a conductor, which would mask the presence of other conductors and/or shift the indicated positions of visible conductors. This interpretation was supported by drilling in the northeast of Darby which had failed to intersect obvious basement conductors.

The 2011 MLEM survey successfully identified new conductors, shifted the locations of several previously identified conductors and refined the geological model of the basement in the northeast portion of the Darby property. Given the proximity to Cigar Lake and that it is completely untested by drilling, the newly identified conductor is considered highly prospective.

At Candle, it was hoped the highly sensitive SQUID B-field sensor would improve data for the weak and/or complex 95A, 97G and 97H conductors. For the 97G conductor, the new survey suggests that previous drilling in the area may have been at least 50 m too far east. Results for the other two conductors surveyed at Candle were poor.

## Potential

### Targets and Future Exploration Plans

Future exploration programs should be focussed on five higher priority areas (Figure 3):

- 1 Drilling new MLEM conductors at Darby northeast,
- 2 Drilling new interpretations of the 97G zone conductor,
- 3 Drilling the reverse fault at the 95B conductor, particularly at the east end where it is under-explored,
- 4 Drilling the underexplored 95A conductor, particularly at the east end where the only drill hole along the easternmost four kilometres of 95A intersected granitic gneiss and did not test the conductor,
- 5 Drilling all remaining undrilled conductors

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Please view [www.denisonmines.com](http://www.denisonmines.com) to view the Company's Annual Information Form and Quarterly Exploration and Development Updates and Financial Statements for further information.



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