

## **TECHNICAL REPORT**

## on the

## HENDAY URANIUM PROJECT

## NORTHERN SASKATCHEWAN, CANADA

National Instrument 43-101

NTS Map Area 78-L-08

Prepared for Purepoint Uranium Group Inc by: Scott Frostad, B.Sc., M.A.Sc., P. Geo. October 21, 2015

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### 1. SUMMARY

The Henday uranium property is situated on the eastern edge of the Athabasca Basin in Northern Saskatchewan, Canada and consists of two mineral claims having a total area of 1,029 hectares. The property is completely surrounded the Waterbury property held by Denison Mines (60%) and Korea Waterbury Uranium Limited Partnership (40%). The Waterbury property hosts known mineralization, locally up to 40%  $U_3O_8$ , within thin lens in the J Zone deposit located 15 km east. The J-Zone deposit is the western extent of Rio Tinto's Roughrider deposit that contained a NI 43–101 compliant combined resource (indicated and inferred) of 57.9 million pounds  $U_3O_8$  as of May, 2011. The McClean Lake mine is located 20 km southwest of the Henday claims and to date has produced almost 50 million pounds of  $U_3O_8$ .

The Henday project lies within the Mudjatik-Wollaston domain boundary that consists of Archean granitoid gneisses overlain by Early Proterozoic sediments, mostly pelitic and semi-pelitic gneisses, which were deformed and metamorphosed together during the Hudsonian Orogony. The Proterozoic Athabasca group of fluviatile quartz sandstones and conglomerates unconformably overlies the crystalline basement rocks of the Wollaston Domain, are flat-lying and relatively undeformed. Based on historic drill results from the surrounding area, the unconformity is assumed to lie approximately 250 metres below the surface.

Uranium exploration on the Henday project is targeting areas proximal to graphitic basement rocks, possible structures (especially where cross-cutting structures are indicated), extensive alteration envelopes within basement or sandstone rocks, low grades of uranium, complex mineralogy and geochemistry (U, Ni, As, Co, B, Cu, Mo, Pb, Zn and V), areas proximal to the Athabasca basement unconformity, and areas of highly fractured sandstone that may be associated with underlying uraniferous zones.

Between 1976 and 1982, the Henday claims were covered by several airborne geophysical surveys undertaken by Asamera and Saskatchewan Mining Development Corporation (SMDC) including INPUT electromagnetics (EM), VLF-EM, magnetic gradiometer and radiometric surveys. In 1988, Cogema Canada Ltd. conducted an airborne electromagnetic survey that helped select areas for staking which included the Henday claims.

In 1990, Cogema conducted a Fixed Loop EM survey and outlined the H-8 conductor that crosses the Henday claims. A Moving Loop EM survey was then carried out on two lines (ML-1 and 2) to better position the H-8 conductor with one of the two survey lines (ML-1) being on the Henday property. In 1991, Cogema tested the H-8 conductor just east of the current Henday claims with three vertical drill holes (HLH8-42, 43 and 44) that reached the unconformity at approximately 325 metres then tested approximately 40 metres of basement rock. The three holes all encountered semi-pelites having graphite specks and pyrite associated with weak bleaching and chloritization. In 1996, Cogema completed one hole (HL-70) on the ML-2 moving loop conductor that intersected weakly anomalous uranium (up to 110 ppm U partial over 1.5m) at the

unconformity and basement lithologies of granite and pegmatite with subordinate, locally graphitic and pyritic semi-pelite. In 1998, Cogema evaluated the H-8 conductor within the current Henday claims with one hole (HL-71) while a second hole (HL-72) followed-up the weak radioactivity intersected by HL-70. Both holes intersected weakly altered sandstone and basement lithologies. HL-71 encountered steeply dipping, strongly graphitic fault gouge at the bottom of a primarily pegmatoid basement with minor graphitic Biotite-Cordierite Gneiss and HL-72 intersected variably graphitic Biotite-Cordierite Gneiss and PL-72 intersected variable graphitic Biotite-Cordierite Gneiss and PL-73 intersected variable graphitic Biotite-Cordierite Gneiss and PL-74 intersected variable graphitic Biotite-Cordierite Gneise graphitic Biotite-Cordierite

Exploration conducted by Purepoint on the project has consisted of a helicopter-borne EM and magnetic (VTEM max) survey carried out by Geotech Ltd. of Aurora, Ontario in 2010. A total of 198 line kilometers was flown using a line spacing of 100 metres. The survey showed a conductive band crossing the claim block from east to west and extending beyond its boundaries in both directions. The conductive band is strongest at the west end and appears to be resolved into two parallel conductor axes, approximately 200 metres apart, which are good quality anomalies with large amplitudes and high signal to noise ratios. The parallel conductors correlate well with a favourable magnetic 'low' anomaly and remain untested.

In an attempt to confirm the South Block parallel conductors, Geotech was requested to conduct EM Plate Modeling on two flight lines using Maxwell<sup>™</sup> software. Only one plate was found, however, it fits closely with the interpreted northern VTEM conductor and also fits with Cogema's untested ML-1 Moving Loop EM anomaly.

The VTEM survey did not confirm the presence of a conductor near the drill hole HL-71, the only historic drill hole that has tested the Henday property. Since HL-71 primarily encountered pegmatitic rock in the basement and only minor graphitic material, it is considered that this hole missed its intended target.

The Henday property has a favorable geologic setting and warrants further exploration. An exploration program and budget is recommended (Table 2).

#### <u>Stage 1: Summer 2016:</u>

A resistivity survey over the VTEM conductors areas is planned to define possible zones of hydrothermal alteration within the Athabasca sandstone and to help locate fault zones. A good portion of the survey would be conducted on Henday Lake and would require the use of boats. Linecutting will also be required.

Stage 2 is not contingent on positive results from Stage 1.

#### Stage 2: Winter 2016 / 2017:

Four geologic drill fences comprised of two holes each on the highest priority geophysical targets. An eight hole, 5,200 meter drill program is recommended.

## 2. INTRODUCTION

The Henday technical report was prepared for Purepoint Uranium Group Inc. in compliance with National Instrument 43-101 following the guidelines specified by National Instrument 43-101F. The purpose of this report is to evaluate the potential of the property to host uranium mineralization.

Scott Frostad, P.Geo., Vice President of Purepoint Uranium Group Inc., is the qualified person responsible for the content of this report. Mr. Frostad has been involved with the Henday Project since November, 2008 and visited the site from Points North by helicopter on July 16<sup>th</sup>, 2013.

The report includes opinions on the geophysical data by Roger K. Watson, P.Eng., Purepoint's Chief Geophysicist.

The available assessment data on the property that have been filed with Saskatchewan Ministry of Economy has been reviewed as well as the recent Airborne Electromagnetic and Magnetic Survey results.

The author has not verified the technical information in the past technical reports, but has formed opinions on the potential for the uranium mineralization in the project area primarily on the basis of the technical information and preliminary results of the current exploration programs.

## 3. PROPERTY DESCRIPTION AND LOCATION

The Henday Property is on the eastern margin of the Athabasca Basin in northern Saskatchewan, Canada within the National Topographic System (NTS) map area 74-I-08 (Figure 1). The property covers approximately 1,029 hectares (ha) and consists of two mineral claims, S-111424 and S-111425 (Figure 2).

The mineral claims are held in the name of Purepoint Uranium Corporation and are 100% owned by Purepoint Uranium Group Inc., a public Company listed on the TSX Venture Exchange.

In order to conduct work at the property, the operator must be registered with the Saskatchewan government and comply with the Saskatchewan Environment's Exploration Guidelines and hold the appropriate Temporary Work Camp Permit, Timber Permit and Aquatic Habitat Alteration Permit. As well, the operator must comply with the Federal Department of Fisheries and Oceans that administers its own Guidelines for the Mineral Exploration Industry.

A mineral disposition in good standing gives the owner mineral rights only; Saskatchewan Environment controls surface rights. The two mineral claims are in good





Figure 2: Disposition Map of the Henday Project

Disposition	Area (ha)	NTS	Recording Date	Next Work Due
S-111424	676	74-I-08	6-Nov-08	5-Nov-19
S-111425	353	74-1-08	6-Nov-08	5-Nov-19

Table 1. Henday Project – Land Status Summary

standing until 2019 and require work commitments of \$25.00/ha/annum since the first 10 years of assessment credit has been accepted (Table 1).

### 4. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The Henday property is accessible from the Athabasca seasonal road and a winter trail or by float or ski equipped aircraft. The property is 720 km northeast of Saskatoon and 10 km north-northwest of Points North Landing. Transwest Air and North Wind Aviation provide scheduled aircraft service from Saskatoon to Points North Landing year round. All weather highways 102 and 905 reach Points North Landing from La Ronge. An extension of highway 905 connects Points North landing to Stony Rapids. This extension is not maintained after March 31<sup>st</sup> but after the thaw is passable again in May.

The property is at the northwest end of Henday Lake and outcrop exposure is sparse in the area (typically less than 3%) due to a blanket of glacial overburden. The Henday project is part of a large moraine plain with varied topography that ranges from 494 to 520 metres above sea level.

Dominant Quaternary landforms include drumlins, eskers, ground moraine and hummocky moraine. Locally, the area of the property is underlain by marshes and lacustrine sands. The forest cover is mainly in jack pine and spruce.

The climate is typical of the northern Saskatchewan, being cold in the winter (-20 to -40 degrees celsius) and hot in the summer (15 to 35 degrees Celsius). Precipitation is moderate.

Services available in Points North Landing include a freighting company and a motel. There is no infrastructure at or near the property.

## 5. HISTORY

Between 1976 and 1982, the Henday claims were covered by several airborne geophysical surveys undertaken by Asamera and Saskatchewan Mining Development Corporation (SMDC) including INPUT EM, VLF-EM, magnetic gradiometer and radiometric surveys.

In 1988, Cogema Canada Ltd. conducted an airborne electromagnetic survey (Geotem) that helped select areas for staking which included the South Block.

In 1990, Cogema established the H-8 grid (Figure 3) and conducted a Fixed Loop EM-37 survey as well as a boulder lithogeochemical survey. The EM survey outlined conductors of moderate strength on the H-8 grid. A UTEM III Moving Loop survey was carried out on lines ML-1 and ML-2 to better position the H-8 conductor. ML-1 contained one south dipping moderate basement conductor while ML-2 results showed the presence of two rock units, possibly hosting graphitic material at the contact, and the most resistive of the units located along the southern portion of the line.

The 1990 boulder survey indicated moderate to weak uranium (2 to 3 times background) anomalies coincident with the H-8 conductor. Boulder sampling west of the H-8 grid, a portion of which covers Purepoint's S-111425 claim, outlined a moderately strong illite anomaly that was deemed to be possibly related to an alteration halo above uranium mineralization.

In 1991, Cogema tested the H-8 conductor just east of the current Henday South Block claims with three vertical drill holes (HLH8-42, 43 and 44). The sandstone in these holes was fairly fresh looking, pinkish to purplish with hematitic liesegang rings and was otherwise moderately limonitic. Uranium peaks for these holes occurred in the sandstone and returned values less than 16 ppm U. Very small scale subvertical fracturing was observed in holes 42 and 43. Kaolinite was the main clay component of the sandstone with illite content increasing just above the unconformity (10 to 20m). The depth to the unconformity was, from east to west, at 303 metres in Hole 44, at 326 metres in Hole 42 and at 342 metres in Hole 43. The basement rock was tested by approximately 40m of drilling by these three holes. Semi-pelites having graphite specks and pyrite was encountered in all these holes and was associated with weak bleaching and chloritization. Hole 43 intersected 1,097 ppm Cu from a fresh calc-silicate at a depth of 375.8 metres.

In 1996, Cogema completed one hole (HL-70) on the ML-2 moving loop conductor. Regional looking sandstone was intersected, however, weakly anomalous uranium (up to 110 ppm U partial over 1.5m) was returned at the unconformity. The basement lithologies consisted of granite and pegmatite with subordinate, locally graphitic and pyritic semi-pelite.

In 1998, Cogema evaluated the H-8 conductor with one hole (HL-71) while a second hole (HL-72) followed-up the weak radioactivity intersected by HL-70. Both holes intersected weakly altered sandstone and basement lithologies. Brittle structures were rare and ductile deformation was found to be variably dipping. HL-71 encountered steeply dipping, strongly graphitic fault gouge at the bottom of a primarily pegmatoid basement with minor graphitic Biotite-Cordierite Gneiss. HL-72 intersected variably graphitic Biotite-Cordierite Gneiss and pegmatoid.



Figure 3: Historical Exploration - Henday Project

In 2005, Strathmore Minerals Corp conducted a MEGATEM II airborne electromagnetic survey over the main group of claims which constituted their Waterbury Lake Property. Strathmore moved its exploration projects, which included Waterbury Lake, into a spin-off company named Fission Energy Corp during 2007.

In 2008, Fission Energy Corp. inadvertently let lapse a central claim of the Waterbury Lake project. A portion of this claim was staked by Purepoint and subsequently named the Henday Project.

## 6. GEOLOGICAL SETTING AND MINERALIZATION

The Henday Property lies on the north eastern margin of the Athabasca Basin, Saskatchewan. The Athabasca Basin is filled by the Athabasca Group of relatively undeformed and flat-lying, mainly fluviatile clastic strata. The Athabasca Group unconformably overlies crystalline basement rocks of the Rae Province in the northwest and the Hearne Province to the east (Figure 4). Diabase dykes that range from a few to a hundred metres in width have intruded into both the Athabasca rocks and the underlying basement. Extensive areas are covered by Quaternary glacial drift and outwash, forming an undulating, lake-covered plain.

## 6.1.1 Basement Geology

The oldest rocks underlying the Henday Property are situated in the Archean Hearne Province near the boundary between the northern Mudjatik and Wollaston Domains (Figure 4). The Hearne province is bounded along its southeast margin by the Trans Hudson Orogen and to the northwest by the Snowbird Tectonic Zone (Hoffman, 1988); which subdivides the Churchill Structural Province into the Rae and Hearne provinces. The northern Mudjatik Domain is bounded to the northeast by the Tantato and Dodge domains of the Rae Province and to the southeast by the Wollaston Domain of the Hearne Province (Hoffman, 1990). The Wollaston Domain is bounded to the southeast by the Trans Hudson Orogen (Hoffman, 1990).

North and east of the property, at the edge of the Basin, the exposed basement consist of the Mudjatik Domain which is comprised of intensely deformed and metamorphosed Archean granitic gneisses and numerous small remnants of Aphebian metasedimentary rocks and pelitic gneisses (Gilboy, 1983). To the east, metasedimentary rocks of the Wollaston Group rest unconformably on Archean granitoid gneisses (Lewry and Sibbald, 1980; Lewry et al., 1985; Lewry



Figure 4: Bedrock Geology- Henday Project

and Collerson, 1990). The Wollaston Group consists of shelf to miogeosynclinal sediments that were deformed and metamorphosed (together with the adjacent gneisses) during the Hudsonian Orogeny. The basal units consist mostly of pelitic and semi-pelitic gneisses with graphitic pelitic gneiss and subordinate quartzite and ironstone. These pass upward into calc-silicate gneisses and psammopelitic and psammitic gneisses (Eriks and Chiron, 1994). The Henday project is thought to lie along the Mudjatik-Wollaston domain boundary and is interpreted from airborne magnetics and historic drilling as being underlain by pelitic and granitoid gneisses (Figure 5).

Following the Trans-Hudson orogeny (ca. 1860-1770 Ma, Saskatchewan Geological Survey, 2003), the Archean basement and Paleoproterozoic metasedimentary rocks were uplifted and subjected to erosion (Ramaekers, 1990, 2003a, b) leaving a weathered profile or regolith with a 1.75 to 1.78 Ga retrograde metamorphic age (Annesley et al., 1997). The regolith consists of a few metres of a hematized red zone, grading into a buff, white to light green weathered basement which grades downwards over a few metres into unweathered basement (Ramaekers, 1990).

## 6.1.2 Athabasca Group Geology

The Athabasca Group geology has been updated by Ramaekers et al, (2007) but was built on the framework set out by Raemaekers (1990). Four regional sequences of fluviatile sands and gravels filled five sub-basins within the Athabasca Basin from different directions. Sequence 1 is the Fair Point Formation, Sequence 2 begins with the sandy Smart Formation in the west and is overlain by the Manitou Falls Formation, Sequence 3 includes the Lazenby Lake and Wolverine Point Formations while Sequence 4 comprises the Locker Lake, Otherside, Douglas and Carswell Formations.

A maximum age constraint for the Athabasca Group is approximately 1.66 Ga provided by a detrital ziron suite collected from the Wolverine Point Formation (Rainbird et al., 2002). The thickness of the Athabasca Group sediments is presently estimated to be a maximum of 2200 m (Sibbald and Quirt, 1987). The overlying MFc is characterized as a moderately sorted, medium- to coarse-grained, granule rich, ripple-cross-laminated sandstone with 1% intraclasts-rich layers and one-grain-thick pebble or granule layers at the base (Ramaekers et al., 2001), deposited in a distal alluvial braid-plain lacking well-developed channels, in a humid climate (Yeo et al., 2000; Jefferson et al., 2001).

#### 6.1.3 Mineralization

No drilling has occurred on the property to date.



Figure 5: Local Geology of Henday Project

## 7. DEPOSIT TYPES

The Athabasca Basin hosts some of the world's largest and richest known uranium deposits. The Cigar lake deposits grade ~15% uranium while McArthur River grades ~22% uranium and the average grade for 30 unconformity-associated deposits in the Athabasca Basin is ~2% uranium, approximately four times the average grade of Australian unconformity-associated deposits (Jefferson et al., 2007). The deposits are located at the sub-Athabasca unconformity, and are hosted in both the Athabasca Group sandstones above the unconformity, and in the Paleoproterozoic metamorphed supracrustal rocks and intrusives of the Archean Hearne Craton basement. Most of the known important deposits occur within a few tens to a few hundred metres of the unconformity and within 500 m of the present-surface, thus making them accessible and attractive exploration targets.

The initial discoveries were found through surficial indicators, such as radioactive boulders, strong geochemical anomalies in the surrounding lakes and swamps, and geophysical signatures (Wheatley et al., 1996). After these initial discoveries, an exploration model was developed that targeted electromagnetic conductors based on the associated underlying graphitic schists with strong electromagnetic signatures (Kirchner and Tan, 1977; Matthews et. al., 1997).

The uraniferous zones are structurally controlled both with relation to the sub-Athabasca unconformity, and the basement fault and fracture-zones. They are commonly localized above and along or in graphitic pelitic gneiss that generally flank structurally competent Archean granitoid domes (Quirt, 1989). Although electromagnetic conductors are typical exploration targets, the Kiggavik deposit in the Thelon Basin, Nunavut (Fuchs and Hilger, 1989) is an example of a significant uranium deposit forming without graphitic units. Uranium deposits within the Athabasca Basin that are associated with little or no graphite include Rabbit Lake, Eagle Point, Raven, Horseshoe, Cluff Lake, and Centennial (Rhys et al., 2010; Yeo and Potter, 2010).

Uranium deposits in the Athabasca Basin that occur in proximity to the Athabasca unconformity can be characterized as polymetallic (U-Ni-Co-Cu, Pb, Zn and Mo) or monometallic (Ruzicka, 1997, Thomas et al., 2000, Jefferson et al., 2007). Examples of polymetallic deposits include the Key Lake, Cigar Lake, Collins Bay 'A', Collins Bay 'B', McClean, Midwest, Sue and Cluff Lake 'D' deposits. Polymetallic deposits have high-grade ore at or just below the unconformity, and a lower grade envelope that extends into the sandstone or downwards into the basement. The lower grade envelope exhibits a distinct zonation marked by predominance of base metal sulphides (Ruzicka, 1997).

Monometallic deposits are completely or partially basement hosted deposits localized in, or adjacent to, faults in graphitic gneiss and calc-silicate units.

Monometallic deposits contain traces of metals besides uranium and include completely basement-hosted deposits developed for up to 500 m below the unconformity (e.g. Eagle Point deposit, Thomas et al., (2000)), or deposits that may extend from the unconformity downward along faults in, or adjacent to, graphitic gneiss and/or calc-silicate units such as the McArthur River deposit (Thomas et al., 2000; Jefferson et al., 2007).

Based on the general geological model for unconformity-type uranium deposits, the exploration for uranium on the Red Willow property will target:

- 1. Areas proximal to graphitic basement rocks;
- 2. Possible structures, especially where cross-cutting structures are indicated;
- 3. Extensive alteration envelopes within basement or sandstone rocks,
- 4. Low grades of uranium;
- 5. Complex mineralogy and geochemistry (U, Ni, As, Co, B, Cu, Mo, Pb, Zn and V);
- 6. Areas proximal to the Athabasca basement unconformity, either above or below it; and
- 7. Zones of highly fractured sandstone that may be coincident with and overlying uraniferous zones.

## 8. EXPLORATION PROGRAMS

On March 22<sup>nd</sup>, 2010, a helicopter-borne magnetic and electromagnetic (VTEM35) was carried out by Geotech Ltd. of Aurora, Ontario over the entire Henday property with a total of 198 line kilometers being completed. Geotech also completed EM plate modeling using Maxwell<sup>™</sup> software on two flight lines.

Roger K. Watson, Chief Geophysicist for Purepoint Uranium Group Inc., reviewed all the geophysical data generated during the 2010 exploration program and his discussion of the VTEM results is provided in this report.

## 8.1 Airborne Electromagnetic (VTEM) and Aeromagnetic Survey

The geophysical survey consisted of helicopter borne EM using the versatile time-domain electromagnetic (VTEM) system with Z and X component measurements and aeromagnetics using a caesium magnetometer. A total of 198 line-km of geophysical data were acquired over the project area during the survey. The crew was based out of Points North, Saskatchewan for the acquisition phase of the survey.

The Henday project was flown in a SE to NW (N 157° E / N 337° E) direction with a traverse line spacing of 100 metres. Tie lines were flown perpendicular to the traverse lines at a spacing of 1,000 metres (N 67° E / N 247° E).

During the survey of the Henday, the helicopter was maintained at a mean height of 88 metres above the ground with a nominal survey speed of 80 km/hour. This allowed for a nominal EM sensor terrain clearance of 53 metres and a magnetic sensor clearance of 75 metres.

The data recording rates of the data acquisition was 0.1 second for electromagnetics, magnetometer and 0.2 second for altimeter and GPS. This translates to a geophysical reading about every 2 metres along flight track. Navigation was assisted by a CDGPS receiver and data acquisition system, which reports GPS co-ordinates as latitude/longitude and directs the pilot over a pre-programmed survey grid.

### 8.1.1 Methodology of Interpreting VTEM Results

The VTEM instrument is a pulse type or time domain transmitter with horizontal concentric receiver/transmitter coil configuration. The anomaly that this instrument provides is different for each type of conductor shape. For this survey Purepoint has identified three anomaly types, referred to as Type 1, 2 and 5, with examples provided in Figures 6, 7 and 8.

![](_page_17_Figure_5.jpeg)

Figure 6: Example of VTEM Type 1 Anomaly

![](_page_18_Figure_0.jpeg)

Figure 7: Example of VTEM Type 2 Anomaly

![](_page_18_Figure_2.jpeg)

Figure 8: Example of VTEM Type 5 Anomaly

The size of the EM symbol is proportional to the number of channels that the anomaly can be defined on, and is therefore very roughly proportional to the conductivity-thickness product, or conductance.

Type 1 - the response from a thin plate and will show two peaks on either side of the center of the plate. "Thin" means less than about 30 metres. A dipping plate will change the symmetry of the anomaly. The ratio of the amplitudes of the two peaks is used to calculate the dip;

Type 2 is a 'wide' plate and, for a geological model, could represent a number of closely spaced bands of graphitic sediments or alternatively a broad deep area of very conductive overburden.

Type 5 is characterized by a positive single anomaly on the very early channels but which switch to negative readings in later channels. It has not been modeled adequately yet. The negative part is believed to be an induced polarization effect and the current practice is to interpret these as a body of disseminated conductive particles.

GeoTech was contracted to conduct EM Plate Modeling on two flight lines, L1120 and L1160, using Maxwell<sup>™</sup> software to estimate the number of EM conductors, their depth, thickness and dip.

## 8.1.2 Discussion of Results

The EM channel 30 amplitude map (Figure 9) show a conductive band crossing the claim block from east to west and extending beyond its boundaries in both directions. The conductive band is strongest at the west end and appears to be resolved into two parallel conductor axes, approximately 200 metres apart, which are good quality anomalies with large amplitudes and high signal to noise ratios. The anomalies to the east are weaker with lower amplitude and less conductivity.

In an attempt to confirm the two parallel conductors, EM Plate Modeling was conducted on two flight lines, L1120 and L1160, using Maxwell<sup>™</sup> software. Only one plate was found using the software, however, it fits closely with the northern VTEM conductor on claim S-111425 (yellow line, Figure 9). The east end of the Maxwell plate also fits with the Cogema Moving Loop EM anomaly.

The VTEM survey did not confirm the presence of a conductor in the area of drill hole HL-71. The interpretation of parallel VTEM conductors north and south of HL-71 is evident in the EM channel 30 results (Figure 9). Since HL-71 primarily encountered pegmatitic rock in the basement and only minor graphitic material, it is considered that this hole missed its intended target.

![](_page_20_Figure_0.jpeg)

Figure 9: EM Channel 30 Results – Henday South Block

The western parallel conductors correlate well with a magnetic 'low' anomaly (Figures 10 and 11). The magnetic response is slightly higher to the east where holes HL-71 and HLH8-43 were drilled and where the anomalies are weaker with lower amplitude and less conductivity.

The broad low magnetic body within the Henday claims is interpreted as pelitic gneiss and the higher magnetic areas on either side are thought to be inclusions of higher magnetic rock types, probably granite (Figure 5). The lateral displacement of the magnetic low is best explained by a north-south fault that also appears to be displacing or breaking up the EM conductors.

## 9. DATA VERIFICATION

Data quality control and quality assurance, and preliminary data processing were carried out by Geotech Ltd. on a daily basis during the acquisition phase of the project. Final reporting, data presentation and archiving were completed from the Aurora office of Geotech Ltd. in July, 2010. Roger Watson, Purepoint's Chief Geophysicist, reviewed the raw data results on a line-by-line basis looking for noise and other quality issues and confirmed the data was good.

## **10. ADJACENT PROPERTIES**

The Henday project is completely surrounded by 13 claims of the Waterbury property (Figure 12) held by Denison Mines (60%) and Korea Waterbury Uranium Limited Partnership (40%). The Waterbury property hosts known mineralization locally up to  $40\% U_3O_8$  within thin lens in the J Zone deposit located 15 km east.

The McClean Lake mine is located 20 km southwest of the Henday claims and is owned by Areva Resources Canada Inc. (70%), Denson Energy Inc. (22.5%) and OURD Canada Co.Ltd. (7.5%). Open pit mining at McClean Lake began with the JEB orebody in 1995 and was followed by mining of the Sue C, A, E and B orebodies. To date almost 50 million pounds of  $U_3O_8$  have been produced at McClean Lake. (Areva website).

The Henday project is completely surrounded by 13 claims of the Waterbury property held by Denison Mines (60%) and Korea Waterbury Uranium Limited Partnership (40%). The Waterbury property hosts known mineralization locally up to 40%  $U_3O_8$  within thin lens in the J Zone deposit located 15 km east.

The Henday claims are strategically located near known high grade uranium deposits. The Midwest Lake mine project (41.0 million pounds  $U_3O_8$  at an average grade of 5.5%) and the Midwest A (MAE) Zone, where Denison Mines recently reported results of 10.5 meters grading 12.4%  $U_3O_8$  to 22.6 meters grading 26.7%  $U_3O_8$ . Rio Tinto's Roughrider Deposit contained a NI 43–101 compliant combined resource (indicated and inferred) of

![](_page_22_Figure_0.jpeg)

Figure 10: Total Magnetic Intensity – Henday South Block

![](_page_23_Figure_0.jpeg)

Figure 11: First Vertical Magnetic Derivative – Henday South Block

![](_page_24_Picture_0.jpeg)

Figure 12: Adjacent Properties with Airborne Magnetics - Tilt Derivative

57.9 million pounds  $U_3O_8$  as of May 17, 2011. The Dawn Lake deposits are located approximately 6 kilometres east of the Roughrider deposit, are owned by Cameco (57%) and Areva (23%), and have an indicated resource of 8,100 tonnes at 4.42%  $U_3O_8$ .

## **11. INTERPRETATIONS AND CONCLUSIONS**

The VTEM survey outlined a conductive band crossing the Henday claim block from east to west and extending beyond its boundaries in both directions. The conductive band is strongest at the west end and appears to be resolved into two parallel conductor axes, approximately 200 metres apart, which correlate well with a favourable magnetic 'low' anomaly and remain untested.

The VTEM survey did not confirm the presence of a conductor in the area of the single drill hole, HL-71, that was drilled within the eastern portion of the property. Since hole HL-71 primarily encountered pegmatitic rock in the basement and only minor graphitic material, it is considered that this hole missed its intended target.

## **12. RECOMMENDATIONS**

The Henday property has a favorable geologic setting and warrants further exploration. An exploration program and budget is recommended (Table 2).

## Stage 1: Summer 2016:

A resistivity survey over the VTEM conductors areas is planned to define possible zones of hydrothermal alteration within the Athabasca sandstone and to help locate fault zones. A good portion of the survey would be conducted on Henday Lake and would require the use of boats. Linecutting will also be required.

Stage 2 is not contingent on positive results from Stage 1.

## <u>Stage 2: Winter 2016 / 2017:</u>

Four geologic drill fences comprised of two holes each on the highest priority geophysical targets. An eight hole, 5,200 meter drill program is recommended.

#### **Table 2: Proposed Henday Exploration Budget**

#### <u>Stage 1</u> Summer 2016

Mob/Demob of Field Crews		30,000
Linecutting	25 line/kms @ \$1,000/km	25,000
DC Resistivity	30 line/kms @ \$3,300/km	99,000
Hotel Costs (Points North)	25 days @ \$1600/day	40,000
Report - Geophysics		15,000
	Subtotal	209,000
	Contingency (5%)	11,000
	Management Fees (10%)	21,000
	Total Stage 1 =	241,000
Stage 2		

# Winter 2016/2017 Mob/Demob of Drill/Field Crews Diamond Drilling 8 holes, 5200 m @ \$150/m Technical Staff Geologist & Technician Hotel Costs 60 days @ \$2000/day Analytical Costs 1600 samples @ \$80/sample Report - Drilling Subtotal Contingency (5%) Management Fees (10%)

Estimate for Total Stages 1 And 2 =	\$1,613,000

70,000

780,000

70,000

120,000

128,000

1,193,000

25,000

60,000

119,000

1,372,000

Total Stage 2 =

#### **13. REFERENCES**

- Annesley, I.R., Madore, C., Shi, R., and Krogh, T.E. (1997): U-Pb geochronology of thermotectonic events in the Wollaston Lake area, Wollaston Domain: A summary of 1994-1996 results; in Summary of Investigations 1997: Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 97-4, p162-173.
- Eriks, S. and Chiron, A. (1994): COGEMA Resources Inc., Henday Lake Project, 1994 Winter Activities and Results: Saskatchewan Geological Survey, Saskatchewan Industry and Resources, Assessment Report 74I09-SE-0055-R, 83p.
- Fuchs, H., and Hilger, W. (1989): Kiggavik (Lone Gull): an unconformity related uranium deposit in the Thelon Basin, Northwest Territories, Canada, in Muller-Kahle, E., ed., Uranium Resources and Geology of North America: Vienna, International Atomic Energy Agency-TECDOC-500, p. 429–454.
- Hobson, G.D. and MacAuley, H.A. (1969): A seismic reconnaissance survey of the Athabasca Formation, Alberta and Saskatchewan; Geological Survey of Canada, Paper 69-18, 23p.
- Hoffman, P. (1988): United plates of America, the birth of a craton: Early Proterozoic assembly and growth of Lautentia; Annu. Rev. Earth Planet. Sci., v16, p543-603.
- Hoffman, P. (1990): Subdivision of the Churchill Province and extent of the Trans-Hudson Orogen; in The Early Proterozic Trans-Hudson Orogen of North America, J.F. Lewry and M.R. Stauffer (eds.): Geological Society of Canada, Special Paper 37, pp.15-40.
- Jefferson, C.W., Thomas, D.J., Gandhi, S.S., Ramaekers, P., Delaney, G., Brisbin, D., Cutts, C., Portella, P., and Olson, R.A. (2007): Unconformity-associated uranium deposits of the Athabasca Basin, Saskatchewan and Alberta; *in* EXTECH IV: Geology and Uranium EXploration TECHnology of the Proterozoic Athabasca Basin, Saskatchewan and Alberta; by Jefferson, C W (ed.); Delaney, G (ed.); Geological Survey of Canada, Bulletin no. 588; p. 23-67.
- Jefferson, C.W., Percival, J.B., Bernier, S., Cutts, C., Drever, G., Jiricka, D., Long., D., McHardy, S., Quirt, D., Ramaekers, P., Wasyliuk, K., and Yeo, G.M. (2001): Lithostratigraphy and mineralogy in the eastern Athabasca Basin, Northern Saskatchewan-Progress in Year 2 of EXTECH IV; in Summary of Investigations 2001, Volume 2: Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 2001-4.2, p. 272-290.
- Kirchner, G. and Tan, B. (1977): Prospektion, exploration und entwicklung der uranlagerstatte Key Lake, Kanada: Erzmetall, v30, p583-589.
- Lewry, J.F. and Collerson, K.D. (1990): The Trans-Hudson Orogen: extent, subdivision and problems. In: Lewry, J.F., Stauffer, M.R. (eds.), The Early Proterozoic Trans-Hudson Orogen of North America. Geol. Soc. Can., Spec. Pap. 37, pp 1-14.
- Lewry, J.F. and Sibbald, T.I.I. (1980): Thermotectonic evolution of the Churchill Province in northern Saskatchewan: Tectonophysics, 68, p. 45-82.
- Lewry, J.F. and Sibbald, T.I.I., and Schledewitz, D.C.P. (1985): Variation in character of Archean rocks in the western Churchill Province and its Significance. In: L.D. Ayres, P.C. Thurston, K.D. Card and W. Weber (eds.), Evolution of Archean Supracrustal Sequences. Geol. Soc. Can., Spec. Pap. 28, pp 239-261.

- Long, D.G.F., Williamson, C., Portella, P., and Wilson, S. (2000): Architecture and origin of fluvial facies in the Athabasca Group at McLean Lake, northern Saskatchewan; in Summary of Investigations 2000, Volume 1: Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 2000-4.
- Matthews, R., Koch, R., Leppin, M., Powell, B., and Sopuck, V. (1997): Advances in integrated exploration for unconformity uranium deposits in western Canada; *in* Geophysics and Geochemistry at the Millennium, Proceedings of Exploration 97, (ed.) A.G. Gubins; Fourth Decennial International Conference on Mineral Exploration, September 15-18, 1997; Prospectors and Developers Association of Canada, Toronto, Ontario, p. 993-1002.
- Meju, M.A. (1998): Short Note: A simple method of transient electromagnetic data analysis, Geophysics, 63, pp 405–410.
- Pagel, M., Poty, B., and Sheppard, S.M.F. (1980): Contribution to some Saskatchewan uranium deposits mainly from fluid inclusion and isotopic data; in Ferguson, J. and Goleby, A.B., eds., Uranium in the Pine Creek Geosyncline: IAEA, p. 639-654.
- Quirt, D. (1989): Host rock alteration at Eagle Point South: Sask. Resear. Council, Publi. No. R-855-1-E-89, 95p.
- Rainbird, R.H., Stern, R.H., and Jefferson, C.W. (2002): Summary of detrital zircon geochronology of the Athabasca Group, Northern Saskatchewan and Alberta; in Summary of Investigations 2002, Volume 2: Saskatchewan Geological Survey, Saskatchewan Department of Industry resources, Misc. Report 2002-4.2, CR-ROM, 3 p.
- Ramaekers, P. (1976): Athabasca Formation, northeast edge (64L, 74I, 74P): Part I, reconnaissance geology; in Summary of Investigations 1976: Saskatchewan Geological Survey, Sask. Dep. Miner. Resour., Misc. Rep. 76-4, p73-77.
- Ramaekers, P. (1978a): Athabasca Formation, southwestern edge: Part I, reconnaissance geology (NTS area 74F, 74K); in Summary of Investigations 1978: Saskatchewan Geological Survey, Sask. Miner. Resour., Misc. Rep. 78-10, p124-128.
- Ramaekers, P. (1978b): Reconnaissance geology of the interior Athabasca Basin; in Summary of Investigations 1978: Saskatchewan Geological Survey, Sask. Miner. Resour., Misc. Rep. 78-10, p133-135.
- Ramaekers, P. (1979): Stratigraphy of the Athabasca Basin; in Summary of Investigations 1979: Saskatchewan Geological Survey; Saskatchewan Minerals Resources, Miscellaneous Report 79-10, p. 154-160.
- Ramaekers, P. (1980): Stratigraphy and tectonic history of the Athabasca Group (Helikian) of Northern Saskatchewan; in Summary of Investigations 1980: Saskatchewan Geological Survey, Saskatchewan Minerals Resources, Miscellaneous Report 80-4, p. 99-106.
- Ramaekers, P. (1990): The geology of the Athabasca Group (Helikian) in Northern Saskatchewan: Saskatchewan Energy and Mines, Report 195, 49 p.
- Ramaekers, P. (2003a): Phases 1 to 4 Ex-Tech IV Study of the Early Proterozoic Athabasca Group, Northeastern Alberta: Alberta Energy and Utilities Board, EUB/AGS Special Report 61.
- Ramaekers, P. (2003b): Development, stratigraphy and summary diagenetic history of the Athabasca Basin, early Proterozoic of Alberta and its relation to Uranium Potential: Alberta Energy and Utilities Board, EUB/AGS Special Report 62, 36 p.

- Ramaekers, P. and Hartling, A.A. (1979): Structural geology and intrusive events of the Athabasca Basin and their bearings on the uranium mineralization; in Parslow, G.R., ed., Proceedings of a Symposium on Uranium Exploration Techniques: Saskatchewan Geological Society, Special Publication No 4, p. 221-234
- Ruzicka, V. (1997): Metallogenetic features of the uranium-polymetallic mineralization of the Athabasca Basin, Alberta, and a comparison with other parts of the basin; in Macqueen, R.W., ed., Exploring for Minerals in Alberta: Geological Survey of Canada geoscience contributions, Canda-Alberta Agreement on mineral development (1992-1995): Geological Survey of Canada, Bulletin 500, p. 31-72.
- Rhys, D., Eriks, S. and Horn, L. (2010): A new look at basement-hosted mineralization in the Horseshoe and Raven deposits, eastern Athabasca Basin; Oral presentation at the Saskatchewan Geological Survey Open House, Saskatoon, SK, Nov. 29, 2010.
- Saskatchewan Geological Survey (2003): Summary of Investigations 2003 Volume 1, Saskatchewan Geological Survey; Misc. Rep. 2003-4.1.
- Sibbald, T.I.I. and Quirt, D.H. (1987): Uranium deposits of the Athabasca Basin Field Trip Guide: Sask. Resear. Council, Publi. No. R-855-1-G-87, 73p.
- Thomas, D.J., Matthews, R.B., and Sopuck, V. (2000): Athabasca Basin (Canada) unconformity type uranium deposits: exploration model, current mine developments and exploration directions; *in* Geology and Ore Deposits 2000: The Great Basin and Beyond, Geological Society of Nevada Symposium Proceedings, Reno, Nevada, (ed.) J.K. Cluer, J.G. Price, E.M. Struhsacker, R.F. Hardyman, and C.L. Morris, May 15-18, 2000, v. 1, p. 103-126.
- Wheatley, K., Murphy, J., Leppin, M., and Climie, J.A. (1996): Advances in the Genetic Model and Exploration Techniques for Unconformity-type Uranium Deposits in the Athabasca Basin; in Ashton, K.E., Harper, C.T., eds., MinExpo '96 Symposium – Advances in Saskatchewan Geology and Mineral Exploration: Saskatchewan Geological Society, Special Publication No 14, p. 126-136.
- Yeo, G. and Potter, E. (2010): Reducing Mechanisms Potentially Involved in Formation of Athabasca Basin Uranium Deposits: Relevance to Exploration; Oral presentation at the Saskatchewan Geological Survey Open House, Saskatoon, SK, Nov. 29, 2010.
- Yeo, G., Jefferson, C.W., Ramaekers, P. (2002): A preliminary comparison of Manitou Falls Formation stratigraphy in four Athabasca Basin deposystems; in Summary of Investigations 2002, Volume 2: Saskatchewan Geological Survey, Sask. Industry Resources, Misc. Report 2002-4.2, CR-ROM, Paper D-7, 14p.
- Yeo, G., Jefferson, C.W., Percival, J.B., Jiricka, D., McHardy, S., Munholland, P., Collier, B., Gaze, A., and Williamson, C. (2000): Practical stratigraphy and flashy sedimentology in the Paleoproterozoic Manitou Falls Formation, eastern Athabasca Basin, Saskatchewan p an EXTECH IV progress report; in Summary of Investigations 2000, Volume 2: Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 2000-4.2, 123-139.

## 14. DATE AND SIGNATURE

This NI 43-101 technical report titled "Henday Uranium Project, Northern Saskatchewan, Canada" and dated October 21, 2015, was prepared and signed by the following author:

## "Scott Frostad" (Signed and sealed)

Scott Frostad, BSc, MASc, P.Geo.

Dated at Saskatoon, SK October 21, 2015

**APPENDIX 1** 

STATEMENT BY QUALIFIED PERSON

I, Scott R. Frostad, of 362 Thode Avenue, Saskatoon, Saskatchewan, Canada S7W 3B9 do hereby certify that:

- I am a registered as a Professional Geologist with the Association of Professional Engineers and Geoscientists of Saskatchewan (Member Number 12878) and the Association of Professional Engineers and Geoscientists of British Columbia (Member Number 25020)
- I am a graduate of the University of Western Ontario with a Bachelor of Science Degree in Geology (1984) and of the University of British Columbia with a Master of Applied Science Degree in Mining and Mineral Process Engineering (1999).
- 3. I have practiced my profession continuously since 1984 and have experience in the search for uranium, gold, and base metals in Canada.
- 4. I am currently employed as the Vice President of Exploration for Purepoint Uranium Group Inc. and am also a director and shareholder of the company.
- 5. That I have read National Instrument 43-101 and Form 43-101F1 and consider myself a "qualified person" for the purpose of the Instrument.
- 6. That I am responsible for the preparation of the technical report dated November 29, 2012 entitled "Technical Report on the Henday Uranium Project, Northern Saskatchewan, Canada"
- That I have been involved with the Henday Project since November, 2008. His most recent visit to the site was from Points North by helicopter on July 16<sup>th</sup>, 2013.
- 8. For this report, I have relied on assessment reports currently on file with Saskatchewan Industry and Resources and recent exploration reports of Purepoint Uranium Group Inc.
- 9. That, as of the date of this certificate, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
- That I consent to the public filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes. I also consent to an extraction from, or a summary of, the Technical Report.

Dated at Saskatoon, Saskatchewan, this 21<sup>st</sup> day of October, 2015.

#### (Signed and sealed) "Scott Frostad"

Scott Frostad, BSc, MASc, P.Geo