

# **Uranium Report 2018**

## Everything you need to know about uranium!



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## **Preface**

#### Dear Readers.

on the following pages, we present to you with pleasure the second update of our uranium report. Uranium is a "hot" topic and many people don't like to say the least and some hate it. But without uranium there would be a major problem with the base load energy supply in the world and e-mobility would be still a dream of the future. Swiss Resource Capital AG has made it its business to topically and comprehensively inform metals and commodity investors, interested parties and the individual who wants to become an investor in various commodities and mining companies. On our website www.resource-capital.ch you will find 20 companies and information as well as articles related to commodities. Our series of special reports started with lithium and silver. Now we move on to uranium as it is the energy metal of the future whether we like it or not. Wind and solar energy are very often not cost effective nor really energy efficient considering the complete energy balance including the amount of energy used to build it. This report shall give the reader an idea about the real facts of the uranium industry and the energy supply from nuclear power worldwide. China especially needs nuclear power plants to solve its air pollution problems because most of the electrical energy is generated by coal power plants. Today around 450 nuclear power plants are in operation in more than 30 countries globally and 70 are under construction. Over 163 nuclear power plants are planned or ordered by 2040 and if we all want to drive with emission free e-cars. bikes or motor scooters we need those nuclear power plants urgently as we cannot reliably generate the necessary extra power with wind and solar alone. Concurrently several of the top uranium producers have announced to reduce their production by 2018 to lift the uranium spot price to a level that is necessary for the survival of most of the companies and to put pressure on the energy companies to renegotiate soon expiring delivery contracts.

We also interviewed the experts Scott Melbye and Dr. Christian Schärer about the uranium markets and the future prospects. Of course, we present you some interesting companies from this industry sector with numbers and facts. The combined market cap of all uranium companies is only around US\$10 billion worldwide, a crazy small market with a fascinating outlook. Climate change and clean air require nuclear energy. "There's really only one technology that we know of that supplies carbon-free power at the scale modern civilization requires, and that is nuclear power" - Ken Caldeira of Stanford University's Department of Global Ecology.

Commodities are the base of our economic cohabitation. Without commodities there are no products, no technical innovations and no real economic life. We need a reliable and constant base load energy supply in our highly industrialized world. With our special reports we would like to give you the necessary insights and inform you comprehensively.

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Yours Jochen Staiger



Jochen Staiger is founder and CEO of Swiss Resource Capital AG. located in Herisau. Switzerland. As chief-editor and founder of the first two resource IP-TV-channels Commodity-TV and its German counterpart Rohstoff-TV, he reports about companies, experts, fund managers and various themes around the international mining business and the correspondent metals



Tim Roedel is chief-editorial- and chief-communications-manager at SRC AG. He has been active in the commodity sector since 2007 and held several editor- and chief-editor-positions, e.g. at the publications Rohstoff-Spiegel. Rohstoff-Woche, Rohstoffraketen, Wahrer Wohlstand and First Mover. He owns an enormous commodity expertise and a wide-spread network within the whole resource sector.

## Satisfying the Hunger for Energy and improving the Carbon Footprint at the same time? – Nuclear Energy can combine both!



#### The global energy demand has multiplied since the end of the 1980s, especially due to the emerging countries and in particular the BRIC countries Brazil. Russia. India and China. About 11.5% of the total energy demand is met by nuclear energy. Fossil fuels like coal and oil are still burned for energy production. The difference in the situation of 25 years ago is the increasing demand for reduction of CO<sub>a</sub> emissions and the more noticeable phenomenon of "global warming". In particular, the energy consuming industrial nations and the emerging countries must increase their energy efficiency and improve their carbon footprint in the coming years. This cannot be achieved by burning coal and oil. The alternatives are renewable energies - which need tremendous time and cost expenditures - or nuclear energy which can provide lot of energy CO<sub>2</sub> neutral. This possibility of the fast and almost clean energy generation has long been recognized by some countries who are increasing the construction of new nuclear power plants.

#### Supply Gap inevitable in the future

Today only 90% of the global uranium demand can be satisfied by producing mines. The number of nuclear reactors will double in the coming 10 to 20 years. The previous main supplier of uranium -Russia's nuclear weapons arsenal doesn't exist anymore. Where will the needed uranium come from? The existing mines can be expanded and new mines opened but not at the current uranium spot price of around US\$ 21 per pound. An enormous supply gap seems to be inevitable at least at the current market price. That is the situation investors should be aware of – a sharply rising uranium spot price and an inevitable connected second uranium boom.

## What is Uranium?

#### One of only two elements that can sustain nuclear fission chain reactions

Now for some information about the element uranium itself. Uranium was named after the planet Uranus and is a chemical element with the element symbol U and the atomic number 92. Uranium is a metal whose isotopes are radioactive. Naturally occurring uranium in minerals is comprised of the isotope 238U (99.3%) and 235U (0.7%).

The uranium isotope 235U is fissile by thermic neutrons and besides the very rare plutonium isotope 239Pu, the only known natural occurring nuclide that is suitable for nuclear fission chain reactions. Therefore, it is used as a primary energy source in nuclear power plants and nuclear weapons.

#### Occurrence

Uranium does not occur pure in nature but always in form of oxides in minerals. There are some 230 uranium minerals that could locally be of economic importance.

There is a large range of uranium deposits from magmatic hydrothermal to sedimentary types.

The highest uranium grades are encountered in unconformity-type deposits with average uranium grades of 0.3 to 20%. These deposits are mined by the two largest uranium producers. The largest single uranium resource in the world is Olympic Dam with a proven uranium content of more than 2 million tons at an average uranium grade of 0.03%. The first industrial scale uranium mine in the world is in Jachymov (Czech Republic) produced from hydrothermal veins.

According to the International Atomic Energy Agency (IAEA) the largest uranium reserves are in the USA, Niger, Australia, Kazakhstan, Namibia, South Africa, Canada, Brazil, Russia, Ukraine and Uzbekistan.

## Short outline of the history of the commercial uranium industry

#### From the beginnings to the first atomic bomb

Uranium was produced for the first time as a by-product in Saxon and English mines at the beginning of the 19th century. Until the 1930s there was little use for the radioactive raw material. It was used for coloring glass and ceramics as well as in photography. The shadowy existence of the uranium changed suddenly as Hitler came into power in Germany, and an unprecedented spiral of armament and testing of new weapons technologies began. Above all the "Third Reich" accelerated the expedited mining of uranium. These mining activities were exclusively in the region of Jachymov (the German name is Sankt Joachimstal) in todav's Czech Republic. The German supply submarine U-234, that was seized by two U.S. destroyers two days after the end of the war and towed to the USA had uranium ore from Jachymov on board. According to leading U.S. scientists, parts of this uranium ore were used to build the Hiroshima atomic bomb.

#### The Cold War makes Uranium acceptable

The newly created uranium sector had its biggest boost after the Second World from mining to enrichment.

#### Rise and temporary slump of civilian use of uranium

War due to the beginning of the Cold war. The victorious powers of the Second World War, which rivaled for global dominance, now needed the highest possible number of nuclear weapons and also vast quantities of uranium. This resulted in a systematic exploration for useable uranium occurrences in all states of the USA. The previous Atomic Energy Commission (AEC) had the exclusive right to buy all of the produced uranium in the USA for over three decades. The greed for more and more nuclear armament led to extreme high prices per pound of uranium for those days. As a result, the search for uranium was conducted in all U.S. states in the 1950s and 1960s. The USA had a strong uranium industry at the end of the 1960s that was a global leader

The Soviet Union initially expanded existing uranium mines in East Germany and Czechoslovakia. This was necessary because Russia had no knowledge of uranium occurrences in its own country until the end of the Second World War. In the 1950s and 1960s Russia began with a uranium exploration which led to large discoveries in Siberia and Kazakhstan.

Already in 1953, the former U.S. president Eisenhower conceived a program for the civilian use of uranium. "Atoms for Peace" should find their way in the energy generation, medicine, traffic and agriculture and resulted in the demand for additional amounts of uranium. The civilian nuclear power had its beginning and was guickly advanced by other nations.

After a 25-year long uranium boom concerns have been increasingly voiced warning of the appearing lack of security in many nuclear power plants. After the almost Maximum Credible Accident in the American nuclear power plant Three

Historical development of the uranium prices. the uranium production and important events. (Source<sup>•</sup> Laramide Resources)



Mile Island and the Super Maximum Credible Accident in Chernobyl, the general public turned its back more and more to nuclear power. In addition, the collapse of the Soviet Union resulted in a building stop of nuclear weapons and therefore no further uranium was needed.

Many nations decided not to install new nuclear reactors and some countries switched off existing reactors. Almost 90% of all uranium mines were closed because the market price for uranium had fallen to US\$ 5 per pound in the meantime. The uranium for the operation of the still existing reactors came from old stockpiles or Russia's disarmament proaram.

## **Uranium Production**

Basically, there are two uranium production methods: the conventional production and the production via in-situ leaching or rather in-situ recovery (ISR). The exact mining method depends on the properties of the ore body, (like depth, shape, ore content, tectonic) and the type of country rock as well as other factors.

#### **Conventional Production**

The majority of the uranium is mined in underground mines. The deposits are developed via shafts, drifts, ramps or spiral declines. Ingressing groundwater and the ventilation of the mine often pose problems. The exact production method is chosen according to the characteristics of the deposit. The form of the orebody and the distribution of the uranium in it are especially pivotal. An orebody can be specifically mined by underground methods where less waste material is produced as by open pit methods. Ore bodies near the surface and very large ore bodies are primarily mined by open pit mining methods. This enables the use of low cost large equipment. Modern open pit mines can have a depth from a few to over 1,000 m and a diameter of several kilometers. Open pit mines often produce large amounts of waste material. Like in underground mines, large amounts of water have to be drained from the open pit however the ventilation is less problematic.

#### **ISR Mining**

The ISR method uses injection wells to pump water and small amounts of CO. and oxygen into the sandstone horizons to leach out the uranium. From recovery wells, the pregnant solution is pumped to the surface for processing. The whole method takes place completely underground. The advantages of this method are obvious: there are no large earth movements like in open pit mines, no waste rock stockpiles or tailings ponds for heavy metals and cyanide. At the surface only the wells are visible and the area around the wells can be used without constraints for farming. With the ISR method low grade deposits can be economically mined, the capital costs for the mine development is significantly reduced. The whole method can be implemented with a minimum of manpower which reduces drastically the operating costs. According to a study of the World Nuclear Association, 25% of the produced uranium outside of Kazakhstan comes from ISR mines.

## The current status of the Uranium Market

But how does today's uranium market look like? It is certain that the lack of investments into the procurement structure of the past 40 years - in the infrastructure of mines and processing plants - will very likely prove to be a windfall for the uranium investors in the future! Nevertheless, despite opposition against nuclear energy since the catastrophe in Chernobyl and even more after the events in the nuclear plants in Fukushima (Japan) the number of plants worldwide is at a record high. Only 30 countries currently operate (as of March 1st, 2018) 449 nuclear reactors with a total

gawatts.

The current leading nuclear nation are the USA with 99 running reactors. But this is only half the truth because emerging countries like China and India need more and more energy and have been focusing on a massive expansion of their nuclear power capacities for some time. It is of no surprise that currently 56 additional nuclear reactors are under construction. The planning was completed for an additional 160 reactors and 350 reactors are in the planning phase. After a 20 year stop a renaissance of the uranium sector is pending - especially in China.



electrical net output of around 392.5 gi-

Overview of currently operating reactors per country (Source: www.iaea.org/PRIS)

The total Number of Reactors includes also 6 reactors in Taiwan, China



Overview of reactors currently under construction per country (Source: www.iaea.org/PRIS)

#### **Demand situation**

## China is only at the beginning of the nuclear age

While many self-appointed experts have predicted the end of the nuclear age, it is only in the development phase in the most populous country in the world. China is operating 39 reactors where most of the electricity is generated by coal power plants. Since the beginning of 2015, 15 new nuclear reactors were put into service. The expansion of the nuclear energy sector in China is enormous and occurs with breathtaking speed! Over two thirds of the Chinese energy consumption is still met by coal power plants. Although China is mining its own coal deposits on a large scale, it is, besides India, one of the biggest coal importer of the world. 30% of the globally produced coal is imported by these two countries. A certain dependency from these coal imports is obvious. This is the point China's leadership wants to avoid. The obligation to implement climate friendly and clean possibilities for energy generation is only secondary matter. In the fall of 2015 the state-owned power

plant manufacturer Power Construction Corporation of China (Beijing) predicted the rise of its country among the biggest user of nuclear energy worldwide the Chinese government is planning the construction of more than 80 nuclear reactors in the coming 15 years and more than 230 new nuclear reactors until 2050. According to information from China Power the new five-year-plan for the energy sector whose approval by the National People's Congress has been planned in March 2016 provides for a faster expansion of the nuclear capacity: to date the capacity was to increase to 58 gigawatts during the coming 5 years, but now over 90 gigawatts are under discussion. In the year 2005 the planning was 40 gigawatts until 2020. Until 2030 110 reactors should be in operation. In the year 2016 alone China started the construction of 6 new reactors. In total 18 nuclear reactors are in the construction phase. According to concepts for the energy sector initial US\$ 75 billion are budgeted for the nuclear expansion. In a second step China's nuclear power generation should be expanded to 120 – 160 gigawatts by 2030! While in Germany the elimination of electricity generation from nuclear energy was decided after the events in Fukushima, China has decided the opposite and will do everything possible to produce electricity by nuclear fission. In light of the rising energy demand - due to the increasing prosperity – and a catastrophic carbon footprint China's approach seems only logical.

## India expands civil nuclear program massively

Besides China, India is the second of the so called "BRIC-Countries" which is pursuing a similar course. The second most populous country in the world plans to expand its nuclear energy capacity by 70 gigawatts. In contrast, India's current total electrical net output is only around 6.2 gigawatts.

But India has slept through the entry into the nuclear energy and is now desperately trying to search for mineable deposits but has to expand its overloaded power grid at the same time. A tenfold increase of the nuclear energy capacities not only seems to be reasonable but also very necessary.

India doesn't have significant uranium deposits. A tenfold expansion of their own nuclear energy capacities would mean an increase of the total global nuclear electricity generation by 10%.

But where will the additionally needed uranium come from? Currently, only a few of the 22 Indian nuclear reactors are operating with full power. While Japan, China, Russia and South Korea could secure uranium resources worldwide, India missed out completely. Only recently has India entered into offtake agreements with companies from the USA, Canada, Namibia, Kazakhstan, Russia, Great Britain und South Korea.

Currently 6 nuclear reactors are under construction in India and 20 additional will follow until 2030.

#### Russia and Brazil with increasing nuclear capacity

The two remaining BRIC-Countries, Russia and Brazil have also announced a massive expansion of their nuclear power plants. Currently Russia operates 36 nuclear reactors with around 27.9 gigawatts. 6 reactors are in the construction phase. Furthermore, Russia plans the construction of an additional 26 nuclear power plants which should increase the percentage of the nuclear energy in the Russian energy mix from currently 16% to 19%. In a second step Russia wants to increase this quota to 25%. By the year 2030 Russia wants to build 26 reactors. Currently Brazil is operating only one nuclear power plant with two reactors. A third reactor is under construction and is expected to be connected to the power grid in 2018. The construction of 4 additional reactors is expected until 2030.

# Rising global expansion of nuclear energy

Besides the 30 nations with operating nuclear reactors, 17 additional countries are planning to install nuclear power plants. Among those countries are Egypt, the United Arab Emirates (four reactors under construction), Jordan, Turkey and Indonesia.

## The USA is close to an energy collapse

The USA has a special status. With 99 reactors, they have by far the biggest nuclear power plant fleet in the world. Nevertheless, the USA is threatened by a collapse of the energy supply. The USA is still the country with the highest electricity consumption per capita. And the hunger for energy of the Americans is increasing. In addition, the USA is facing the auestion how to fulfil the CO<sub>2</sub>-reductions which were agreed to in Kvoto and Paris. Because many of the coal power plants were built in the 1950s and 1960s, they are working inefficiently and uneconomically. They have to be shut down sooner rather than later. The electricity consumption is rising continuously. The USA has no choice but to increase the number of its nuclear reactors during the coming years. Of course, photovoltaic plants, wind farms, hydroelectric power plants or geothermic energy provide climate friendly energy, but these energy producers can offer only a partial solution for the pressing energy problems. They are very expensive and their performance is deOverview of currently operating reactors (blue), currently shutdown reactors (grey), reactors under construction (green) and permanently shutdown reactors (red). China, India, South Korea, Russia, the United Arab Emirates and the USA are currently working increased at the expansion of their reactor fleet. (Source: www.iaea.org/PRIS)



pendent on the time of day and weather. Nuclear energy is therefore the only climate friendly energy generating possibility. In light of the amount of additional electricity demand during the coming two to three decades regenerative energies can only be an addition to the total energy mix.

Therefore, a law for expansion and funding of the energy generation by nuclear energy was created within the "Clean Energy Act of 2009" a program to provide carbon free energy. Both U.S. governing parties worked on a US\$ 18.5 billion plan for doubling of the nuclear power capacities until 2030. At the beginning of 2010 President Obama announced that the U.S. government will provide in the 2011 federal budget additional funds of US\$ 36 billion of government guarantees for the construction of a new generation of nuclear power plants. This would be a tripling of the originally planned budget. During the past years an application for lifetime extension of 60 years total operating time was made for over 60 U.S. nuclear reactors. In addition, there are 40 applications for the construction of new nuclear power plants that should be

connected to the power grid by 2025. Until now only 2 plants are under construction and additional 14 are in a concrete planning phase.

## Long-term supply contracts expire soon

The previous cycle of contract conclusions which was dominated by the uranium price peaks of the years 2007 and 2010 was the reason that the plant operators signed contracts at higher price levels and very long durations of 8 to 10 vears. On the one hand, these old contracts are ending and on the other hand the plant operators didn't look for a replacement of such deliveries. The forward contracts of the plant operators are declining and therefore the required quantities for which there are no contractual obligations are increasing and have to be contractually secured in the future. As expected the unmet demand will be just less than one billion pounds of U<sub>2</sub>O<sub>2</sub> in the coming 10 years. At the same time, over 70% of the expected reactor demands are not contractually secured until 2025. For a little traded commodity like uranium this return to more "normal" long term contracts could put tremendous pressure on the long-term prices as well as on the spot prices. The international plant operators are showing more and more buying signals which are encouraging.

#### Conclusion

Fact is that currently 449 reactors are in operation and an additional 300 reactors will be added until 2030. 56 plants are already under construction and 150 additional plants are in the concrete planning phase. Even if half of the old reactors should be shut down until then 600 to 700 reactors would be in operation in 2030.

Furthermore, 90% of the long-term delivery contracts between the uranium producers and the energy generating companies are expiring by the end of 2020 which could get the established nuclear energy nations like the USA into trouble especially.

## The Supply Situation The established producers are running out of air

The established uranium producing nations Australia, Canada, Russia and Niger have problems to expand their production further. All four countries produced in total just 26.835 tons uranium in 2016. In 2009, they produced 28.000 tons uranium. Australia has problems with BHP Billiton's Olympic Dam Mine, the by far most profitable uranium mine in this country. In Canada, the production start in Cameco's MacArthur River Mine had to be postponed many times due to repeated groundwater ingresses. In Niger planned mine openings also had to be postponed.

# The uranium production in the USA has hit rock bottom

The situation in the USA is even worse. Although the Obama government has approved a US\$ 54 billion program for the funding of the nuclear energy indust-



Overview, age of currently operating reactors. Many will be (have to be) replaced by more powerful ones.

(Source: www.iaea.org/PRIS)



Uranium Energy's Hobson plant is ready for the re-start. (Source: Uranium Energy)

ry, it is not clear from where the necessary uranium will be derived. The uranium industry in the USA is only a shadow of the past. During the past 40 years there have been no investments in development of new deposits and almost 95% of the needed uranium was derived from the disarmament programs. The US-American nuclear reactors consume 18.000 tons uranium per year. An expansion of the capacities would also be an increase of the needed amount of uranium. The World Nuclear Association (WNA) estimates that 40,000 tons uranium per year will be needed in the USA alone by 2025. Even at the peak of the US-American uranium production during the 1960s and 1970s, such an amount could not have been produced by the mines in the USA. The US-American uranium production reached its previous peak in 1980. During that year 29,000 tons uranium were produced. After the end of the Cold War disarmed nuclear weapons became the most important source for the US-American uranium demand. This resulted in a decline of the American uranium production from 23.400 to currently 1,125 tons uranium per year. As a direct

result, the majority of the infrastructure and the permitted production facilities were closed or completely dismantled. Currently there are only a few mines in Texas, Arizona and Wyoming.

#### Kazakhstan – the new uranium superpower

Almost all established uranium producers are having difficulties with the rebuilding or the expansion of their uranium production, but one region has climbed to the top of the uranium production: Central Asia. Kazakhstan especially could multiply its uranium production during the past 10 years. The uranium production of the previous Soviet Republic increased from 2000 to 2016 from 1,870 to over 24,500 tons. Kazakhstan surpassed the previous leader Canada in 2009 and is responsible for close to 40% of the global uranium production.

#### Massive production cuts were already initiated

Kazakhstan is part of the nations which can mine uranium at the lowest costs. The country is however not willing to give away its uranium resources to absolute low prices anymore. At the beginning of 2017 the state-owned group Kazatomprom announced that the uranium production will be cut by at least 10% in 2017. This would take around 2.500 tons uranium off the market.

But Kazatomprom is not the only uranium producer which opts for production cuts in light of the ridiculous uranium price. The uranium-major Cameco also announced production cuts. These are specifically 4 million pounds of U<sub>2</sub>O<sub>2</sub> for the Rabbit Lake Mine and 2 million pounds of U<sub>2</sub>O<sub>2</sub> for the MacArthur River Mine which rank among the 10 largest uranium mines globally. From the Husab Mine in Niger 5 million pounds of U<sub>2</sub>O<sub>2</sub> per year are missing and from the Langer Heinrich Mine in Namibia 1.5 million pounds of U<sub>2</sub>O<sub>2</sub>.

#### Supply gap unavoidable

In spite of the massive production expansion in Kazakhstan during the past years a large supply gap will form in the uranium sector in the foreseeable future. There is already such a gap. Until now this gap could be closed with material from nuclear waste. But the nuclear industry consumes about 10% more uranium than is currently produced. The 449 nuclear reactors worldwide are consuming around 68,000 tons uranium per year, only approximately 62,000 tons are covered by the global uranium production. The International Atomic Energy Agency (IAEA) estimates that the global uranium demand will rise to 140.000 tons uranium by 2030 due to the construction of new nuclear power plants. The percentage of primary supply has to increase because Russia has reached the end of its nuclear disarmament.

#### New disarmament contracts without effect to the uranium market

The currently existing disarmament contract between the USA and Russia. New START, will not change that. It provides for a further reduction of the nuclear weapons arsenal by 30%. These 30% don't include the total weapons arsenal at the end of the Cold War but only from 2011. Since 1990 85% of all nuclear weapons have been disarmed. The remaining 15% will be reduced by 30% meaning that from the original amount only 5% will be disarmed.

According to this new contract only 5% of the original amount will be disarmed during the coming 10 years, while 85% of the original amount was disarmed in the past 20 years. This material has been already consumed in form of fuel elements. The future disarmament uranium is minimal compared to the amount of the past 20 years and will have no big effect on the uranium market. The secondary supply for the uranium market will fall from currently 9% to below 5% by 2030. Therefore, the whole amount of Russia's secondary supply will remain in Russia because Russia has not offer uranium from its own disarmed nuclear weapons at the free market since 2013.

#### Summary

ture come from? deposits.

Experts estimate that there are less than 650,000 tons of economically recoverable uranium at a market price of US\$ 40 per pound uranium.

The supply side in the uranium sector is going through a transition phase. The secondary supply from Russia's disarmed nuclear weapons becomes less and less important. While in 2006 37% of the demand was covered by disarmed nuclear weapons, currently it is only 9%. Concurrently the number of nuclear reactors will increase rapidly. This rapidly increase in demand will not be completely covered by the established uranium producers - at least not at the current uranium spot price of US\$ 21 per pound U<sub>2</sub>O<sub>2</sub>. From where will the needed uranium in the fu-

An increased production can only be achieved with a higher uranium price and associated large investments in the expansion of existing and the construction of new mines. The basic problem is still the relatively low uranium spot price, which doesn't allow producers to mine difficultly accessible and more expensive At an annual consumption of around 68,000 tons uranium, these resources would not even last for 10 years assuming a constant market price of US\$ 40 as well as a constant demand. This will rise inevitably.

If the market price for uranium would increase and would justify production costs of US\$ 80 per pound uranium the triple amount of 2.12 million tons uranium could be mined economically.

At a uranium price of US\$ 130 per pound approximately 5.7 million tons uranium could be mined economically. At the current consumption, the known reserves would last for 83 years.

## Conclusion

# Doubling of demand is not faced by any expansion of the supply!

The uranium spot price is as far from the US\$ 130 per pound uranium as the current demand will be from future demand. According to a conservative estimate of the International Atomic Energy Agency (IAEA) this will double during the coming years. The aforementioned range can be cut in half in 10 to 15 years.

It shows that the still – apparently cheap way of generating electricity can only be used if the market price for the starting product uranium increases again. Supply and demand determine the market price for uranium too.

If the market price doesn't allow an economical production, it will have to increase. In the case of uranium, the demand will increase sharply due to the construction of several hundred new nuclear reactors so that the market price will benefit twofold as well as the investor who has recognized that trend in time.

# High demand is uncovered to date

As expected the unmet demand will be just less than one billion pounds of  $U_3O_8$ in the coming 10 years. At the same time, over 70% of the expected reactor needs are not contractually secured until 2025. For a little traded commodity like uranium this return to more "normal" long term contracts could put tremendous pressure on the long-term prices as well as on the spot prices. The international plant operators are showing buying signals more and more.

#### The best uranium stocks promise multiplication potential!

We have taken the current situation of way to low and not reality reflecting uranium spot price plus the expected future supply deficit to present you a compact summary of promising uranium stocks. Our focus is especially on development companies with very promising projects because these offer, besides the actual appreciation due to a higher uranium spot price, in this connection also a high takeover chance. At the end of 2015 the merger (in fact a takeover) of Fission Uranium with (by) Denison Mines failed due to, among other things, the vote of Fission's shareholders. This example shows that the investor can act on the assumption that there will be other takeover or merger possibilities in the future. That is because the uranium sector is currently undervalued and has to be rectified first.

## Interview with Dr. Christian Schärer – Manager of the Uranium Resources Fund and partner of Incrementum AG

Dr. Schärer you are manager of the Uranium Resources Fund of LLB Fundservices AG in Liechtenstein (ISIN LI0122468528). What is your strategy and what precisely represents the Fund?

The Fund invests heavily in companies which are involved in the development and mining of uranium deposits. The Fund predominantly has shares of mining companies in its portfolio. Thereby we limit ourselves to the first part of the uranium value chain. The investment goal is to get a maximum benefit of the emerging supply gap in the uranium market. This supply gap is the result of a scissor movement of supply and demand at the uranium market. While supply has been stagnant for years due to falling uranium prices, the demand is continuously growing with high visibility of 3% per year. Until now the supply deficit is covered by existing inventories as well as secondary sources. But this will not be sufficient in the near future...

Nuclear energy, especially in the German-speaking region, is controversial and the politics has initiated the exit out of nuclear energy. Nevertheless, you are confident that the uranium market will form a bottom from a cyclical perspective. You assume an increase in demand by 3% per year. What makes you so confident?

We have to differentiate between the situation in Germany or in Switzerland on one side and the global perspectives on the other side. Contrary to Germany, the emerging economies in Eastern Europe or Asia count on the expansion of nuclear energy. By February 1st, 2018 448 reactors were online globally. This is a historical record. Furthermore, according to the International Atomic Energy Agency (IAEA) 60 reactors are under construction worldwide, more than half of them in China (20), Russia (8) and India (5).

The construction of new nuclear power plants should reduce CO<sub>2</sub> emissions and air pollution as well as the dependence on imports of fossil fuels. In addition, nuclear energy provides the baseload to the power grids which are constantly under pressure due to the fast-growing demand. Despite the events in Fukushima and the nuclear phase-out in German-speaking regions, this results to a capacity expansion of the nuclear energy production from 330 gigawatts (2016) to 580 gigawatts in 2030 in total. The predicted demand growth of around 3% per year is to be seen against this background.

Since 2011 the uranium price is permanently under pressure. What are the main reasons for this price collapse and how do you assess the current market situation?

The uranium price is moving in multi-year cycles. The price movement between the lower and upper turning point is enormous. During the bull market of the 1970s the uranium price increased from US\$3 to US\$43 to drop by 70% to US\$8 by 2001. During the next cycle the price climbed to US\$130 by 2007. Of course, enormous profit opportunities as well as significant risks are associated with such price fluctuations.

Since the reactor accident in Fukushima in 2011, the price dropped from US\$ 75 per pound to currently US\$ 21 at the uranium spot market; a movement that puts tremendous pressure on the producers. Three reasons seem to be primarily responsible; first, the sale of uranium from the inventory of the Japanese nuclear power plant operators that were dis-



Dr. Christian Schärer is a partner in Incrementum AG and responsible for special mandates.

During the course of his study he was looking for strategic success factors of successful business models. A topic that fascinates him until today and inspires him when selecting promising investment opportunities. Dr. Schärer studied business administration at the Universität Zürich and he received his PhD extra-occupational at the Bankeninstitut Zürich for an analytical survey of the investment strategy of Swiss pension funds in the real estate sector. Since 1991 he has gained comprehensive financial market knowledge in several roles as investment adviser, broker and portfolio manager.

Since summer 2004 Dr. Schärer's focus as an entrepreneur, adviser and portfolio manager is on several investment themes with material asset character. He brings his practice-oriented financial market knowledge as board member to companies.



connected from the power grid after the reactor catastrophe in Fukushima. Second, the sale by uranium producers with liquidity shortages and producers with uranium as a by-product, which then sell the uranium with little price sensitivity. Third, the restraint of the buyers which are not stressed by falling prices despite low inventories.

At that reached price level we see the uranium market now at an interesting milestone. The bear market seems to be over. Since one year the uranium price tries to form a bottom. Besides the mentioned good demand, we see a reduced supply and an increasing price discipline on sides of the producers as possible catalysts for a considerable recovery of the uranium prices.

You mentioned that the low uranium prices are putting massive pressure on the producers. How do the uranium producers come to terms with these low uranium prices and why do you expect a rebound?

The low price of uranium at the market is a tremendous challenge for producers. A profitable production is unthinkable in this environment. The costs are reduced accordingly consistently. Production plans are adjusted to the low prices and unprofitable mines are closed. The existing capital is allocated with much discipline. Development and expansion projects are rescaled or cancelled accordingly. It is noteworthy that some producers have started to buy uranium at the spot market to meet the long-term commitments entered into. The current spot price is obviously below their production costs! These actions have the advantage that the as yet not produced uranium stays in the ground and can be sold for higher prices at the market. With this behavior the producers are tightening their supply and are preparing the ground for a medium-term price turnaround at the uranium market when the stagnant supply cannot satisfy the steady demand from China and India against this background. In other words: at the uranium market a growing supply gap is forming in the foreseeable future which will be closed by rising uranium prices. We assume that the uranium prices will have to recover in direction US\$ 70 permanently to stimulate the necessary expansion of the production capacities...

Returning to your question; we expect the change for the better to materialize during the current year. During that timeframe an inventory cycle comes to an end for many European and American nuclear power plant operators. They will have to come to the market to rebuild their inventories. From today's perspective around 40% of the demand for 2020 is not contractually secured. This impulse could become the catalyst of a sustainable turnaround. In addition, the spot market does not have the liquidity like in the past two years because the two largest uranium producers (Kazatomprom and Cameco) have announced a significant reduction of their production during the current year. Normally the market will anticipate this turnaround within a timeframe of several months...

#### Is such a fund, focused on a single commodity, not too specialized and therefore too risky?

An investment in the fund is a focused bet on the emerging supply gap at the uranium market. An attractive return potential is opening up in front of an investor with a medium-term investment horizon which could also be very risky. Therefore, the fund is suitable as complementary building block in a diversified portfolio but not as a basic investment. The Uranium Resources Fund has between 25 and 30 positions in the portfolio. This diversification makes sense against the background of the current state of the uranium market.

# What do you recommend to investors who are interested in an investment in the uranium sector?

The outlined supply gap and the related potential of rising uranium prices are only foreseeable at the moment. The exact timing of the expected turnaround at the uranium market is uncertain despite the good perspectives. If, against expectations, the current phase of bottom building continues for a longer time the air will become thin very fast for some uranium producers. Their balance sheets are emaciated after the persistent price collapse and the cost reduction potentials are mostly exhausted. Even for a developer of new uranium projects the environment is challenging because their projects become economically viable and thereby feasible with increasing uranium prices. As a result, it is difficult to find investors for the funding of the next project stages. Who bets everything on one card at that constellation takes a big risk - possibly too big. The stake within a diversified investment fund seems to be reasonable. In addition, we suggest a timely scaled build-up of the positions.

## What are your selection criteria for the selection of your fund holdings?

We initiated the fund with confidence based on the described positive medium-term prospects three weeks before the reactor accident in Fukushima. These events have pushed back the positive starting position by 5 to 6 years. The decommissioning of the Japanese reactor fleet, which comprises 10% of all operating reactors worldwide and the related uncertainty about the future perspectives of the civil use of nuclear energy is responsible for that. Against this background we became very humble although we still feel confident about the potential of the uranium market. Our primary goal is to remain a player when the uranium market rebounds.

Our portfolio is therefore based on three pillars. The core of the portfolio is comprised of 2 solid basic investments. First an investment in Uranium Participation (U CN), a Canadian holding company which invests in physical uranium. If we are right the supply gap at the uranium market will be closed by the increasing uranium price. Uranium Participation will be one of the first and direct profiteers. In addition, we always have a significant position in the Canadian industry leader Cameco (CCO CN). The company has a broad-based portfolio of World Class Assets, is cash flow positive and pays a dividend despite the challenging environment.

When the prices begin to climb only the producers, which can place a significant uranium production on the market will benefit. Only the one who produces can deliver. To be on the safe side we invest in companies with low production costs and that have a solid order book. It is good to know in this context that only a relatively small amount of the annual uranium production is traded at the spot market. The main portion of the uranium production is processed within long-term delivery contracts at a predetermined (forward) price. We invest in companies that have sold a significant portion of their production in the past at a predetermined price, which is considerably higher than the current spot prices. This softens the current psychological strain. As examples for companies in this category can be mentioned Ur-Energy (URE CN) or Energy Fuels (EFR CN).





Third, we invest in explorers and developers that are advancing development and mining projects on a world class level. Of special interest are those that can start their production in the timeframe of the expected supply gap. They will benefit from the attractive sales prices. In addition, these assets should have the necessary size to qualify as take-over targets. We assume that after the price turnaround at the uranium market a consolidation wave will roll through and mining companies from outside the sector would like to position themselves in the uranium business as well. This would make sense due to the low cyclical sensitivity and the relative high visibility of the uranium production.

#### Currently which are your biggest individual positions and why?

Besides the mentioned standard assets Uranium Participation and Cameco assets like Uranium Energy (UEC US). Berkeley Energia (BKY LN), NexGen Energy (NXE CN), Energy Fuels (EFR CN), Fission Uranium (FCU CN) or Denison Mines (DML CN) fit, for various reasons, in our aforementioned acquisition strategy.

In addition, do you keep an eye on smaller uranium companies which could become interesting during the comina months?

This is a difficult question. A consequence of the bear market is the disappearance of many companies. At the height of the last bull market around 500 companies with focus of uranium were listed. Today only 40 to 50 companies with reference to uranium are suitable investments. However, there are some attractive investment possibilities. If I have to name one of my favorites it would be Berkeley Energia , which is the largest

position in our fund today. The company has started the construction of the Salamanca uranium mine in Spain and will commence production in 2019, latest, At that time many nuclear reactor operators in the EU might start to renew their longterm delivery contracts. Berkeley Energia is in an excellent position because the Salamanca mine will be the only significant uranium producer in the EU-region. This makes the project attractive from a strategic point of view. In addition, I like that, by global comparison, low investment volume of less than EUR 100 million is necessary to bring the mine to production. This is the result of the excellent infrastructure (water, electricity, and workforce) and the attractive geographic location. Due to the fact that the uranium deposit is near the surface low cost open pit mining is possible. A comparable low investment volume, low production costs and an annual production volume of around 4.4 million pounds make this project very attractive from an economic point of view.

In addition, the state fund from Oman took a long term holding in "Berkeley Energia" with the investment of around US\$120 million within a convertible bond last year. Thereby the construction of the mine is financially secured. If we assume the conversion of the bond into shares of the company later Oman will be, with a holding around 37%, a strategic major shareholder. A clear commitment to the long term intact perspectives of the uranium market!

## **Interview with Scott Melbye Executive Vice President of Uranium Energy**, **Commercial V.P. of Uranium Participation Corp. and** Advisor to the CEO of Kazatomprom

Mr. Melbye, over the course of your career you have held positions as Executive Vice President, Marketing of Uranium One. President of Cameco Inc., Chair of the Board of Governors of the World Nuclear Fuel Market and President of the Uranium Producers of America. Currently, you are serving as Executive Vice President of Uranium Energy, Commercial V.P. of Uranium Participation Corp., and as the Advisor to the CEO of Kazatomprom. In other words: You are THE uranium expert! What led to your uranium-career?

Thank you, that is very nice of you to say. I feel fortunate to have spent my entire career in the uranium and nuclear energy business. Our industry is quite unique in that it is a fairly small and international community of quality, smart, and devoted people who are all pulling together to supply 11 percent of global electricity supplies with highly reliable, clean-air, base-load energy.

My introduction to the uranium business was at a very young age. Being a second-generation uranium miner, I grew up around the business. My father, Chuck Melbye, graduated from the Colorado School of Mines-in 1950. He explored, and developed uranium deposits throughout the Colorado Plateau. Wvoming and even Paraguay, with joint venture partners such as Southern California Edison, Korea Electric Power and Taiwan Power Company. I recall an early memory at the age of 12 travelling to Moab, Utah with my father to meet a bearded and dusty old prospector at the local motel coffee shop. After spreading out the exploration maps over the breakfast table, we jumped in his old pickup truck and headed out a jeep trail into the remote red-rock canvons and plateaus of that prolific uranium district. Arriving at the prospective outcropping, we took some scintillometer readings, bagged some mineral samples (kicking a scorpion off one of them) and headed three hours back into town. Experiences like this helped me develop a real passion for the resource business. Years later. I graduated from Arizona State University in 1984, and took on my first industry role with uranium broker, Nukem Inc. in New York.

Japan is going to bring its reactors back to the grid step-by-step, but cancelled a supply-contract with Cameco in early 2017. Will Japan put too much pressure on the spot-price?

#### Since mid-2015 we saw significant volatility in the uranium spot-price. It went from 40 to 18 and back to 26 US\$. So, have we already seen the bottom?

The short answer is yes, even though we will have some starts and stops before we fully gain traction (as has been the case recently with the price back down around the US\$21-\$22 level). The industry has been in a seven-year bear market that began after Fukushima in March 2011. This has been a long and challenging downturn, as it would be for any commodity. While this period has challenged the patience of uranium investors, the depth and breadth of this downturn has sowed the seeds of an even more robust and sustainable recovery. We are finally seeing years of low prices beginning to take its toll on the supply side of the market. Production cutbacks are becoming the norm (and accelerating), as higher priced legacy term contracts begin to fall off. Uranium prices in the low U\$20's per pound U<sub>2</sub>O<sub>2</sub> range are simply unsustainable over the longer term. All-in production costs of the lowest cost mines are higher than the current depressed price level. Further, the current price environment fails to incentivize the majority of undeveloped uranium projects towards construction.



the nuclear energy industry having held leadership positions in major uranium mining companies as well as industry-wide organizations. Through to June 2014, Melbye was Executive Vice President, Marketing, for Uranium One, responsible for global uranium sales activities. Prior to this, Melbye spent 22 years with the Cameco Group of companies, both in the Saskatoon head office and with their U.S. subsidiaries. He had last served as President of Cameco Inc., the subsidiary responsible for marketing and trading activities with annual sales exceeding 30 million pounds  $U_2O_2$ . Melbye was formerly the Chair of the Board of Governors of the World Nuclear Fuel Market and President of the Uranium Producers of America. He also currently serves as Executive Vice President of Uranium Energy and VP-Commercial for Uranium Participation Corporation and just completed a two-year term as an advisor to the CEO of Kazatomprom, the world's largest uranium producer in Kazakhstan. He also sits on the advisory board of the Colorado School of Mines, Nuclear Engineering program. Melbye received a Bachelor of Science in Business Administration with specialization in International Business from Arizona State University in 1984.

The pace of the Japanese recovery has certainly been a disappointment. Most analysts, including me, have been wrong as to how quickly their reactor restarts would occur. The good news is that positive developments took hold during 2017 (despite Cameco's high-profile contract dispute with Tokyo Electric Power, which appears to be isolated to those parties). Japan now has 21 reactors in the restart process with Federal regulators, with fifteen Safety Review approvals being handed down by the NRA. We are expecting to see a total of nine reactors restarted and operating in 2018 (five are currently in operation today). These don't sound like big numbers, but should be viewed as positive developments for both market fundamentals and sentiment in the uranium industry. Furthermore, recent Energy Policy has reaffirmed a target of having nuclear provide at least 20% of Japanese energy supplies going forward. This policy was further strengthened with the landslide reelection victory of pro-business and pro-nuclear Prime Minister Shinzo Abe. While this issue remains very emotional with many Japanese, the replacement cost of fossil-fueled electricity has raised household power bills by close to 14% in just 4 years. Japan has few viable alternatives going forward and nuclear provides protection against both supply and price risk from fossil fuel imports (much of which is produced in the Middle East).

In the last few months, a couple of producers reported that they are planning to cut their production, including Kazatomprom where you served as an advisor for the past two years. Will this significantly affect the uranium spotprice?

This is absolutely a key catalyst in the uranium price recovery that has been long in coming. Global uranium producti-

on amounted to 162 million pounds in 2016. While this continued a trend of annual uranium production increases in the face of low prices, the rate of increase has finally reversed as cutbacks are being implemented. Global production in 2017 fell to 151 million pounds and could decline further to below 140 million pounds in 2018. This supports observations that a peaking of mine production has finally occurred. Several high-profile production cutbacks have been announced, including Cameco's Saskatchewan and U.S. operations, Areva's Niger mines. Paladin's Namibian Langer Heinrich mine and Kazakhstan's ongoing reductions in output. The announcement by Cameco to shut in their world-class MacArthur River Mine in late 2017 has been particularly significant. The MacArthur River Mine (and associated Key Lake mill) in Northern Saskatchewan represents the world's richest uranium deposit, with ore grades 100 times the global average and is the world's largest in terms of annual output. Cameco has declared that this operation will be down for "at least 10 months", which would equate to as much as 18 million lbs of global, tier-one, production being removed from the supply mix. As Cameco continues to sustain global sales at a level exceeding 30 million pounds per vear. this bold move will serve to drawdown inventories much faster than envisioned even one year ago and put Cameco into the market as a significant buyer of uranium. Subsequent to Cameco's announcement, the Kazakh state producer, Kazatomprom, followed up their 10% cut in 2017 production, with an announced 20% reduction in planned output over the years 2018 to 2020. While analysts are still struggling to define the exact volumes impacted, it is definitely a continued strong signal that the world's largest producer of uranium, accounting for about 40% of global mine supplies, is intent on pursuing a rational and disciplined market approach going forward. The planned 2018 IPO to privatize a 25% share of the company will also incentivize Kazatomprom to do anything in their power to support global uranium prices during, and after, this process.

Finally, while not a production cutback, we received great news in early 2017 that the U.S. Department of Energy ("DOE") has bowed to pressure from the U.S. producers and reduced the amount of government inventories that are released to the market by over 1 million pounds per year in 2017 and 2018. This may not sound like much, but combined with announced production cutbacks, close to 50 million pounds of current/future supply has now been removed from the market over the past 24 months. It should also be recognized that an additional 17 million pounds per year will be removed by 2025 from the expected resource depletion of currently operating mines.

Many long-term contracts will run out in the next 12 to 18 months. Utilities are beginning to return to the market. Will they get their uranium for less than 30 US\$ per pound?

Only in the very near term and until such time renewed utility uranium procurement levels pick back up. This is the other key catalyst that has me excited right now, but has yet to fully hit the market

The world's fleet of operating reactors, and those nearing completion, are now expected to generate a cumulative fuel requirement of 174 million pounds of U<sub>2</sub>O<sub>2</sub> in 2018. This fuel requirement is expected to grow to 196 million pounds by 2030. While this demand for uranium is fairly steady and predictable, the procurement decisions of utilities can vary based on contract coverage, inventories, forecasts of future prices and risk tolerance. The previous contracting cycle,





brought on by uranium price spikes in 2007 and 2010, resulted in utilities rushing to contract at higher prices and for very long terms. While these old contracts are expiring, the utilities have not been moving to replace these supplies. As a result, the forward coverage of utilities has fallen appreciably, increasing the uncommitted requirements that will need future contract coverage. These unfilled needs (under recently revised conservative estimates) currently total around 742 million pounds over the next 10 years, which is higher than the 705 million pounds of uncommitted demand existing in 2011. In a thinly traded commodity, like uranium, this return to more normal long term contracting levels should put considerable upward pressure on long term and spot prices. We are beginning to see the signs of this increased buying activity by global utilities which is very encouraging. However, utilities in the United States are continuing to sit on the sidelines in a wait and see mode as to the direction future fundamentals. Perhaps a catalyst behind this perceived complacency, stems from the Section 232 Trade case which was filed by two U.S. producers with the Department of

Uranium production in Kazakhstan (Source: Kazatomprom)

Commerce early this year. A "232" filing is made to address harmful levels of foreign imports reaching a point which endangers national security. Today, less than 5% of domestic needs are fulfilled by domestic mines, despite abundant resources and competitive potential. As the proposed remedy of this filing is a reserved 25% quota of U.S. reactor requirements for U.S. domestically mined uranium, there is a great deal of uncertainty in the market until the Trump Administration rules in this "buy American" issue. Similar trade actions have been filed with regards to aluminum and steel imports, so market observers are keeping a keen eye on this development.

New reactors are being built and older ones will be shut down. What does this mean for the future demand? Do new reactors need more uranium than older ones?

Ten reactors were added to the global grid during the 2016 calendar year, exceeding the mark set in 2015 for the highest growth rate of nuclear power capacities in the past 25 years. While 2017 reactor additions were down from 2016, the pause is only temporary, as there are currently, 57 nuclear reactors under construction in 14 countries with the principal drivers of this expansion being China. Russia, India, South Korea, and the United Arab Emirates.

The World Nuclear Association reports that 448 reactors are operable in 30 countries. These reactors have a capacity of 393 gigawatts of electricity and supply about 11 percent of the world's electrical requirements.

The new reactors are all of designs which exceed 1000 megawatts and more than compensate for the retirement of some older smaller reactors that have reached the end of their operating lives. The total demand for uranium will increase with the requirements of the larger reactors balanced against the retirement of the older smaller units with designs typically less than 1,000 MWe.

A trend to keep our eyes on, and not yet factored into the near-term supply and demand analysis, is the growing emergence of Small Modular Reactor ('SMR") designs. These are reactor designs which have a 50-300-megawatt range of output, and are similar to the small, compact U.S. naval reactors which have operated safely since the 1950's. SMR's can be mass produced in factories and shipped on site. They are scalable in nature, can accommodate small grids like islands and remote areas, require much lower upfront capital, and have a faster payback period due to short construction times. The U.S. Nuclear Regulatory Commission is updating their regulations to accommodate these small-scale power producers, which has been a big barrier to entry to date. While these reactors will use less uranium than today's large units, this potential new growth area is a verv welcome development.

Just to give the readers some numbers: How much uranium does a new reactor need for the first load and how much does it need for further loads?

Great question and something that adds to near term uranium requirements due to the 57 reactors currently under construction. A reactor under steady-state operation refuels only once every 12 - 24 months depending on their optimal fuel management and operating strategy. At these periodic refueling outages, approximately one-third of the reactor core is replaced with fresh fuel and the remaining fuel assemblies are shuffled to new locations in the core. The oldest fuel that has been in the reactor for several years is retired to spent fuel storage for ultimate disposal (or is reprocessed into new fuel).

In the case of a new reactor in its first operating cycle, the entire reactor core needs to be loaded with fresh fuel. This



creates what is known as the "initial core effect". The first core fueling requires about 1.5 times the uranium required in a typical reload (the reason it is not 3 times more has to do with lower U-235 enrichment levels in the first cycle). Taken collectively across all of the new reactor start-ups, the bump in global requirements is substantial, not to mention that these requirements tend to be procured earlier than subsequent reloads.

To put this into actual numbers, a new Westinghouse AP-1000 reactor (like those being built in Georgia) require about 1.65 million pounds for an initial core. with a reload requiring around 1.1 pounds. This can, of course, vary based on operating cycle-length and tails assay (depending on the relative prices of uranium and enrichment).

The new leading nuclear nation will be China. How will their current construction plans effect the uranium sector?

China continues to lead the global nuclear growth story, expanding from their currently installed 35 gigawatts of capacity from 38 reactors, to close to 150 gimillion pounds by 2030.

gawatts by 2030. The Chinese government has increased its emphasis on nuclear energy as a way to deliver vast amounts of electricity, without adding to the severe air pollution crisis from carbon emissions affecting their major cities. In terms of reactor requirements Chinese annual uranium consumption will rise from 20 million lbs in 2017, to over 75

This all has a profound impact on global uranium supplies, as China possesses relatively little in the way of quality domestic geologic uranium reserves, despite its large geography. As such, China state-owned companies have been aggressively pursuing uranium imports to the tune of about 50 million pounds of U<sub>2</sub>O<sub>2</sub> per year, taking advantage of the uranium downturn and accumulating an under-valued commodity that they will rapidly consume at their current growth rate. Their investments in foreign uranium deposits and production assets also have significant impacts on the global market. While their massive investment in the Husab uranium mine in Namibia will advance this mine's development earlier than economics would otherwise dictate, other investments in existing mi-

There is extremely high air pollution in the Chinese cities. (pixabay/ 3dman\_eu)

nes, like Langer Heinrich, also in Namibia, will take significant volumes of production "out of circulation" for western utilities.

Much has been said lately about the nuclear energy program of the United States, currently the world's largest fleet. So-called de-regulated electricity markets and low natural gas prices have put some plants under economic stress. What is the Trump Administration doing to address the continued viability of nuclear energy in the U.S.?

We have actually seen a great deal of positive developments on this front in the past year, and the Trump Administration has certainly been supportive of both the nuclear energy industry, and uranium fuel cycle, in the United States. The challenge is not that nuclear reactors are uncompetitive with their low US\$0.03 to \$0.05 per kilowatt hour generating cost. The market structure in these supposedly de-regulated jurisdictions are severely distorted by the high levels of subsidies granted renewables and compounded by low natural gas prices. Unfortunately, renewables provide the lowest level of as-needed reliability, and gas prices cannot be relied upon to stav low forever (or simply through the cold winter weather months). Meanwhile, the potential loss of 24/7 reliable and carbon-free base load electricity from nuclear is put in jeopardy. The Trump Administration has certainly taken on this energy security predicament as a priority, emphasizing the need for a reliable and robust electric grid under all supply and demand scenarios. While the DOE directives in this regard did not result in mandated changes through Federal Energy Regulatory Commission ("FERC") regulatory measures in 2017. the onus is now on the individual states to demonstrate the price stability and reliability standards recommended

by DOE. Already New York, Connecticut and Illinois, have taken real concrete steps to reform these market dysfunctions and preserve this critically important base load nuclear power in the name of reliability and grid stability. Other states like Ohio, New Jersey and Pennsylvania are considering similar legislation. The performance of U.S. nuclear power plants during recent "polar vortex" winters, and hurricanes, have only reinforced the need for this policy shift by the Trump Administration and individual states.

Elsewhere in the regulated markets of the Southeastern United States, we are seeing the construction of two new reactors of the Westinghouse AP-1000 design. Two additional units in South Carolina had begun construction, but are on hold for the time being. Unfortunately, these massive construction projects were caught up in the bankruptcy restructuring of Westinghouse given their inability to effectively manage these construction programs. The good news is that the Voatle units 3&4 in Georgia will proceed to completion under a new construction manager, Bechtel, and will be supported by extended loan guarantees from the Trump Administration. The Summer units 2&3 in South Carolina remain in suspension, but here too, the story can still turn positive with state officials and potential investors looking at ways to complete these reactors and bring them into operation.

While some isolated, older operating units will succumb to decommissioning in the United States in the coming years, like that of Oyster Creek recently in New Jersey (1969 start-up), we are seeing the opposite occur with most U.S. reactors pursuing (and receiving) approvals for license extensions to add 20 to 40 years of additional operating years to their safe and useful lives. Already, Exelon, Dominion and NextEra Energy have said they plan to ask regulators to extend 60-year licenses by 20 years for eight reactors in

Virginia, Pennsylvania and Florida. Requests for as many as 20 more are expected to follow. Also last year, the Palisades nuclear power plant in Michigan. that was slated to be retired in 2018, is now pursuing a plan to extend operations for four additional years. The value of these vital base-load electricity generators, from both an economic and energy security perspective, are perhaps finally becoming more widely recognized.

Let's come to uranium supply. Do you see major new mines starting production in the next five to eight years? What does the pipeline look like and what price will most companies need to advance development, and bring their projects into production?

This development should be startling to the nuclear generating companies, and probably explains the current, and very strategic appetite for Chinese investment. Bevond the large Chinese Husab mine, we see very little in terms of new mine development. From a producer's viewpoint this is not surprising, given the seven-year period of challenging price conditions we have experienced. The incentive price for meaningful new uranium production (new developments or mine expansions) to come to the market is estimated by BMO, in their March 2017 uranium market outlook, to be higher than US\$60 per pound U<sub>2</sub>O<sub>2</sub>. This, and the prolonged licensing and permitting process required to bring on new production (as much as 10 years or more for a major conventional mine/mill complex), make for an interesting situation as the uranium market is expected to move into a near term supply deficit amidst higher contracting volumes.

In summary: What are your feelings about the current supply-demand-statrend?

The uranium market has required a great deal of patience from investors as it has worked through the over-supply conditions that emerged out of the Fukushima events in 2011. Having said that, as we head into 2018, we have a very exciting development materializing that is rarely seen, but certainly coveted, by commodity investors. With the record number of reactors operating, and coming on-line around the world, we are seeing a robust and growing global demand for uranium. While utilities have recently been heavily covered under contract from past cycles, we see a new contracting cycle emerging that will put renewed stress on available supplies in the coming years. The trend of global uranium production cutbacks, like those announced by Canada and Kazakhstan late last year, have been long in coming. These cutbacks will likely continue at a time when the pipeline for new supplies is at a low point, and leadtimes required to reverse that trend could be rather prolonged. The price impact could be acute. This is certainly the right time to be positioned in uranium investments to capitalize on an emerging, sustained, price recoverv.

#### tus in the uranium sector and could this lead to another uranium-price upward

## **Anfield Energy** High ISR Potential and a fully permitted uranium processing plant in the US

Anfield Energy is a uranium-vanadium development company with the goal of becoming one of the leading uranium and vanadium producers in the USA. Currently the main focus is on the in-situ recovery (ISR) projects in Wyoming. Besides this, Anfield Energy owns one of the only three fully permitted conventional processing plants in the USA. Herewith the company wants to establish a uranium production of 1.5 million pounds per year.

#### **Company Strategy**

Anfield Energy's main focus lies on its ISR proiects in Wvomina (Source: Anfield Energy)

Anfield Energy impresses with a threefold company strategy. First, the creation of a company headquartered in the USA with focus on US



projects with significant production potential. This will be secured through organic growth as well as by new acquisitions.

Second, Anfield Energy wants to build a significant ISR production which would be a production that could be realized in the short to medium-term. At the currently low uranium spot price this would give the company a significant leverage. The third pillar gives the chance for a bigger conventional production which is longer term and would leverage the company value in the case of increasing uranium prices.

#### **ISR Projects in Wyoming**

The biggest coup in the company history was the acquisition of a total of 24 ISR projects in Wyoming from Uranium One in September 2016. The acquisition comprised 2,667 federal mining claims, 56 Wyoming State leases and 15 private leases in known uranium districts like the Black Hills. Powder River Basin. Great Divide Basin, Laramie Basin, Shirley Basin and Wind River Basin. In addition, Anfield Energy acquired a database of drilling and geologic work that includes 575 drill holes totaling approximately 130.000m of drilling.

Together the 24 ISR projects contain historic resources of 36.8 million pounds U<sub>0</sub>O<sub>2</sub> whereby for some of these projects no resource estimation exists. Anfield Energy acquired an additional historic database of geologic information about the acquired claims and surrounding areas.

In March 2017 Anfield Energy engaged the renowned engineering firm BRS Inc. to prepare a series of NI 43-101 compliant technical reports for a number of the 24 ISR projects. In addition, the historic and more recent databases will be evaluated to outline the existing uranium resources as quickly as possible. It is im-

Anfield Resources		Measured			Indicated		Inferred			Total Measured & Indicated			
Project		Tons	Grade	Pounds	Tons	Grade	Pounds	Tons	Grade	Pounds	Tons	Grade	Pounds
Velvet	1	362,600	0.27%	1,966,000	71,200	0.38%	548,000	76,000	0.34%	517,500	433,800	0.29%	2,514,00
Wood	1	-		-	377,000	0.28%	2,113,000	11,000	0.16%	34,500	377,000	0.28%	2,113,00
Red Rim	2			-	336,655	0.17%	1,142,449	472,988	0.16%	1,539,447	336,655	0.17%	1,142,44
South Sweetwater	3	166,000	0.07%	217,000	36,000	0.09%	66,200	95,200	0.07%	133,000	202,000	0.07%	283,20
Clarkson Hill	4	-		-	-		-	753,611	0.06%	939,888	-		
Frank M	5	-		-	1,095,000	0.10%	2,210,000	42,000	0.05%	75,000	1,095,000	0.10%	2,210,00
Findlay Tank	6	<u></u>			<i></i>		÷-	211.000	0.23%	954.000			
		528,600		2,183,000	1,915,855		6,079,649	1,661,799		4,193,335	2,444,455		8,262,64

portant to know that the majority of the 24 ISR projects are located in close proximity to projects of other uranium developers with already existing uranium resources.

#### **First Resources confirmed**

In a very short time, the cooperation with BRS resulted in a first resource estimate. Anfield Energy published a resource for the Red Rim Project in April 2017.

This project contains:

- an Indicated Resource of 336.655 tons of mineralized material with an average grade of 0.170% equivalent to 1.142.449 pounds of U<sub>2</sub>O<sub>2</sub>; and
- an Inferred Resource of 472.988 tons of mineralized material with an average grade of 0.163% equivalent to 1,539,447 pounds of U<sub>2</sub>O<sub>2</sub>.

In August 2017 a second resource estimate followed, this time for the Clarkson Hill Project. The project contains:

Inferred resources of 957.000 tons ore with average grades of 0.058% U<sub>2</sub>O<sub>2</sub> for 1.113 million pounds of  $U_2O_0$ .

In November 2017, BRS commenced an additional resource estimate for the former producing Nine Mile Project.

#### **Processing Capacity secured**

The highlight of the aforementioned deal is the closing of the so-called Resin Processing Agreements with Uranium One. Anfield Energy has now the possibility to produce up to 500.000 pounds of Uranium per year in Uranium One's processing plant Irigaray in Wyoming. And there is more: In the case that Anfield Energy cannot meet the off-take agreements completely, the company has the possibility to buy the appropriate quantities from Uranium One. This is a unique agreement that provides the company with lots of leeway for possible production scenarios and off-take contracts. The cost for the whole package, including the Resin Processing Agreement, was only US\$ 6.55 million which Anfield Energy will pay over a period of five vears.

## **Conventional Assets**

Besides the pure ISR projects, Anfield Energy owns a number of conventional high-quality uranium assets.

## **Shootaring Canyon Mill**

The Shootaring Canyon Mill is located 77km south of Hanksville in Utah. It is one of only three fully licensed conventi-



Current (partly historical) resource base. (Source: Anfield Resources)





The maiority of Anfield's Utah-projects lie in the very south-east of the US-state. (Source: Anfield Energy)

> onal processing plants in the USA. Shootaring Canyon is a conventional acid leach plant with a permitted capacity of 750 tons per day. In the vicinity of the plant are stockpiles containing around 370,000 pounds of U<sub>2</sub>O<sub>2</sub>. The plant was in operation for a short time only.

#### **Velvet-Wood Mine**

The Velvet-Wood Mine is also in Utah. Anfield Resources bought this mine, like the Shootaring Canvon Mine, from Uranium One in 2015. The mine contains a current resource of 5.1 million pounds of U<sub>2</sub>O<sub>2</sub>. An initial economic assessment in 2016 confirmed a pretax IRR of solid 41%. After the strong increase of the vanadium price during the past months Anfield Energy engaged BRS in November 2017 to complete a new resource estimate that incorporates the existing vanadium resources.

The company is also evaluating the possibility of adding a vanadium cycle at the

Shootaring Canvon Mill. The Velvet-Wood Mine nevertheless produced 5 million pounds of vanadium in the past. BRS published an exploration target report in December 2017 whereby Velvet-Wood hosts an exploration target of 6.3 to 9.7 million pounds of vanadium at grades averaging 0.40 to 0.61%.

#### Other Projects/Royalties

In addition, Anfield Energy owns other conventional projects in the US states of Arizona, Colorado and Utah like Frank M (2.3 million pounds of  $U_0O_0$ ), Findlay Tank (954,000 pounds of U,O,) and Henry Mountains. Furthermore, the company owns some stockpiles in Utah from which a significant short-term cash flow can be generated. All these assets are located within a radius of only 125 miles around the Shootaring Canyon Mill. In the US states Utah, Colorado and South Dakota the company owns royalties in a total of four projects of listed uranium companies.

#### Annual Production of up to 1.5 million pounds of U<sub>2</sub>O<sub>2</sub> within the next three years

Anfield Energy's initial focus is on the ISR production in Wyomina. Due to the Resin Processing Agreements, the company can produce 500,000 pounds of U<sub>0</sub>O<sub>2</sub> per year in Wyoming if the appropriate well fields are installed. This can be done within 18 to a maximum of 24 months and would cost initially, including a satellite facility, an estimated 11 million dollars. A second step is the refurbishment, the expansion and the recommissioning of the conventional processing facilities in the Shootaring Canvon Mill and the Velvet-Wood Mine above all. The estimated costs are around 35 million dollars, a very small amount in light of an anticipated annual production of one million pounds of U<sub>2</sub>O<sub>2</sub>. The company would be able to produce 1.5 million pounds of U<sub>2</sub>O<sub>6</sub> per year in total whereby the company would rank in second place in terms of uranium production in the USA.

#### Short to medium-term Catalysts

During the coming months, a range of news is expected from Anfield Energy. Among other things a number of resource estimates are pending for the Wyoming projects as well as for the conventional assets in Utah, Colorado and Arizona. Furthermore, important milestones will be reached with the approval of the production in Wyoming. Anfield Energy also waits for evaluation results for a vanadium production at Velvet-Wood and in the Shootaring Canyon Mine. In addition, the company is looking for additional acquisition opportunities of ISR and conventional assets as well as inventory of the end product Yellowcake.

energy producers

In addition, the company is working on delivery contracts with energy producers. For that purpose. Robert Scott Lumadue was hired as Vice President, Uranium Sales and Marketing and was part of Uranium One America's successful sales team. He also worked at the utility company Duke Energy Corporation for 12 years. He is familiar with both sides which should be invaluable for Anfield Eneray.

#### Summary: at the right time with the right projects at the right location

dium sector. value.

In July 2017, the company was able to generate CA\$3.1 million through a financing, which makes the company well financed for the coming months.



## New Sales manager ought to finalize delivery contracts with

Anfield Energy is, with its projects, at the right time at the right location. The uranium longing US-American nuclear power plant operators could stand in line at Anfield Energy. The reason being, that Anfield Energy is one of just a handful companies that will be able to put together a significant uranium production within 2 to maximum of 3 years. This is possible due to a double strategy with the low cost ISR production and a processing plant that can be put in operation with little money besides several possibilities to provide this facility with sufficient material. This flexibility and the quick production possibility make Anfield Energy at the current share price the absolute top pick in the whole uranium and vana-

Above all because several resource estimates will be announced in the short to medium-term which will continuously increase Anfield Energy's' resource base and thereby increasing the company





Corey Dias, CEC

## **Exclusive interview with Corey Dias**, **CEO of Anfield Resources**

#### What did you and your company achieve within the last 12 months?

We have commenced resource definition and upgrade with regard to the 24 ISR uranium projects we acquired from Uranium One in 2016. We have completed two resource reports, with one currently in the pipeline. We have also begun to explore the vanadium potential of our mines and the economic viability of adding a vanadium processing circuit to our existing uranium mill.

What are the main catalysts for your company within the next 6 months?

We continue to upgrade our current uranium portfolio in order to prepare for near-term production while looking for attractive and accretive acquisitions.

What is your opinion about the current conditions of the uranium market?

The uranium market remains a challenge, despite the actions taken by a few of the major players. That said, we do believe that 2018 will be the year when utilities begin to truly reengage with producers as uncovered demand continues to grow.

## **Anfield Energy Inc.**



ISIN: CA03464C1068 WKN: A2JSG9 FRA: 0AD TSX-V: AFC

Shares issued: 20.9 million Options: 0.6 million Warrants: 10.4 million Fully diluted: 31.9 million

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## **Appia Energy** The planet's best uranium geologist on the search for high-grade uranium and rare earth deposits

Appia Energy is a Canadian resource development company specializing in uranium and rare earth element sectors. Appia Energy has a two-fold strategy: the exploration of high-grade uranium deposits in the Athabasca Basin Region and the development of the Elliot Lake Uranium and Rare Earth Element Project in Ontario.

#### Elliot Lake

The Elliot Lake Project is located three kilometers north of the town of Elliot Lake in northern Ontario. 60km to the southwest lies the town of Blind River, where Cameco operates the world's largest uranium refinery. The short distance to the nearest town means that all the infrastructure is in place already. The project comprises 101 claims which are in the possession of Appia Energy completely. During the period from 1955 through 1996 13 underground mines within the Elliot Lake Mining Camp produced a total of 362 million pounds of U<sub>2</sub>O<sub>2</sub> at an average grade of 0.106 wt.% U.O. (weight percent).

However, Elliot Lake still contains significant resources of 8.0 million pounds of U<sub>0</sub>O<sub>2</sub> and 47.7 million pounds of TREE (total rare earth elements) in the category indicated and 47.7 million pounds of U<sub>2</sub>O<sub>2</sub> and 133.2 million pounds of TREE in the category inferred. According to historic resource estimates Elliot Lake could host more than 200 million pounds of U<sub>2</sub>O<sub>2</sub>.

In the past Appia Energy and especially other companies spent over CA\$50 million for exploration campaigns in Elliot Lake. It was demonstrated that Elliot Lake has the potential for a much larger resource because the known uranium veins are open to all sides.

The Elliot Lake Project hosts a number of independent deposits whereby the Teasdale Lake Zone and the Banana Lake Zone stand out clearly. Currently these zones are the focus of additional exploration plans containing drill locations for securing good results as well as possible economic mining scenarios. The project is currently on standby and should be reactivated quickly in the case of higher uranium and rare earth element prices.

# Projects

Although the Athabasca Basin is known for its rich uranium deposits (since the year 2000 alone eight deposits were discovered with more than 50 million pounds of U<sub>2</sub>O<sub>2</sub> each) the exploration in this region is still in its infancy. Appia Energy owns several high-quality license areas in the Athabasca Basin Region. Three of these projects stand out especially. All of these projects have geophysical and geological similarities with already known high-grade uranium deposits.

#### Loranger

Loranger is located in the southeastern part of the Athabasca Region slightly outside of the actual Athabasca Basin. The project is located 60km from the Cigar Lake Mine, 40km from the McLean



(Source: BigCharts)

#### Athabasca Basin Uranium

The Filiot Lake Project hosts a number of independent deposits whereby the Teasdale Lake Zone and the Banana Lake Zone stand out clearly. (Source: Appia Energy)



Lake Mill and only 28km from the Rabbit Lake Mill. The 33,400-hectare project area is connected to a highway via a 20km long ice road and has direct access to a high-voltage power line. Besides uranium traces of rare earth elements, thorium and molybdenum are found at Loranger. Appia Energy has a 100% interest in Loranger.

Several locations with high-grade near surface and not covered by sandstone uranium resources are found in the project area. Already during the 1970s radioactive outcrops and radon anomalies in water were discovered. In the course of a historic drill program significant uranium grades were identified down to a depth of 94m in 10 of the 13 drill holes. The breakthrough came in October 2016 as four separate structural corridors with a total strike length of 94km were identified by a VTEM (Versatile Time Domain Electromagnetic) survey (airborne, electromagnetic survey of the rock characteristics). To date only 2km of this area have been explored!

At the beginning of 2017 a gravity survey was conducted and numerous areas with gravity lows were identified which share numerous similarities with NexGen Energy Ltd.'s mega discovery Arrow.

In March and April 2017, a drill program was conducted where exceptionally high radioactivity was found in three drill holes. In addition, four drill holes encountered low-grade uranium traces.

In May 2017 Appia Energy released additional sensational drill results. The company encountered 72.9 m grading 0.012 wt. % U<sub>3</sub>O<sub>8</sub>. 150m further the drill returned 26.4m grading 0.014 wt. % U<sub>2</sub>O<sub>2</sub>. 600m southwest along strike 56.85 m grading 0.012 wt.% U<sub>2</sub>O<sub>2</sub> were intersected and 425m further the company encountered 10.3m grading 0.016 wt.% U<sub>2</sub>O<sub>0</sub>.

In July 2017 the company announced that instead of the two historic occurrences three radiometric occurrences with significant radioactivity were identified. Appia Energy will do some more diamond drilling to explore two or three high-priority areas.

#### Otherside

Otherside comprises an area of 21,800 hectares and is located in the center of the Athabasca Basin. Appia Energy has a 100% interest in the project. The company aims at the discovery of a high-grade uranium deposit because the area has geological similarities with NexGen's Arrow project. Previous exploration activities included an airborne survey as well as gravity surveys and a radon analysis. Two diamond drill holes 10 and 20km southwest of the central area encountered massive faults within the sandstone. Interesting is that the discovered veins show a similar displacement like that of NexGen's Arrow project.

#### Alces Lake

Alces Lake is located northwest of the Athabasca Basin, not far from Uranium City. The project comprises 5,750 hectares and hosts, besides uranium, traces of rare earth elements, titanium and thorium. Appia Energy has a 100% interest in 8 of the 9 claims and a 90% interest in one claim. The previous exploration activities included, among other things, sampling which returned up to 36 wt% TREO (total rare earth oxide). In 2016 VTEM and radiometric as well maanetic surveys were conducted that identified numerous follow-up targets with similar characteristics like high-grade rare earth element occurrences. Trenching at Alces Lake returned the highest-grade traces of rare earth elements in Saskatchewan and are comparable with those from the world-class deposit Steenkampskraal in South Africa. In August 2017 the company commenced a field program for a closer examination of the high-grade radioactive areas discovered in 2016. In this context the company discovered several radioactive outcrops with up to 50,000 counts per second (cps). In addition, geochemical surveys in 5 zones identified sample with up to 49.64 weight % Rare Earth Oxides. In 2018 Appia Energy will conduct additional surface surveys followed by diamond drilling. By the end of the year the company will release a resource estimate.

#### **Eastside Property**

The Eastside Property is the most recent acquisition. It is a group of contiguous claims covering 4,736 hectares. Eastside is located 50 km east of the Loranger property and 85 km east of Cameco's Rabbit Lake uranium mill in the eastern part of the Athabasca Basin, Historic sampling provided samples with uranium grades of up to 7,575 ppm. In August 2017 the company commenced airborne radiometric and magnetic surveys. Thereby Appia Energy identified several radiometric anomalies. Exploration in the years 1976 and 1978 provided uranium concentrations of on average 360 ppm uranium with the highest grades of 6,650 and 7,575 ppm. The company will continue the exploration at Eastside in 2018.

#### North Wollaston Property

In December 2017 Appia Energy acquired a license area comprising 11.306 hectares located 30 kilometres northeast of Cameco's Rabbit Lake facility and the Eagle Point mining operations and on the same geological trend as those major projects. North Wollaston hosts at least 4 uranium deposits where historic exploration campaigns identified up to 0.495 weight% U<sub>2</sub>O<sub>2</sub>. In 2018 the company plans airborne magnetic and radiometric surveys.

## Appia Energy bets on Top Uranium Geologist

velopment.





At Alces Lake, Appia Energy discovered a couple of high-grade rare earth areas. (Source: Appia Energy)

Appia Energy has a top management team where one name stands out clearly: James Sykes! Exceptionally he is not the CEO but Appia Energy's Chief Geologist and Vice President Exploration & De-

In the uranium community Sykes is considered as the one with the best nose for extreme high-grade and large uranium deposits. Sykes was part of the exploration team at Denison Mines that outlined the targets for the discovery of the mega projects Phoenix and Gryphon. At Hathor Exploration, he developed the geologic 3D model of the Roughrider West



deposit which resulted in the discovery of the East and Far East deposits.

At NexGen he was jointly responsible for the discovery of the Arrow deposit and the high-grade A2 subzone. Therewith Sykes was responsible for the discovery of far more than 450 million pounds of U<sub>2</sub>O<sub>2</sub> during his career!

#### Summary: Appia Energy has the potential for a second NexGen

As you might have noticed the name NexGen appears every now and then in the text above. Appia Energy has nothing to do with this successful uranium explorer except that Appia Energy's chief geologist James Sykes came from NexGen to Appia Energy. This is a big win for Appia Energy! At NexGen Sykes was jointly responsible for the discovery of the Arrow deposit and the high-grade A2 subzone and thereby for more than 300 million pounds of U<sub>2</sub>O<sub>2</sub>! Sykes wants to repeat that success at Appia Energy where he finds an ideal field of activity because several Appia projects have almost identical geological features like NexGen's mega project Arrow. The company will conduct several exploration programs during the coming months to have the first of several real strikes. The ace up the sleeve is the Elliot Lake Project, where it is only a matter of time until it will recommence operation. There the company owns one of the largest uranium resources globally. Appia Energy has a big opportunity to have a big hit in the Athabasca Basin and has, in light of the large resources, a big leverage on the uranium price which must increase in the future. Investors can await several exploration results.

Anastasios (Tom) Drivas. CEO

## **Exclusive interview with Anastasios** (Tom) Drivas, CEO of Appia Energy

What did you and your company achieve within the last 12 months?

Appia Energy Corp. has been very active over the last 12 months. A major highlight for the Company was the completion of ground radiometric prospecting on the Alces Lake property. Highlights include:

- discovered 4 new zones of critical rare earth element ("REE") + uranium mineralization at surface with grades of to 49.64 wt% Total Rare Earth Oxide ("TREO") and 0.20 wt% U<sub>2</sub>O<sub>2</sub>,
- identified uniformly high concentrations of critical REEs, such as neodymium ("Nd") and praseodymium ("Pr"), which account for about 20% and 5% of the Total REEs, respectively

In addition, the Company has;

- raised \$642,225 CAD in new capital,
- completed 1.461 m of diamond drilling on the Loranger property with 6 out of 7 drill holes intersecting uranium mineralization, and 4 of those 6 drill holes intersected wide intervals of urani-
- um mineralization. completed ground radiometric prospecting, and identified radioactive boulders and outcrops on the Loranger property,
- acquired the Eastside property, which is a high-grade uranium prospective area that hosts three surface outcrops along a 1.7 km geological strike with 2,538 ppm, 6,650 ppm and 7,575 ppm uranium, respectively.
- > completed an airborne radiometric,

magnetic and VLF-EM survey over the Eastside property; the survey identified many new radiometric expressions that have never received follow-up around exploration.

- acquired the North Wollaston property, which is host to multiple high-grade uranium showings at surface, and on trend with the Rabbit Lake-Eagle Point uranium system that has produced more than 200 M lbs. uranium concentrates since beginning production in 1975, and
- been approved for trading on OTCQB Venture Market in the USA.

What are the main catalysts for your company within the next 6 months?

The main catalyst for the Company will be continued exploration for critical REEs + uranium on the Alces Lake property. The Company is planning overburden stripping/trenching and diamond drilling for the Summer of 2018, with a possible maiden Resource Estimate produced by years end.

In addition, ground prospecting and airborne surveys are planned for the Eastside, Loranger and North Wollaston properties. Appia remains well-funded to complete all the exploration programs.

The current conditions of the uranium market are not sustainable for the uranium producers, explorers and utilities. Many producers are losing money at the current uranium price and therefore they've had to curtail uranium production.

The price of uranium needs to climb higher as there are more than 300 new reactors still proposed for construction by 2030 and supply will have to almost double to 300 M lbs. uranium annually to meet demand. In the meantime, there's no new uranium mines scheduled to come into production within the next 7 years which creates a looming shortfall in production on the horizon.

ISIN: CA03783B1022 WKN: A2DLD6 FRA: A0I TSX-V: API

Shares issued: 52.3 million Options: 3.8 million Warrants: 9.1 million Fully diluted: 65.3 million

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#### What is your opinion about the current conditions of the uranium market?

## Appia Energy Corp.

(Source: BigCharts)

## **Blue Sky Uranium** High-grade uranium projects with good prospect of low cost open pit mining!

The majority of standard uranium mines produce the uranium ore by underground mining techniques raising the construction and mining costs. The Canadian development company Blue Sky Uranium owns several huge uranium licenses in Argentina which, after initial inspection of the drill results, can probably be mined by open pit methods. This is an enormous cost advantage which promises not only faster mining but also high margins.

#### Amarillo Grande Uranium-Vanadium Project: Location, Resources and Mining Possibilities

Blue Sky Uranium's flagship project is Amarillo Grande which consists of three subprojects: Anit, Ivana and Santa Bar-



the exclusive right to complete airborne geophysical surveys over an area of 2.265 million hectares. After a detailed study the company decided to acquire the mining rights for Anit, Ivana and Santa Barbara because several significant anomalies were discovered on these projects. The three license areas cover an area of 269.000 hectares in total and are located in the province of Rio Negro, Argentina. Anit, Ivana and Santa Barbara are situated within a 140km long trend which hosts several known uranium deposits. Besides the near surface uranium mineralization, Amarillo Grande also hosts significant vanadium resources. This is interesting because the price of vanadium has more than doubled since the fall of 2016 und vanadium as by-product could significantly contribute to a low-cost production. The uranium and vanadium ore occur in depths of 0 to 25m whereby the deposits can extend over several kilometers. The overburden is comprised of only slightly compacted sand which results in favorable mining and extremely low drill costs. Mining will be carried out by a so-called scraper which strips the rock layers and a conveyer loads the stripped material directly on a following truck. No drilling and blasting is necessary, which drastically reduces the mining costs. In addition, the company does not need the majority of excavators usually needed. The ore material could be processed in a central processing plant located between the three subprojects by means of the lowcost leaching process. All these benefits make it possible to mine low grade deposits. An example for such a mine is Langer Heinrich in Namibia where the corresponding resources are mined for less than US\$18 per pound of uranium. It should be noted that Blue Sky Uranium has the advantage of the additional vanadium resources.

bara. In 2010 Blue Sky Uranium received

#### Amarillo Grande Uranium-Vanadium Project: Ivana

Ivana is the largest and southernmost subproject. It covers 118,000 hectares and hosts a 25km long anomaly. Within a 4,500m x 1,500m corridor a high-grade mineralization was discovered by sampling and drilling corresponding to previous radiometric surveys. Initial sampling provided results of up to 1.81% U<sub>o</sub>O<sub>o</sub> over 0.75 m. This sample was collected only 2m below the surface.

Follow-up drilling provided among other thinas:

- ▶ 3,136ppm U<sub>2</sub>O<sub>2</sub> over 1m,
- 2,182ppm U<sub>2</sub>O<sub>2</sub> and 1,285ppm V<sub>2</sub>O<sub>2</sub> over 2m.
- 2,087ppm U<sub>2</sub>O<sub>2</sub> and 1,892ppm V<sub>2</sub>O<sub>2</sub> over 1m,
- ▶ 1,861ppm U<sub>2</sub>O<sub>2</sub> over 3m,
- 1,473ppm U<sub>3</sub>O<sub>2</sub> and 721ppm V<sub>2</sub>O<sub>5</sub> over 1m
- ▶ 1,410ppm U<sub>2</sub>O<sub>2</sub> over 1m. 1,135ppm U<sub>o</sub>O<sub>o</sub> over 5m and
- ▶ 1,130ppm U<sub>2</sub>O<sub>2</sub> over 5m
- within significant Uranium and vanadium mineralization of up to 20m in thickness. All these drill results are from maximum depths of 23m!

In September 2017 and January 2018 released drill results could extend the strong mineralized corridor by 3km to the northeast and suggest that the corridor continues to the north and south.

Furthermore, additional drilling provided further high-grade result, among other things, 10,517 ppm U<sub>2</sub>O<sub>2</sub> over 1m and 8,618 ppm over 1m within a larger intersection of 8m with more than 2.200 ppm U<sub>2</sub>O<sub>2</sub> and 2,800 ppm U<sub>2</sub>O<sub>2</sub> respectively. In January 2018 the next spectacular result followed! The company identified, among other things, more than 20,000 ppm U<sub>3</sub>O<sub>8</sub> (equals over 2%) over 1m.

Santa Barbara

grades of more than 1% U<sub>2</sub>O<sub>2</sub>!

#### Amarillo Grande Uranium-Vanadium Project: Anit

within a paleo channel.

Amarillo Grande is located in the province of Rio Negro, Argentina. (Source: Blue Sky Uranium)





That successfully confirmed the initial

The second subproject, Anit, covers around 24,000 hectares and lies between Ivana and Santa Barbara. Anit is located on a 15km long trend showing near surface uranium mineralization. Special attention is on a 1.000m x 200m corridor

Historic exploration activities identified for 81 drill holes an average grade of 0.03% U\_O\_ and 0.075% V\_O\_ over 2.6m. In the western and central zones 103 pits were discovered which had uranium grades of more than 50ppm whereby on average 1.97m with 0.04% U<sub>2</sub>O<sub>2</sub> and 0.11% V<sub>0</sub>O<sub>r</sub> were detected. A drill campaign, which started in May 2017, identified uranium grades of up to 1,114ppm U<sub>2</sub>O<sub>2</sub> and up to 3,411ppm

Blue Sky Uranium's flagship project is Amarillo Grande which consists of three subprojects: Anit, Ivana and Santa Barbara. (Source: Blue Sky Uranium)



V<sub>2</sub>O<sub>5</sub>. The very high-grade vanadium resource especially attracted the attention of the management so that additional work and drilling is planned in this area. Blue Sky's management believes that this corridor could be 5km or more long. Test works also showed that the majority of the present uranium and vanadium resources could be significantly improved by wet screening because coarse gravel in particular contains hardly any uranium. This could reduce transport and processing costs and achieve production at several satellite projects concurrently.

#### Amarillo Grande Uranium-Vanadium Project: Santa Barbara

The third subproject Santa Barbara lies northwest of Anit and is still at a very early stage. Blue Sky Uranium could alreadv identify several anomalies on the project and wants to make a new discovery soon.

#### Amarillo Grande Uranium-Vanadium Project: current activities

Currently the company is increasingly focusing its activities on Anit and especially on Ivana. Ivana especially is at the focus because the company tries to extend the discovered high-grade areas and provide a resource estimate as quickly as possible. To this end the company works with an electrical tomography program covering 11km and a drill program comprised of 4,500m. Metallurgical test runs are conducted concurrently to establish an optimal leaching process and to receive the highest possible recovery rates. In January 2018 recovery grades for uranium of over 95% were determined. The completion of a resource estimate was commissioned.

#### **Exploration projects in Chubut** Province

Blue Sky Uranium has additional exploration projects in the Chubut Province south of Rio Negro.

The Sierra Colorada project covers around 39,900 hectares. The project is located 96km from Cerro Solo project (not Blue Sky Uranium) in a similar geologic environment. The National Commission of Atomic Energy could already confirm a significant resource at Cerro Solo. Sampling at Sierra Colorado could prove up to 0.65% U<sub>2</sub>O<sub>2</sub> and 1.55% V<sub>2</sub>O<sub>2</sub> as well as traces of molybdenum.

Blue Sky Uranium's second project Tierras Coloradas is situated northeast of Sierra Colorada and to date was explored only sporadically for existing deposits although the company detected near surface mineralization by radiometric survevs.

The Cerro Parva project covers around 67.800 hectares and is located only 40km east of Cerro Solo.

The Chubut projects are intended for a future pipeline expansion and therefore are not currently in the development focus of the company.

#### Grosso Group: the game changer

Blue Sky Uranium belongs to the Grosso Group. The Grosso Group is a resource management company that is in operation since 1993. The company is specialized on South America and especially on Argentina. During this time, they made three multi million ounces precious metals finds in Argentina. In addition, partnerships could be entered with resource giants like Barrick, Areva, Rio Tinto, Teck and Yamana. Company chief Joe Grosso was awarded Argentina's Mining Man of the Year in 2005. The Grosso Group has a vast network of industry and political contacts in Argentina. Grosso is director and chairman of Blue Sky Uranium since October 2017.

#### Summary: three projects, two elements, prospect of low cost minina!

Blue Sky Uranium is a real early stage chance at an imminent uranium boom market. Although the company has already made significant exploration and development progress on its three advanced projects within Amarillo Grande. an initial resource estimate which is planned for the fourth quarter of 2017 may bring clarity on the dimension of the resources at Ivana. Two things seem objectively speaking crystal clear: First, the rocks at Ivana and also at Anit contain,

besides uranium, significant vanadium resources also and second, the existing resources can be mined most likely by open pit mining methods. Together this promises, due to several existing high-grade sections, a very good chance for an early production and especially for a low-cost production which needs only a fraction of the capital costs that similar conventional mines require. An own production should be within the realms of possibility with the very well networked Grosso Group in Argentina. In December 2017 Blue Sky Uranium completed an oversubscribed financing of CA\$1.12 million. An additional also oversubscribed financing of CA\$1.45 million was realized in February 2018. Both oversubscribed financings clearly show that many investors are convinced by the development of Blue Sky Uranium.

## **Exclusive interview with Nikolaos** Cacos, CEO of Blue Sky Uranium

#### What did you and your company achieve within the last 12 months?

Our drilling continues to reveal high-grade uranium intercepts within poorly consolidated sediments near surface, building our understanding of the deposit and its potential. The Ivana target has the largest, highest-grade zone of uranium mineralization found at the Amarillo Grande uranium-vanadium project to date, and understanding it fully is the key to uncovering the potential of the 140-kilometre-long mineral belt controlled by Blue Sky. We are an excellent candidate to be the first low-cost, near-term domestic uranium supplier in Argentina. Three main properties with zones of near-surface mineralization within a 140km trend

discovered by Blue Sky and is open for expansion - mineralized sequences believed to be preserved along the trend. Leachable mineralization; upgradeable through a simple low-cost wet screening technique. Exclusive rights to over 287,000 hectares with this information we are moving toward a resource estimate and a PEA.

We are working on a resource estimate to be completed in March (43-101) and then on to a Preliminary economic assessment targeted to be completed by July.



#### What are the main catalysts for your company within the next 6 months?



Nikolaos Cacos, CEO



#### What is your opinion about the current conditions of the uranium market?

The \$20 per pound range is a crisis price for the uranium industry. Prices are now so low that most uranium mines are losing money on every pound they sell at spot pricing. All U.S. uranium mines are losing money at current prices. The reality is that nuclear energy has provided and continues to provide - the world with massive amounts of clean, safe, emission-free electric power. Coal, which is also used to generate electricity, has killed far, far more people than uranium. The average citizen in nuclear energy capabilities doesn't know the vital role that nuclear power plays in their economy. America gets 21% of its electricity from nuclear power. Nuclear power provides electricity for about 23 million homes in the US, or about twice the number of homes in California. A portion of an ounce of uranium contains the equivalent ener-

gy of 6,613,868 pounds of coal. It would take 2 million grams of oil or 3 million grams of coal to equal the power contained in 1 gram of uranium fuel. Unlike oil and coal, nuclear fuel is recyclable and, in a breeder reactor, can actually produce more fuel than is used up! For these reasons, nuclear energy is by far the best means now available to power a modern industrial economy. Seasoned resource investors know that one of the ultimate signs of a market bottom is when the current market price of a resource is lower than an industry's lowest cost of production. When this situation occurs, either the price of the resource goes up or the producers go out of business and the world goes without the resource. In the case of energy resources, the world always chooses to keep the cars running and the lights on.

## Blue Sky Uranium Corp.



(Source: BigCharts)

ISIN: CA0960495079 WKN: A12GAR FRA: MAL2 TSX-V: BSK

Shares issued: 77.6 million Options: 4.8 million Warrants: 10.4 million Fully diluted: 92.9 million

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## **Denison Mines** With the Athabasca Basin's highest-grade development project on the road to success!

Denison Mines Corp. ("Denison") has a long history of uranium mining in Canada - dating back to its operations in Elliot Lake, which ceased in the 1990s after decades of mining. Having expanded its interests during the last uranium bull market to include projects in the USA, Africa and Mongolia, the company has recently divested its non-core assets and has become laser focused on Canada and the Athabasca Basin region in particular. The company currently has interests in, among other things, the Wheeler River project, which is the largest undeveloped uranium project in the eastern Athabasca Basin, and the McClean Lake mill, which is a fully licensed uranium processing plant with excess licensed capacity. In addition, Denison is the manager of Uranium Participation Corp., a type of physical uranium investment fund that is traded on the TSX. Most recently the Waterbury project became the focus because drilling at the project also returned high-grade results.

Wheeler River – Location, Infrastructure. Ownership structure

Denison's flagship project is Wheeler

River which is located in the southeast of

the Athabasca Basin between the

MacArthur River Mine and Cameco's Key

Lake Mill. As a result. Wheeler River is

well situated amongst critical infrastruc-

ture - including roads and the provincial

power grid. Denison holds a 63.3% inte-

rest in Wheeler River, while 26.7% be-

longs to Cameco and 10% to JCU (Ca-

nada) Exploration Limited. At the begin-

ning of 2017 Denison announced a

binding agreement with Cameco where

Denison will increase its interest to ~66%

by the end of 2018. Cameco's interest

will be reduced to ~24%. In exchange

Denison has to pay for 50% of Cameco's

share of expenses at Wheeler River till

this date.

#### Wheeler River – Resources

1.9 million pound).



Wheeler River is host to two separate deposits, the Phoenix deposit and the Gryphon deposit. The two deposits are situated in the northern part of the property and are only separated by approximately 3 kilometers.

In January 2018 Denison Mines released a new resource estimate for Wheeler River. According to the estimate the project contains 1.81 million tons of ore averaging 3.3% U<sub>2</sub>O<sub>2</sub> in the category indicated for 132.1 million pounds of U\_O\_. Denison Mines 63.3% interest is equivalent to 83.6 million pounds of  $U_3O_8$ . This includes 166,000 tons averaging 19.1% U<sub>2</sub>O<sub>2</sub> from the Phoenix subproject. This makes Phoenix to the highest-grade deposit in the Athabasca Basin. Denison Mines increased their indicated resources by 88% compared with the former resource estimate. In addition, Wheeler River hosts 3.0 million pounds of U<sub>2</sub>O<sub>2</sub> in the category inferred (Denison's share:

#### Wheeler River – Deposits

The Phoenix deposit and the Gryphon deposit are situated in the northern part of the property and are only separated by approximately 3 kilometers (Source: Denison Mines)

# Penison Mines

#### Wheeler River – Phoenix

The larger deposit of the two is Phoenix, which is estimated to contain inferred resources of 1.1 million pounds U<sub>2</sub>O<sub>2</sub> at 5.8% U<sub>2</sub>O<sub>2</sub>, plus indicated resources of 70.2 million pounds U<sub>2</sub>O<sub>2</sub> at an average grade of 19.1% U<sub>2</sub>O<sub>0</sub> – which makes Phoenix the highest grade undeveloped uranium deposit in the world. By comparison, some ISR projects have grades between 0.01% and 0.02% U<sub>2</sub>O<sub>2</sub>! In the company's Preliminary Economic Assessment ("PEA") for the Wheeler River project, this deposit is estimated to provide 7 million pounds of U<sub>2</sub>O<sub>2</sub> per year over 9 years. The deposit is expected to be mined by a Jet Bore Mining method similar to Cigar Lake.

#### Wheeler River – Gryphon

Gryphon was discovered in 2014, when drill hole WR-556 returned uranium grades of 15% over several meters. Gryphon is hosted in basement rocks and can be mined by conventional and lowcost underground mining methods. Gryphon is estimated to contain 43.0 million pounds U<sub>3</sub>O<sub>8</sub> at an average grade of 2.3%  $U_3O_8^{"}$ , and according to Denison's PEA could provide 6 million pounds of U<sub>2</sub>O<sub>2</sub> per year over 7 years as the first stage of a co-development plan that will provide a 16-year mine life together with Phoenix. In May 2017, Denison announced the best result to date for the D Lenses with drill hole WR-633D3, returning 3.3% U<sub>2</sub>O<sub>2</sub> over 13.5m, plus 6.2% U<sub>2</sub>O<sub>2</sub> over 2.5m and 1.3% U<sub>2</sub>O<sub>2</sub> over 3.0m. In the area of the ore lenses E Denison reported, among other things, 4.3 m with 4.3% eU<sub>2</sub>O<sub>2</sub> at the end of 2017 and thereby expanded Gryphon to the northeast.

#### Wheeler River – Economic Assessment

Denison released a PEA for Wheeler River in April 2016, using the then current long-term contract price for uranium (US\$44/lb U<sub>2</sub>O<sub>2</sub>) in its base case. The results were very encouraging for such a moderate price assumption, returning a pre-tax IRR of 20.4% and a pre-tax Net Present Value ("NPV") of CAD\$513 million. At a uranium price of US\$62.60 per pound U<sub>2</sub>O<sub>2</sub>, the pre-tax NPV would reach CAD\$1.42 billion and the pre-tax IRR would climb to 34.1%. The initial capital costs modelled for the project were also very encouraging - amounting to only CA\$560 million (100%), as the plan assumes use of excess capacity at the company's 22.5% owned McClean Lake mill, rather than building a new uranium mill.

The estimated operating cash costs are also worth highlighting. According to the PEA, operating costs are estimated to be US\$22.15 per pound of U\_O\_ at Phoenix and only US\$14.28 per pound U<sub>0</sub>O<sub>2</sub> at Gryphon. Sensational numbers considering that these numbers are based only on the drill results received by the end of 2015. With the discovery of the D and E series of lenses at Gryphon, since that time, it is fair to expect that the results from the ongoing preliminary feasibility study (PFS) could be even better.

#### McClean Lake – the own plant as future processing facility for ore from Wheeler River

The McClean Lake processing plant is an ace by all estimates. Denison already holds a 22.5% interest in that plant through a Joint Venture with AREVA (70%). The plant is fully licensed and is presently processing ore from the Cigar Lake mine under a toll milling agreement. McClean Lake has a licensed processing capacity of 24 million pounds of U<sub>2</sub>O<sub>2</sub> per year, with 18 million pounds U<sub>2</sub>O<sub>2</sub> per year available for Cigar Lake. The remaining 6 million pounds of processing capacity is available, at present, for Denison to potentially use for Wheeler River, Although McClean Lake is 120km from Wheeler River, the high grades at Wheeler make a low tonnage operation well suited for transport to an existing mill - providing an unbeatable alternative to building and licensing a costly new plant.

#### Wheeler River – current plans and schedule

In 2018 Denison is planning two things: First, the advancement of the PFS. In order to deliver the PFS in 2018, the company will conduct geotechnical, hydrogeological and environmental field programs. In addition, the company will complete studies for shaft construction, different mining methods for Phoenix. and evaluations for water treatment. Beyond working towards the PFS, Denison is planning an aggressive exploration drill program, originally totaling 46,000m - to confirm and expand the mineralization at Gryphon.

Following the PFS, investors can expect Denison to look at permitting the project and completing a bankable feasibility study ahead of mine construction in the early 2020s. Given the permitting required in Saskatchewan, a realistic time for mining to start is estimated in 2025/2026.

#### Wheeler River – Exploration and development potential

Although Wheeler River is already the largest undeveloped uranium project in the infrastructure rich eastern portion of the Athabasca Basin, mineralization at Gryphon remains open on multiple fronts and continues to expand.

#### **Other Projects**

Including Wheeler River, Denison owns interests in over 350,000 hectares of ground in the Athabasca Basin region which is highlighted by numerous highly prospective exploration pipeline proiects.

#### Waterbury and Midwest

with 16.8% U<sub>2</sub>O<sub>2</sub>. a 25.17% interest in Midwest.

#### **Hook-Carter**

In October 2016, Denison acquired an 80% interest in the Hook-Carter Project located on the same trend as Fission Uranium's Triple R deposit and NexGen's Arrow deposit. Hook-Carter covers



The Waterbury Project (Denison: ~64%) was acquired from Fission Energy in 2013 and is host to the J-Zone uranium deposit (estimated to include an indicated resource of 12.8 million pounds U<sub>2</sub>O<sub>2</sub> at an average grade of 2.0% U<sub>2</sub>O<sub>2</sub>). Denison recently made a new discovery on the property - located approximately 1 kilometer north of J-Zone at an area that is now called the "Huskie" zone. In an initial 9-hole drill program, mineralization has been discovered in the basement rocks over 100 meters of strike length and is highlighted by various high-grade drill intersections - including 3.7% eU<sub>2</sub>O<sub>2</sub> over 3.9 meters. In October 2017 Denison Mines received excellent results. among other things a 3 m long section averaging 9.1% U<sub>2</sub>O<sub>2</sub> that contains 2m

Adjacent to Waterbury is the Roughrider deposit, acquired by Rio Tinto in 2011 for over CAD\$500 million, and the Midwest project (25,17% owned by Denison). Midwest is estimated to contain over 50 million pounds U<sub>2</sub>O<sub>2</sub> in the Midwest and Midwest A deposits. Both Waterbury and Midwest are located only a few kilometers from McClean Lake. Denison has

# **C**enison Mines

19,573 hectares and has seen little to no exploration to date. The company also acquired the Coppin Lake project to consolidate Hook-Carter into a single land package. In 2017 Denison carried out extensive geophysical surveying and now plans to carry out a maiden drill program in 2018.

#### Holdings in other top uranium companies

Due to the disposal of various non-core assets. Denison has become a large shareholder in other top uranium companies in past years. Denison owns approximately 20% of the shares of GoviEx Uranium, and more than 10% of the shares of Skyharbour Resources.

#### Summary: Future uranium producer with almost unlimited development potential!

Denison is well prepared for increasing uranium prices. Wheeler River is the largest undeveloped uranium project in the

eastern Athabasca Basin - and located in Cameco Corporation's backyard. Wheeler has the benefit of existing infrastructure nearby, high-grade uranium, and large scale. Taken together, a mining start seems to be realistic within seven vears. The ownership of the McClean Lake processing plant is also a very important part of Denison's story, as it is already built and licensed, so capital costs for Wheeler River are comparative low. Beyond Wheeler, Denison has over 350,000 hectares of license areas in the Athabasca Basin, and is currently exploring the very exciting Huskie discovery at Waterbury Lake. With such high-quality exploration ground. Denison almost has unlimited news and development potential, including drill results and the PFS, as it looks to return to the ranks of uranium producers.

Another important advantage: Denison is backed by the Lundin family, one of the best known and most successful mining dynasties, with Lukas Lundin holding the position of Executive Chairman at Denison

What are the main catalysts for your company within the next 6 months?

Denison's priority for 2018 is to complete the Pre-Feasibility Study (PFS) for the Wheeler River project. Much of the work completed in 2016 and 2017 was in anticipation of advancing Wheeler towards the PFS and ultimately a development decision in future years. We also anticipate increasing our ownership in Wheeler to up to 66% by the end of the year. In addition, Denison continues to work on its priority exploration projects, with the potential for drill results from Waterbury and Hook-Carter to catalyze the stock.

#### What is your opinion about the current conditions of the uranium market?

Optically, negative demand side stories from nuclear heavy-weight countries like the United States, France and South Korea, plus continued disappointment with the rate of nuclear reactor restarts in Ja-

ISIN: CA2483561072 WKN: A0LFYS FRA: IUQ DML TSX: NYSE: DNN

Shares issued: 559.1 million Options: 12.5 million Warrants: 1.7 million Fully diluted: 573.3 million

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info@denisonmines.com www.denisonmines.com pan and the deferral of utility contracting activity, have offset several high-profile production curtailments announced by industry leaders Cameco Corp. and Kazatomprom during 2017. The production curtailments, however, are quite significant and signal that the current price of uranium is not at all sustainable - especially since Cameco and Kazatomprom both have top tier assets under price pressure at these levels. That said, for a price recovery to be sustained, utility buying must resume and contracting volumes must increase as utilities work towards securing nearly 1.2 billion pounds U<sub>0</sub>O<sub>2</sub> in uncovered uranium requirements for the period of 2018 to 2030. With few economic sources of new supply in the project pipeline, and the potential for additional production curtailments, a significant utility contracting cycle is expected to emerge and ultimately lead to higher prices, which will be required to incentivize new sources of primary supplv into the market.



David D. Cates. CEO

## **Exclusive interview with David D. Cates, CEO of Denison Mines**

What did you and your company achieve within the last 12 months?

Denison has successfully executed on its growth strategy to position the company as the next uranium producer in Canada. following an 88% increase in our estimate of indicated resources for the Wheeler River project - reaffirming Wheeler's position as the largest undeveloped Uranium project in the infrastructure rich eastern Athabasca. The company also increased its ownership in Wheeler from 60% to 63.3%, under an agreement with its JV partners. Financially, the Company raised CAD\$63.5M in cash during the first quarter of 2017, which has positioned Denison with a strong balance sheet capable of funding the advancement of our projects over the next several years.

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## **Denison Mines Corp.**

(Source: BigCharts)

## **Energy Fuels** Mega production capacities for the next uranium rebound

Energy Fuels is currently the second largest uranium producer in the USA after Cameco. Although the company produced 650,000 pounds of  $U_0O_0$  in 2017, Energy Fuels has a way higher licensed production capacity. This means that Energy Fuels could produce and sell up to 11.5 million pounds of  $U_0O_0$  in the case of increasing uranium prices. This provides the company with a tremendous leverage on the uranium spot price!

#### Nichols Ranch ISR Project

One of the two producing uranium proiects is Nichols Ranch and is located in the U.S. state of Wvoming. Nichols Ranch is a so called in-situ recovery (ISR) project and was acquired in the merger with Uranerz Energy. ISR mining is a relatively low-cost production method which is why Energy Fuels can operate this project at very low uranium prices. Since the start of the operation at Nichols Ranch more than 1 million pounds of U<sub>2</sub>O<sub>2</sub> were produced and processed in the central plant which is licensed for processing 2 million pounds of U<sub>2</sub>O<sub>2</sub> annually. Nichols Ranch has additional well fields which

can be operated in the future. Nichols Ranch is the central puzzle piece of a series of other (potential) satellite projects. The nearby projects Jane Dough and Hank have at least an additional 30 well fields with relevant resources which can be connected easily and at low costs to the existing pipeline system. Jane Dough contains a current resource of 3.9 million pounds of U<sub>3</sub>O<sub>8</sub>, Hank more than 1.7 million pounds of U<sub>2</sub>O<sub>2</sub>. Both projects are fully licensed for a future production. Nichols Ranch could significantly increase the production within six months, provided it could realize a uranium sales price of US\$ 40 to US\$ 50 per pound of U<sub>2</sub>O<sub>2</sub>. Additional non-core ISR project areas in Wyoming were sold to Uranium Energy for US\$ 5.39 million in cash and shares in November 2017.

In December 2017 Energy Fuels acquired by a merger with Excalibur Industries the existing production royalty of 6 – 8% on Nichols Ranch as well as on several ISR projects of Cameco. Thereby there are no more future royalty payments and the company will receive royalties from Cameco provided their projects resume production.



#### Alta Mesa ISR Plant

The Alta Mesa ISR Plant is located in southeastern Texas and is currently on standby mode. From 2005 to 2013 Alta Mesa produced in total 4.6 million pounds of U<sub>2</sub>O<sub>2</sub> and has a fully licensed processing capacity of 1.5 million pounds of U<sub>2</sub>O<sub>2</sub> per year. The associated license area hosts resources of 20.4 million pounds of U<sub>2</sub>O<sub>2</sub> and the production could be restarted within 12 months if a uranium sales price of US\$40 to US\$50 per pound of U<sub>2</sub>O<sub>2</sub> could be realized. The license area (200,000 acres) has a high exploration potential which could extend the mine life by an additional 15 vears.

#### White Mesa Mill

White Mesa Mill is located in southeastern Utah and is currently the only functional and operating conventional uranium processing plant in the entire USA! It has a fully permitted annual processing capacity of 8 million pounds U.O., The White Mesa Mill has several special features. It has a separate circuit for low cost processing the aforementioned alternate feed materials. The mill also has an additional circuit for processing of vanadium and had a significant vanadium production in the past. But the biggest advantage of the White Mesa Mill is its unique location. The mill is located centrally between several mines featuring the highest uranium grades in the USA. Besides the possibility to feed the mill from these mines, the company is working together with the U.S. Government at a legacy cleanup program in which also significant amounts of uranium could be generated as well. Last but not least, Energy Fuels is processing for a third party on toll milling basis uranium rich ore. Thereby the company is generating US\$6 million per year.

#### **Canyon Mine**

cesses are ongoing.

between 5.70% and 9.29%.



One of the high-grade uranium mines that will feed uranium rich ore to the White Mesa Mill in the future (again) is owned by Energy Fuels. It is the fully permitted and currently on standby mode Canyon Uranium and Copper Mine in northern Arizona which has the highest grades of all conventional uranium mines in the USA! The Canyon Mine currently hosts resources of 1.6 million pounds of U<sub>2</sub>O<sub>2</sub> (as of 2012) but was only sporadically explored for existing deposits. Since 2012 the company announced excellent drill results. Averaging the 12 best drill intersections results in 1.15% U<sub>2</sub>O<sub>2</sub> and 9.36% copper over just 300m in total! The surface infrastructure and the production shaft are already completed. According to estimates, Canyon ranks among the conventional uranium mines with the lowest production costs worldwide. The actual processing of the produced ore will take place at the White Mesa Mill located 300km away. Canyon could be commissioned within 12 months in case of a stable uranium price between US\$40 and US\$50 per pound of U<sub>2</sub>O<sub>2</sub> and produce between 500,000 and one million pounds of U<sub>2</sub>O<sub>2</sub> per year. In 2017 published drill results confirmed grades of up to 2.88% U<sub>2</sub>O<sub>2</sub> and 14.85% copper in the Canyon Mine. The high copper values could lead to Energy Fuels processing the ore from the Canyon Mine for an almost unbeatable price in the White Mesa Mill. Appropriate test pro-

In August 2017 Energy Fuels published a new expanded resource estimate for the Canyon Mine. According to the estimate the Upper, Main and Juniper zones contain around 2.6 million pounds U<sub>2</sub>O<sub>2</sub> with average grades between 0.20% and 0.89% as well as around 12.5 million pounds of copper with average grades



#### Other permitted top projects

Besides the already mentioned large-scale projects Energy Fuels owns a series of additional projects which are fully permitted for production.

#### La Sal Complex, Utah

The La Sal Complex is located around 100km northeast of the White Mesa Mill and is comprised of the two mines Beaver and Pandora which were already in production in 2012. Both mines contain more than 4.5 million pounds of U<sub>2</sub>O<sub>2</sub> and 23.4 million pounds of vanadium. The La Sal Complex could be recommissioned within 6 months if a uranium sales price of at least US\$60 per pound of U<sub>2</sub>O<sub>2</sub> could be realized. Due to the recent increase of the vanadium price the commissioning of La Sal could reactivate the vanadium circuit in the White Mesa Mill. In February 2018, the company achieved the permit to expand the La Sal Complex.

#### **Daneros Mine**

The Daneros Mine is located 40km west of the White Mesa Mill and was in operation until 2012. The mine contains around 0.7 million pounds of U<sub>2</sub>O<sub>2</sub>. Daneros could be recommissioned within 6 months if a uranium sales price of at least US\$60 per pound of U<sub>2</sub>O<sub>2</sub> could be realized.

#### Whirlwind Mine

The Whirlwind Mine is located 120km northeast of the White Mesa Mill. It contains around 3.0 million pounds of U<sub>2</sub>O<sub>2</sub> and 10.1 million pounds of vanadium. Whirlwind could be commissioned within 6 months if a uranium sales price of at least US\$60 per pound of U<sub>2</sub>O<sub>2</sub> could be realized. Regarding the vanadium resource the same applies like for the La Sal Complex.

#### Tony M Mine (Henry Mountains)

The Tony M Mine is located 200km west of the White Mesa Mill and belongs like the Bullfrog Mine to the Henry Mountains Complex. Tony M contains 10.9 million pounds of U<sub>2</sub>O<sub>2</sub> and could be commissioned within 6 months if a uranium sales price of at least US\$60 per pound of U<sub>2</sub>O<sub>2</sub> could be realized.

#### Projects in the development phase

Besides the already permitted mines Energy Fuels owns a series of other excellent projects which will need startup periods of several years. Among them are the aforementioned Bullfrog Project with a resource of 10 million pounds of U<sub>2</sub>O<sub>2</sub>, Roca Honda with 25.8 million pounds of  $U_3O_8$  and Sheep Mountain with over 30 million pounds of  $U_3O_8$ . Energy Fuels has a resource basis totaling over 130 million pounds of U<sub>2</sub>O<sub>2</sub> as well as 24.5 million pounds of vanadium and more than 12 million pounds of copper.

#### Petition for strengthening of the U.S. uranium production

In January 2018 the only two remaining U.S. uranium producers Ur-Energy and Energy Fuels filed a petition with the U.S. Department of Commerce to point out the relevance of the U.S. uranium production regarding possible security-related concerns as well as the increasing dependence of the energy sector from uranium imports.

Both companies argued that by now 40% of the U.S. uranium demand is satisfied by imports from successor states of the former Soviet Union (namely Russia. Kazakhstan and Uzbekistan). Only 5% of the demanded uranium is mined in the United States of America. The dependence of the U.S. energy sector (20% of the electricity in the USA is generated by nuclear energy) as well as the military from these nations has reached an alarming level.

The two producers want to achieve, with their petition, that the U.S. Department of Commerce as well as President Trump will develop a clear assessment of the dependence on imports of the USA from Russia, Kazakhstan and Uzbekistan as well as promote the uranium industry in the USA.

#### Summary: the possibility of fast commissioning of several mines provides a large leverage on the uranium price!

Energy Fuels is the second largest uranium producer in the USA after Cameco and has production capacities of over 11 million pounds of U<sub>2</sub>O<sub>2</sub> per year! The company owns several low-cost mines and could increase its production already at a uranium price of US\$40. In addition, the company owns several processing plants which can produce at lower costs with increasing utilization. These are very flexible regarding an increasing production and can extract other commodities like vanadium and copper. With that Energy Fuels not only has a significant leverage on the uranium spot price but also a unique variability. Another advantage: Energy Fuels is producing not only conventionally but also by ISR mining. With resources of 130 million pounds of U<sub>2</sub>O<sub>2</sub> Energy Fuel ranks under the top three companies with the largest uranium resources in the USA. The new CEO, Mark S, Chalmers appointed in January 2018 who has several decades of experience in the uranium sector will inject new vitality into the company.

## Exclusive interview with Mark S. **Chalmers, CEO of Energy Fuels**

What did you and your company achieve within the last 12 months?

The past year has been extremely busy for Energy Fuels. The biggest news is that Energy Fuels, along with Ur-Energy, filed a Section 232 Petition with the U.S. Department of Commerce (a cabinet-level agency of the U.S. federal government) to have them investigate the effects of today's high levels of uranium and nuclear fuel imports on U.S. national and energy security. The U.S. is currently about 40% dependent on imports of uranium from Russia and its satellites - and that number may grow to 50% or more in 2018 and 2019 without prompt action. The U.S. generates 20% of our electricity from nuclear energy. Therefore, Russia exerts a large degree of control over 10% of U.S. electricity. We felt we needed to bring this to the attention of our government. To help fix the problem, we have recommended that uranium imports into the U.S. be limited, so that 25% of the U.S. uranium market is reserved for U.S. producers (about 10-12 million pounds of uranium per year). Once the investigation is initiated, Commerce will have 270 days to complete the investigation and submit a recommendation to President Trump. Then, the President has 90 days to impose a remedy. If successful, the U.S. uranium mining industry would be revitalized, and due to our having three production facilities and unmatched scalability, Energy Fuels would likely fill a majority of this production.





Mark S Chalmers CEO



Aside from this, Energy Fuels and our White Mesa Mill in Utah is also the only vanadium producer left in the U.S. Vanadium prices have increased substantially over the past several months, and we are looking at a number of opportunities to capture these price increases. Our mill last produced vanadium in 2013 (1.5 million pounds), and it has actually produced more pounds of vanadium than uranium during its 40-year operating history.

Finally, we are seeking other revenue through new sources of alternate feed materials and becoming involved with the U.S. government in the cleanup of historic uranium mines.

#### What are the main catalysts for your company within the next 6 months?

The main catalysts for Energy Fuels include the success of the 232 Petition, higher uranium prices, vanadium production, securing new alternate feed

sources, and hopefully signing contracts for government cleanup work.

#### What is your opinion about the current conditions of the uranium market?

The current uranium market is at an interesting stage. The world is oversupplied, and we've seen major production cuts announced over the past year. On the other hand, there is a significant portion of current global production that comes from state-controlled and state-subsidized actors who are not as price sensitive as free market miners. Therefore, global production is not dropping as fast as it should. That is part of the basis of our 232 Petition - to provide U.S. uranium producers like us with some level of support.

Energy Fuels is making things happen, and we are very excited about the prospects for 2018.

## **Energy Fuels Inc.**



(Source: BigCharts)

ISIN: CA2926717083 WKN: A1W757 FRA: VO51 TSX: EFR NYSE: UUUU

Shares issued: 70.1 million Options: 2.0 million Warrants: 6.7 million Restricted: 1.7 million Convertible Deb.: 5.3 million Fully diluted: 85.9 million

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## Fission 3.0 Uranium property bank hits the first bull's eye!

Fission 3.0 is a Canadian development company with 20 uranium projects in and around the Athabasca Basin and the Macusani Project in Peru. The company is the product of a spin-out from Fission Uranium and therefore the third Fission project of the successful management team under Dev Randhawa. He wants to achieve similar successes with Fission 3.0 as with fission Energy and Fission Uranium.

#### From Strathmore Minerals to Fission 3.0

1996 Randhawa founded Strathmore Minerals at a time when the uranium spot price was at US\$7. He led Strathmore Minerals from an initial market cap of 2 million dollar to a market cap of over 450 million dollars by 2007. During that time, he completed a Joint Venture with Sumitomo. In 2007 the spin-out of Fission Energy took place. Randhawa led Fission Energy from a market cap of 16 million dollars to a market cap of 150 million dollars by 2013. Besides a joint venture with KEPCO he discovered the J Zone which was successfully sold to Denison Mines. In addition, he discovered the Triple R Zone which is currently a part of the Patterson Lake South (PLS) mega project of Fission Uranium. Fission Uranium is a spin-out resulting from the Denison deal. In 2013 Fission Uranium acquired a 50% interest in PLS from Alpha Minerals, at which time the other projects were spun out into Fission 3.0. Fission 3.0 is an independent company since November 2013.

#### The most important projects

The many projects in the Athabasca Basin region can be roughly divided into four categories:

- iect.

### **Patterson Lake South Projects**

The three Patterson Lake South Projects; Patterson Lake North, Clearwater West and Whales Lake comprise an area of close to 60.000 hectares located along Highway 955 and are partly in close proximity to Fission Uranium's PLS Project. The complete southwestern



1. The three Patterson Lake South Projects which are located north and south of Fission Uranium's PLS Pro-

2. The three Key Lake Road Projects which line up along Highway 914 southwest of Key Lake Mill.

3. The five Beaverlodge Projects which are located north northwest the Athabasca Basin around Uranium City.

4. The remaining project areas which are dispersed in and outside the Athabasca Basin.

In addition to these projects is the Macusani Project in southern Peru. Following is a detailed overview of the most important projects.



Dev Randhawa, CEO

Fission 3.0 is a Canadian development company with 20 uranium projects in and around the Athabasca Basin (Source: Fission 3.0)



area of the Athabasca Basin hosts some very large uranium deposits like the past producing Cluff Lake Mine on the one hand and the high-grade deposits Triple R. Arrow and Shea Lake on the other hand and is still considered as largely under explored.

#### Patterson Lake North

Patterson Lake North is the flagship project of Fission 3.0. It is the northern counterpart of Fission Uranium's Patterson Lake South mega project. Patterson Lake North is a joint venture project between Fission 3.0 (90%) and Azincourt Uranium. Although Patterson Lake North is not as advanced as Patterson Lake South, there are credible signs that Patterson Lake North could host a significant uranium deposit as well. The proiect is located on the same structural corridor as PLS. Several drill holes have already tested the corridor over a distance of 700m. The drill holes returned significant uranium mineralization and other elements like boron, copper, nickel and zinc indicating a high-grade potential.



#### **Clearwater West**

Clearwater West directly borders Fission Uranium's Patterson Lake South Project in the south. Thereby it is also in the sphere of influence of the boulder field that was the starting point for the discovery of Patterson Lake South as well for the Patterson Lake North Project. On both projects, a new "boulder finding" technology was applied for which a patent application was filed. This airborne survey method was largely responsible for the discovery of the Patterson Lake South boulder field. Now the first anomalies were also detected for Patterson Lake North and Clearwater West.

#### Whales Lake

Whales Lake is located 25km southwest of Fission Uranium's Triple R deposit. In 2017 a helicopter borne VTEM survey was flown over the area.

#### **Key Lake Projects**

The three Key Lake Projects (12,670 hectares) have the potential for high-grade, near surface uranium resources. To date the entire Key Lake region produced more than 200 million pounds of U<sub>0</sub>O<sub>2</sub> and has an excellent developed infrastructure. The Key Lake Mill is located 50km north of Fission 3.0's projects. Ore material from the McArthur River Mine is processed there.

#### Karpinka Lake

One of these three projects is called Karpinka Lake. It covers 2,743 hectares and is located south of the southeastern boundary of the Athabasca Basin directly on the Wollaston-Mudiatik Transition Zone. Several important uranium pro-



iects like the McArthur River uranium mine, the Cigar Lake uranium mine and the former producing Key Lake uranium mine are also located within the Key Lake Shear Zone of the Wollaston-Mudjatik Transition Zone. In 2017 a helicopter borne VTEM survey was flown over the area. The results provided Fission 3.0 indications for potentially high-grade drill targets, which shall be tested in 2018.

#### Hobo Lake

The second important subproject of the Key Lake Projects is called Hobo Lake. It covers 6,946 hectares and is located 40km south of Karpinka Lake on the same geological trend. In 2017 a helicopter borne VTEM survey was flown over the area. The results will provide Fission 3.0 indications for potentially high-grade drill targets. Fission neighbor Forum Uranium identified in samples up to 6.42% U<sub>2</sub>O<sub>2</sub>.

## jects

The combined Beaverlodge Projects comprise three single projects with a total area of 58,119 hectares. Although a very well-developed infrastructure is in place due to the proximity to Uranium City and the fact the region hosted over 50 uranium mines during the 1950s and 1960s Beaverlodge is a completely underexplored district.

#### **Beaver River**

Beaver River has already a proven trend which is over 137m long. Uranium grades of up to 1.77% U<sub>2</sub>O<sub>2</sub> were found in trenches.



At Midas. Fission 3.0 recently made some high-grade discoveries (Source: Fission 3.0)

from the area of the nearby Hobo Zone

#### Beaverlodge/Uranium City Pro-





The entire Macusani District hosts a variety of near surface uranium and lithium deposits which can be mined by heap leaching methods. (Source: Fission 3.0)

#### Jackpot at Midas

In November 2017 Fission 3.0 hit the jackpot at Midas, the second of the Beaverlodge projects. The company discovered high-grade uranium in boulders identifying uranium grades of up to 11.9%. Thereby this underexplored project to date is now in the focus of the company and additional exploration activities are planned for 2018.

#### Thompson Lake

In 2017 extensive formation studies were carried out at the third project, Thompson Lake, identifying a host rock formation down to a depth of 100m. This qualifies Thompson Lake for more detailed explorations and drilling.

#### Macusani Project, Peru

The Macusani Project is located in the Macusani District in southern Peru. The

entire district hosts a variety of near surface uranium and lithium deposits which can be mined by heap leaching methods. Fission 3.0's Macusani Project is surrounded by license areas of Plateau Uranium which already have a mega resource containing 105 million pounds of U<sub>2</sub>O<sub>2</sub> and 179.000 tons of Li2O outlined. Plateau Uranium expects to start production in 2019 whereby Plateau Uranium's planned processing plant will be only one kilometer from Fission 3.0's Macusani Project. Fission 3.0's subprojects Llama North and Llama South are in trend with Plateau's Corapachi and Corani Complexes which hosts four independent deposits.

Fission 3.0 completed a drill program (16 drill holes) in 2016. 13 drill holes intersected radioactive anomalies, some of them starting only 1.5m below surface. One of the drill holes returned from a depth of 16m a 0.5m long intersection with sensational 1.21% U<sub>2</sub>O<sub>2</sub>. Samples from visible outcrops had grades of over 2% U<sub>2</sub>O<sub>2</sub> with identified peak values of up to 24.48% U<sub>2</sub>O<sub>2</sub>.

#### Top management team wants to book the next achievement

Fission 3.0's management team is comprised largely of board members of Fission Uranium. Fission Uranium made the biggest uranium discovery of the past 40 years at Patterson Lake South in Canada's Athabasca Basin.

Aforementioned Dev Randhawa is an experienced CEO with a wealth of experience in resource expansion, mine exploration and energy companies. The Northern Miner named him "Mining Person of the Year 2013" and Finance Monthly awarded him the "Deal Maker of the Year 2013" award. He is the current CEO of Fission Uranium and Fission 3.0 Corp.

Ross McElroy is a professional geologist with nearly 30 years of experience in the mining industry. He is the winner of the PDAC 2014 Bill Dennis Award for exploration success and The Northern Miner "Mining Person of the Year 2013". Mr. McElroy has held positions with both major and junior mining companies, including BHP Billiton, Cogema Canada (now AREVA), and Cameco. He was a member of the early stage discovery team of the MacArthur River uranium deposit. Ross McElroy was also part of the very successful Fission Energy Corp. team as president, COO and chief geologist. He headed up the technical team that made Fission Uranium's PLS discovery.

#### Summary: Property bank with several possibilities for a big discovery

Fission 3.0 is a so called "Property Bank", a company with a variety of potentially high-quality mining projects which the company is developing itself to sell them profitably later or to enter

SIN:	CA3381241007
/KN:	A1W9R9
RA:	2F3
SX-V:	FUU

Shares issued: 219.9 million Options 13.0 million Warrants: 22.2 million Fully diluted: 255.1 million

#### Contact:

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into joint venture agreements. Contrary to Fission Uranium Fission 3.0 is still in an early exploration and development stage. But that is the big share price potential of Fission 3.0. Several potentially high-grade uranium projects are explored for deposits with self-developed methods. At some projects (Patterson Lake North, Clearwater West, Macusani) the location alone is an indication of the great potential and the source of appropriate speculations. Soon Fission 3.0 could like Fission Uranium make a big discovery. The 11.9% discovery at Midas could be only a small foretaste.

Ultimately the strong CEO Dev Randhawa would make a huge success story out of his latest project like he did with Strathmore Minerals, Fission Energy and Fission Uranium.

## Fission 3.0 Corp.

(Source: BigCharts)

## **Fission Uranium**

One of the largest uranium deposits worldwide not yet fully developed



Dev Randhawa, CEO

(Source: Fission Uranium)

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Fission Uranium is a Canadian uranium development company which made one of the biggest uranium discoveries of all time in the past years. The Patterson Lake South Project is not only one of the biggest uranium projects worldwide but also one with the highest grades. It is one of the projects that could be brought to production in the foreseeable future. Further, Fission Uranium is currently the most award-winning uranium developer globally.

#### Patterson Lake South -Location. Discovery and Infrastructure

The Patterson Lake South (PLS) Project Location of the original boulder field is located in the western part of the Atand the diverse uranium deposits, which habasca Basin just outside the (actual) extend to more than 3 kilometers basin margin. One has to know that all of the uranium production is concentrated in the eastern portion of the basin -Key Lake, Rabbit Lake, MacArthur River and Cigar Lake. In contrast, the western part of the Athabasca Basin is very underexplored. The former Cluff Lake Mine, operated by AREVA until 2000, is located 80km north of PLS. Fission Uranium's President, COO and Chief Geologist Ross McElroy worked for AREVA, which discovered the Shea Creek deposit that is located a few kilometers north of PLS and hosts a resource of more than 100 million pounds of U<sub>2</sub>O<sub>2</sub>. This discovery was the reason for McElroy to believe in the potential of the western part of the basin.

While most deposits in the Athabasca Basin are so called "unconformity deposits" (hosted in sedimentary rocks) a few are so called "basement hosted" deposits, which are typically found close to



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the surface because the overlying rocks were eroded over time. This means that the Athabasca Basin was bigger in the past. Therefore, McElroy explored there, were the basin's original outer rim was in the past. After completion of a radiometric survey showing a large area with radiation, the company discovered boulders containing up to 10% U<sub>2</sub>O<sub>2</sub>, very high-grade material. That material was spread over several kilometers by glaciers during the last ice age. Fission Uranium subsequently traced the track of the ice to the source of the uranium. All this work resulted in the first discovery in November 2012, when the very first drill hole intersected the PLS deposit. It is interesting that the overburden is only 50m thick. All those findings resulted in an extensive drill program in 2013 leading to the discovery of a one-kilometer long mineralization called Triple R. This mineralization, with uranium grades of over 20%, is located under a shallow lake. PLS is located directly on the road connecting Saskatoon with the former Cluff Lake Mine drastically reducing the costs and ultimately the project risk.

#### Patterson Lake South -**Resource and Feasibility Study**

U<sub>0</sub>O<sub>0</sub> (inferred) respectively.



In 2015 Fission Uranium announced a first resource estimate of about 108 million pounds of U<sub>2</sub>O<sub>2</sub> with the majority in the category indicated. Around 59 million pounds of U<sub>2</sub>O<sub>2</sub> are contained in the especially high-grade R780E Zone (part of the Triple R deposit) at 18% U<sub>2</sub>O<sub>2</sub>.

In February 2018 Fission Uranium pulverized this resource base and outlined a resource of 140.61 million pounds of U<sub>2</sub>O<sub>2</sub>. Thereof 87.76 million pounds of U<sub>0</sub>O<sub>0</sub> are in the category indicated and 52.85 million pounds of U<sub>2</sub>O<sub>2</sub> are in the category inferred. Close to 63 million pounds of U<sub>3</sub>O<sub>8</sub> are located in the high-grade R780E Zone averaging 18.39% U<sub>2</sub>O<sub>2</sub> (indicated) and 20.85%

In September 2015 Fission Uranium published a Preliminary Economic Assessment (PEA) demonstrating the economical extraction of the deposit. An open pit scenario was assumed because the uppermost part of the resource is only 50m below the surface. This open pit model extends down to a depth of 200m TripleR is a one kilometer long mineralization which hosts very high uranium grades of 20% and more. (Source: Fission Hranium)





Fission Uranium made a significant discovery in January 2018. In the area of the Triple R deposit the company identified a continuous mineralization of 108m averaging 8.46% U<sub>3</sub>O<sub>8</sub>. (Source: Fission Uranium)

> with additional underground scenarios. The post-tax Internal Rate of Return ("IRR") would amount to 40% and the capital costs are estimated CA\$1.1 billion. Despite the high capital costs, the repayment period would be one and a half years. Based on the resource estimate from 2015, the mine life is 12 to 15 vears. Since the first resource estimate the company continued drilling along the main trend and could expand the trend to over 3km by several new discovered zones.

> Of particular importance were the drill results published in the summer of 2017. They showed among other things a compound mineralization of over 61m with more than 10,000 cps.

> In addition, Fission Uranium made a significant discovery in January 2018. In the area of the Triple R deposit the company identified a continuous mineralization of 108m averaging 8.46% U\_O 120m west of the high-grade R780E

Zone. This section included a 8.5m long interval with a sensational 27.66% U<sub>2</sub>O<sub>2</sub> one of the highest uranium grades ever being reported worldwide. Further to the east a 8.0m long interval with 22.28% U<sub>2</sub>O<sub>2</sub> was identified.

#### Profitability improvements due to zones on land

The on land located mineralized zones R840W and R1515W are of special interest because no dike construction is necessary for mining these zones. Fission Uranium could start with a conventional open pit mine on land without any water problems. This would generate a significant cash flow and pay for the second phase. The overburden at this land zone is the perfect material to build the necessary dikes. Material is used that has to be moved anyways and a second benefit would be that the resulting waste rock could be stored in the initial pit. This should improve enormously the profitability although the all-in costs are only US\$16.60 per pound according to estimates in the PEA making PLS the lowest cost uranium mine on the planet. It appears that there are additional mineralization zones on land.

In the course of the 2017 summer drill campaign the company reported several world-class drill results. From the R1515W zone the company reported among other things 3.12% U<sub>2</sub>O<sub>2</sub> over 8.5m within 27.5m with 1.24% U<sub>0</sub> as well as 5.15%  $U_3O_8$  over 2.0m within 9.0m with 1,71%  $U_3O_8$ . In addition, radioactive anomalies with over 10,000 cps over several meters were detected. To illustrate: this high-grade zone is located 2.3km from the Triple R deposit!

In this context it is interesting to note that significant uranium grades were reported that are situated an additional 120m to the west. This indicates that the mineralized zones extend further to the west and on land.

In October 2017 Fission Uranium identified additional significant uranium grades over a total length of 95m in the R1545W Zone including 35m with 1.80% U<sub>2</sub>O<sub>2</sub> and 4.5m with 5.27% U<sub>2</sub>O<sub>2</sub>. In addition, the company reported several drill intervals with radioactivity of over 10.000 cps in each case. The best interval had a radioactivity of over 65.500 cps.

#### Strategic partner from China

In January 2016, the state-owned Chinese utility company CGN invested in Fission Uranium. It acquired 19.9% of the then issued and outstanding shares at a total price of CA\$83 million. At that time CGN paid a premium of 35% on the appropriate share price. CGN is not an end-user but a company planning far ahead into the future and was searching for projects in Canada to secure the growing nuclear power industry in China. CGN also met Cameco and almost all the other companies with projects in the Athabasca Basin. Ultimately the choice was an investment in Fission Uranium and therefore in PLS due to its enormous size and as well for the mineralization in shallow depth.

#### Top management team for maximum success

um and Fission 3.0 Corp. discovery.

#### Plans for the coming months

For 2018 the company's goal is to extend the currently known mineralized



Fission Uranium has a very experienced and successful management team.

Dev Randhawa is an experienced CEO with a wealth of experience in resource expansion, mine exploration and energy companies. The Northern Miner named him "Mining Person of the Year 2013" and Finance Monthly awarded him the "Deal Maker of the Year 2013" award. He is the current CEO of Fission Urani-

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trend further to the west and east. In addition, Fission Uranium has already conducted some tests outside the known trends. PLS has a variety of additional radioactive hotspots that could host additional deposits. As well, an expansion of the Triple R deposit and test drill holes between the zones is planned. The company plans the completion of a prefeasibility study by the end of 2018 and a bankable feasibility study by the end of 2019.

#### Summary: Top project, top management, top prospects!

Fission Uranium will continue to focus on the development of PLS and therefore the exploration of the projects. The focus will be especially on the western part of the known mineralization trend because this will have a positive effect

on the profitability of the project. Fission Uranium has one of best uranium projects with a mega potential worldwide, enough cash for the development and the best partner from China as well as an absolutely success-oriented management to lift Patterson Lake South to an unprecedented level in 2018. Thus, making the company more and more a takeover candidate for a major (uranium) company looking for easy to mine high-grade near surface uranium resources.

## **Fission Uranium Corp.**



ISIN: CA33812R1091 WKN: A1T87E FRA: 2FU TSX: FCU

Shares issued: 485.6 million Options: 45.8 million Warrants: -Fully diluted: 531.5 million

#### Contact:

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## **GoviEx Uranium** Future low-cost uranium producer with large resource and big leverage on uranium price

GoviEx Uranium is a Canadian mining development company specializing in the exploration and development of uranium projects in Africa. To date the company outlined resources with more than 200 million pounds of U<sub>2</sub>O<sub>2</sub>. GoviEx already has valid mining licenses for the two most advanced projects. The current goal of the company is to reduce the uranium price necessary for the project development and to advance toward production (in 2020) of the most advanced project, Madaouela, parallel to the increasing uranium spot price.

important deposit is called MSNE and is located four kilometers to the south. The third deposit, Maryvonne, is located right in the middle. A fourth mining area. Miriam, is located in the south of the Madaouela 1 concession. In contrast to the first three deposits, Miriam can be mined by open pit methods. The deposits are only 60 to 80m below the surface and have a thickness of up to 30m. In addition, this deposit contains in part up to more than 1% U<sub>2</sub>O<sub>2</sub> and contributes to a tremendous cost reduction of the total planned mining operation.

#### Madaouela - Location, Infrastructure, Resource

Madaouela (100% GoviEx) is located in Niger, 10km from Arlit and near the mines of Cominak as well as Somair in which AREVA has an interest. The mine of Cominak is in operation since 1978 and is considered to be the largest underground uranium mine in the world. GoviEx benefits from the well-developed infrastructure providing, besides all-season roads, sufficient groundwater and a good power supply. Madaouela has reserves of 60.54 million pounds of U<sub>2</sub>O<sub>2</sub> and total resources of 117 million pounds of U<sub>2</sub>O<sub>2</sub>. In January 2016 GoviEx received the final mining permit for Madaouela 1 i.e. for one of six license areas (comprised of Madaouela 1 to 4 as well as Eral and Anou Melle). Pursuant to the permit the company can build the appropriate mine including all necessary facilities as well as mine the known deposits.

#### Madaouela – Deposit

Currently the most important deposit is called Marianne-Marilyn and is located within the Madaouela 1 concession. It is a sandstone hosted uranium deposit in a shallow depth of 30 to 120m. The second

life of 18 years.

92.84

(Source: BigCharts)



## Madaouela – Feasibility Study

In 2015 a preliminary feasibility study could confirm the profitable production. Based on a long-term uranium price of US\$70 the study indicates, among other things, an Internal Rate of Return ("IRR") of 21.9% and a Net Profit Value ("NPV") of US\$340 million at an 8% discount rate. The initial capital costs were estimated US\$359 million and the operating cash costs US\$24.49 per pound of U<sub>2</sub>O<sub>2</sub> based on an annual production of 2.69 million pounds of U<sub>2</sub>O<sub>2</sub> over a total mine

GoviEx' flagship projects host one of the largest resource bases worldwide (Source: GoviEx Uranium)



Mutanga, which belongs to 100% to GoviEx,

lies around 200 kilometers south of the

Lake Kariba

(Source: GoviEx Uranium)

Sambian capital Lusaka, directly adiacent to

#### Madaouela -**Exploration potential**

Madaouela most likely has more resources as previously known. Although more than 600,000 m were drilled, Anou Melle has a high "blue sky potential" because this license area is located on the same geological structure as Cominak and Somair. In addition, there is the possibility that the Miriam deposit continues on to Madaouela 4 and that a Cominak extension stretches at depth on to Madaouela 1.

#### Madaouela -**Development strategy**

Currently GoviEx is working on a four-staged development strategy for Madaouela. The first stage is a loan financing including the participation of several international export credit agencies. The second stage is the project optimization and the completion of the detailed engineering work. The third is the completion of the appropriate long-term offtake agreements for which Houlihan Lokey EMEA, LLP was engaged as financial adviser in February 2017. The fourth stage will be a share-based equity financing in parallel.



#### Great interest for a project financing

In September 2017 GoviEx reported that several Export Credit Agencies and banks have signaled the company that they want to provide a debt financing of US\$ 220 million for the construction of the mine. The conditions for the financing are a bankable feasibility study for Madaouela, long-term off-take contracts in place from creditworthy nuclear utilities and appropriate credit insurances. In March 2018 the existing legacy with Toshiba was settled with a single payment of US\$4.5 million. The company is now debt-free.

#### Mutanga – Location, Resource, Infrastructure

Mutanga (100% GoviEx) is located 200km south of the Zambian capital Lusaka and immediately north of Lake Kariba. The project contains more than 49.2 million pounds of U<sub>2</sub>O<sub>2</sub> in the deposits Mutanga, Dibwe and Dibwe East discovered to date. GoviEx has a mining license over 25 years for three of the five concessions allowing the production by open pit methods and heap leaching. Mutanga is connected to a road and has sufficient groundwater. A high-voltage-line passes at a distance of 60km. The mineralization starts at the surface and is open in strike.

#### Mutanga – positive economic assessment

Im November 2017 GoviEx released a Preliminary Economic Assessment (PEA) for Mutanga. The PEA is based on a production averaging 2.4 million pounds of U<sub>0</sub>O<sub>2</sub> annually over 11 years. The initial capital costs are estimated US\$123 million. The cash operating costs are US\$31.10 per pound of U<sub>2</sub>O<sub>2</sub> and the total life-of-mine costs are forecast at US\$37.9 per pound of U<sub>2</sub>O<sub>2</sub>. Based on a long-term uranium price of US\$ 58 per pound of U<sub>2</sub>O<sub>2</sub> the Internal Rate of return will be at 25%. GoviEx has now two well advanced uranium projects both of them with mine permits.

#### Mutanga – **Exploration potential**

Although the resource appears to be large, to date not all areas of the concession were explored for possible uranium deposits. Especially the areas near the west and east limits of the license areas offer a high potential for additional significant uranium deposits.

New VTEM surveys identified a high exploration potential in the northern section of Dibwe East. The company will test that area for possible additional deposits by means of drilling.

#### Chirundu and Kiraba Valley – potentially top-class expansion possibilities for Mutanga

This northeastern area borders African Energy Resources Ltd.'s concessions Chirundu and Kiraba Valley. Due to the aforementioned VTEM results, GoviEx has made African Energy Assets an offer which was accepted by African Energy in March 2017. Chirundu consists of the two subprojects Njame and Gwabe which together contain a resource of 11.2 million pounds of U<sub>2</sub>O<sub>2</sub>. GoviEx has to issue 3 million of its shares and 1.6 million warrants to African Energy for the two concessions. This is a very small price for a project with 11 million pounds of uranium and an apparently high exploration potential in the southwestern part of Chirundu, which borders GoviEx's Dibwe East concession.

#### Falea

Falea (100% GoviEx) is located in Mali 80km from AREVA's Sarava East uranium deposit. The project consists of three exploration licenses: Bala, Madini and Falea. To date a resource base of 30.8 million pounds of U<sub>3</sub>O<sub>8</sub>, 63 million pounds of copper and 21 million ounces of silver has been identified. This equals a converted resource of 38.1 million pounds of U<sub>o</sub>O<sub>o</sub>.

It is important to know that only 5% of the license area (in total 225 square kilometers) was explored for the appropriate deposits. In addition, the majority of the known deposits are not completely defined. Falea offers a high potential for the construction of an underground mine. The project is accessible by road and plane.

#### Strong shareholder base

GoviEx has a very strong shareholder base including Denison Mines, that provide technical assistance, Cameco, which co-financed the initial exploration program at Madaouela, and Ivanhoe Industries, with its mining expert Robert Friedland as investor. Including the private investment of GoviEx's Executive Chairman Govind Friedland, these five main shareholders own around 49% of all outstanding shares of GoviEx. In addition, at the end of 2016. Sprott came on board of GoviEx.

#### Summary: financing for Madaouela is a game-changer!

GoviEx is, without a doubt, a heavyweight in the uranium industry with a resource base of over 200 million pounds of U<sub>2</sub>O<sub>2</sub>. Madaouela the biggest project by far is ready for production. The interest of several parties of granting a line of credit of





US\$ 220 million for the construction of the mine is a milestone in the company's history and will facilitate the project advancement and the negotiations of off-take agreements. Furthermore, the company was able to prove a possibility for an economic production at its second big project Mutanga by the recent PEA. The missing part is an appropriate uranium price which would push GoviEx, due to its large resources, towards unimagined price peaks. An additional advantage: contrary to many other African countries, Niger and Zambia are consi-

dered as political stable. Mining companies are not faced with obstacles for example Cominak whose mine is in operation since the 1970s. In addition, GoviEx has a very experienced and successful management team as well as strong major shareholders which will ensure that GoviEx will become a real success story.

Daniel Maior CEC

## **Exclusive interview with Daniel Major, CEO of GoviEx Uranium**

What did you and your company achieve within the last 12 months?

In 2017, GoviEx advanced an integrated four-part strategy for the development of the Madaouela Project.

- Following appointment of Medea Capital Partners as Debt Advisor. GoviEx received expressions of interest from Export Credit Agencies and project finance banks to arrange US\$220 million of senior debt.
- The Agaliouk Exploration Permit was granted, adding 11.67Mlb U<sub>2</sub>O<sub>2</sub> in Measured and Indicated Resources and 9.35 Mlb U<sub>2</sub>O<sub>2</sub> in Inferred Resources. Agaliouk is adjacent to the boundaries of the project, and is already covered by an 2015 Environmental Social Impact Assessment.
- GoviEx has started programs to optimize the operating and capital costs, including the assessment of nano-filt-

ration to target sulfuric acid recovery, highlighted as a major consumable in the PFS. GoviEx is studying the potential of dry attrition as an alternative to existing wet ablation processes, to reduce water and power consumption.

GoviEx engaged Houlihan Lokey as financial advisors to secure potential long-term off-take agreements.

In Zambia in 2017, GoviEx acquired uranium mineral interests from African Energy Resource. The addition of the Chirundu and Kiraba Valley significantly expanded and improved the potential economies of scale of the Mutanga Project in Zambia. GoviEx subsequently reported the PEA for the expanded Mutanga Project. The project plan envisions an average annual production rate of 2.4 Mlb U<sub>2</sub>O<sub>2</sub> over an 11-year mine life. Initial capital costs are estimated at US\$123 million, with estimated cash operating costs of US\$31.1/lb U<sub>2</sub>O<sub>2</sub>.

What are the main catalysts for your company within the next 6 months?

GoviEx is developing of a growing. Africa-focused uranium project pipeline. The Company has already commenced core tasks required for the development of its flagship, mine-permitted Madaouela Project, and with an improving uranium price, these tasks will be accelerated. The PEA for the enlarged, mine-permit-

ted Mutanga Project has highlighted its economic potential. Expansion and upgrading the Mineral Resources in Zambia will be kev.

At the Company's Falea Project in Mali, uranium resources need to be expanded; however, we need a greater understanding of the precious and base metal mineralization that exists on the property. Through geophysics and drilling, we will be better able to evaluate the project's full potential.

2025.

ISIN: CA3837981057 WKN: A12BL3 FRA: 7GU TSX-V: GXU

Shares issued: 351.2 million Options/Warrants: 155.9 million Vollverwässert: 507.1 million

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#### What is your opinion about the current conditions of the uranium market?

Global nuclear power capacities are proiected to increase from 379.4 GW in 2015 to over 483 GW by 2030. Estimated annual uranium demand could grow nearly 60% to more than 300 Mlb U<sub>2</sub>O<sub>2</sub> by 2030 from 190.2 Mlb U<sub>2</sub>O<sub>2</sub> in 2016. In 2018, demand of 194 MIĎ Ŭ<sub>3</sub>O<sub>8</sub> is forecast.

In 2018, world production is expected to total 141 Mlb U<sub>2</sub>O<sub>2</sub>, which is 8% lower than preliminary 2017 production of 154 Mlb U<sub>2</sub>O<sub>2</sub>. Looking ahead, secondary sources of supply are expected to fall from 2016 levels of 45.9 Mlb U<sub>2</sub>O<sub>2</sub> per year to only 30.7 Mlb U<sub>2</sub>O<sub>2</sub> per year by

## **GoviEx Uranium**

(Source: BigCharts)

## Laramide Resources

One of the ten largest uranium deposits in Australia and one of the highest ISR grades in the US

> Laramide Resources is a Canadian mining company specializing in exploration and development of uranium deposits in Australia and the USA. The shares of the company are listed at the TSX in Toronto as well as the ASX in Sydney giving the company exposure on both continents. Laramide Resources has a large resource base.

#### Westmoreland Uranium Project: Location. Resource and Infrastructure

In Australia, Laramide Resources' flagship is Westmoreland, located in Queensland directly on the border to the Northern Territory. The project is comprised of three contiguous licenses previously in possession of Rio Tinto and are located 400km north-northwest of the famous Mt. Isa copper. zinc. lead. silver deposit. Via a subsidiary, Laramide Resources has a 100% interest in the

total project (548.5 square kilometers). The Westmoreland Uranium Project contains a very large resource base of 36.0 million pounds of U<sub>2</sub>O<sub>2</sub> in the category indicated and additional 15.9 million pounds of U<sub>2</sub>O<sub>2</sub> in the category inferred making it to one of the ten largest uranium projects in Australia. These resources are located within a 7km long trend. It is important to know that 80% of these resources are contained within a depth of 50m hence Westmoreland could be mined with open pit mining methods.

Regarding the infrastructure, sufficient electricity as well as trained workers and road connections are present.

#### Westmoreland Uranium Project: **Economic Assessment**

In 2016 Laramide Resources published a Preliminary Economic Assessment (PEA) for Westmoreland. According to the stu-



dy, processing of the rocks is possible by conventional acid leaching and solvent extraction.

The initial capital costs for the construction of the mine and the processing facilities amount to US\$268 million plus US\$49 million contingency which is sufficient construction of a 2 million tons per year mill with a nameplate capacity of 4 million pounds of U<sub>2</sub>O<sub>2</sub> per year. Additional costs are estimated US\$58 million over the estimated mine life of 13 years. The operating cash costs were estimated at US\$21 per pound of U<sub>2</sub>O<sub>2</sub> during the first 5 years and US\$23.20 per pound of U<sub>2</sub>O<sub>2</sub> over the whole mine life. The Net Present Value ("NPV") at a 10% discount rate is US\$400 million after tax. A very good Internal Rate of Return of 35.8% after tax was determined.

According to company estimates, this would allow for a production of 3.5 million pounds of U<sub>2</sub>O<sub>2</sub> per year. The metallurgical studies confirmed a recovery rate of up to 97% with relatively low acid consumption. Currently the mine life is 13 years but with the project having a much higher exploration potential it could extend the mine life for over 15 years.

#### Westmoreland Uranium Project: Expansion potential

Laramide Resources holds three contiquous joint ventures situated along strike from Westmoreland Project in the Northern Territory, for an additional land package of 1,531 km2. The company has besides joint ventures with Gulf Manganese and Rum Jungle Resources one joint venture with the resource giant Rio Tinto. Initial sampling confirms that these joint venture licenses have a big exploration potential. Additional exploration activities on the Murphy joint venture were already decided.



## Acquisition

In January 2017 Laramide Resources acguired from Uranium Resources Inc. the two ISR projects Churchrock and Crownpoint. The two projects in New Mexico were consolidated into one project due to a distance of only 25km. For the 100% acquisition of Churchrock and Crownpoint, Laramide Resources paid and has to pay US\$2.5 million in cash and transfer a note payable of US\$5 million to Uranium Resources. This debt will be paid back over a period of three vears beginning in 2018. In addition, Uranium Resources will receive 2.218.333 shares of Laramide and will keep a Net Smelter Royalty with a value of US\$4.5 million.

#### Churchrock

Churchrock is comprised of 7 sections including the deposits Mancos and Strathmore. In the past, over US\$100 million were invested in the exploration of the area. At Churchrock, a resource was confirmed containing 50.82 million pounds of U<sub>2</sub>O<sub>2</sub> in the category inferred in October 2017.

In Australia, Laramide Resources' flagship is Westmoreland located in Queensland directly on the border to the Northern Territory (Source: Laramide Resources)



Mineral Resource Estimate of the Church Rock Deposit					
Sand Unit	Tonnage	Grade	Contained Metal		
	(Tons)	(% eU <sub>3</sub> O <sub>8</sub> )	(U <sub>3</sub> O <sub>8</sub> lbs)		
kota Sandstone	632,000	0.115	1,452,000		
rrison Formation - Brushy Basin	64,000	0.147	189,000		
rrison Formation - <u>Westwater</u> Canyon (A nd)	1,714,000	0.075	2,556,000		
rrison Formation - Westwater Canyon (B nd)	7,890,000	0.077	12,145,000		
rrison Formation - Westwater Canyon (C nd)	4,498,000	0.092	8,290,000		
rrison Formation - <u>Westwater</u> Canyon (D nd)	6,588,000	0.067	8,894,000		
rrison Formation - Westwater Canyon (E nd)	6,110,000	0.068	8,310,000		
rrison Formation - Westwater Canyon (F	5,557,000	0.068	7,583,000		

At Churchrock, a resource was confirmed containing 50.82 million pounds of U<sub>3</sub>O<sub>8</sub> in the category inferred. (Source: Laramide Resources)

#### **Churchrock and Crownpoint:**





(Source: Laramide Resources

A feasibility study from 2012 confirmed that Section 8 can be mined by the low cost ISR method. The capital costs for an initial production of one million pounds of U<sub>0</sub>O<sub>2</sub> per year are an estimated US\$35 million and the operating costs are US\$20 to 23 per pound of U<sub>2</sub>O<sub>2</sub>. The Internal Rate of Return would be 22% at a uranium price of US\$65 per pound of U<sub>3</sub>O<sub>8</sub>.

The company could produce 6.5 million pounds of U<sub>2</sub>O<sub>2</sub> within 6 years. It should be noted that the average grade of 0.115% is the highest within the peer group.

Section 8 and the adjoining Section 17 in the south where the old Churchrock mine is situated would be the starting point in case of a production. Most of the licenses and permits were granted for that scenario.

West of Section 8 are Sections 7, 12 and 13 where the Mancos mine is located. Northeast of Churchrock (Section 8) lies Section 4, where the Strathmore deposit is located.

#### Crownpoint

Crownpoint is located 25 miles northeast of Churchrock. The project contains a historic resource of 15.3 million pounds of U<sub>2</sub>O<sub>2</sub> in the category indicated. Although no feasibility study was completed on Crownpoint to date, Laramide Resources holds the majority of the necessary production permits.

#### Churchrock and Crownpoint -Development plan

Laramide Resources is currently working on the completion of the mining permits for Section 8 and Section 17. Thereupon a pre-feasibility-study is planned for Section 8 including review and assessment of expansion opportunities including the deposits Mancos and Strathmore.

Afterwards, from today's perspective the construction of a satellite facility in the area of Section 8 and 17 is under consideration. A central processing plant will be built at Crownpoint.

Short to long term a 6,100m drill program (15 drill holes) is planned which will target the upgrading of the existing resources in higher categories and the expansion of the current resource base. A new resource estimate will be released for Crownpoint in the second quarter.

#### Other projects

Besides the aforementioned ISR projects, Laramide Resources has two other hard rock projects in the USA.

The La Jara Mesa Project is located in New Mexico, 40 miles southeast of Crownpoint. La Jara Mesa contains a NI 43-101 resource of 10.4 million pounds of U<sub>2</sub>O<sub>2</sub>. The final operating permits are already in the works.

The La Sal Project is located in Utah, 100km northeast of the White Mesa Mill. A toll milling agreement for the processing of ore from La Sal in the White Mesa Mill was signed with its operator Energy Fuels. Both projects offer a big exploration and expansion potential.

#### Summary: diversified developer with enormous resource base and prospect of fast production start

Laramide Resources has a diversified portfolio of large and high-quality uranium projects in the USA and Australia. The company benefits from the not so technologically challenging, and at the same time, low cost production possibilities of open pit mining and ISR mining.

The newly acquired projects Churchrock and Crownpoint especially provide the possibility of relative fast production start which would position Laramide Resource in a top position in the case of an expected uranium boom. The stock has good liquidity due to the membership in a top ETF (Global X Uranium ETF). The long-term oriented and supporting main shareholders make Laramide Resources a top pick in the uranium sector.

## **Exclusive interview with Marc Hender**son, CEO of Laramide Resources

What did you and your company achieve within the last 12 months?

In October 2017, the Company announced the results of an independent Mineral Resource Estimate for Church Rock Uranium Project, located in New Mexico, USA, completed by Roscoe Postle Associates Inc. in Denver. Colorado, with the assistance of Laramide's technical team. This new Resource Estimate supersedes various "historical estimates" for purposes of NI 43-101 reporting and considers planned In Situ Recovery ("ISR") of uranium. The Company also advanced permitting, community programs and preparation of an economic study on the consolidated New Mexico properties acquired in 2017.

Church Rock Project's Resource Estimate highlights include:

- An Inferred Resource Estimate of 33.9 million tons at an average grade of 0.075% eU<sub>2</sub>O<sub>2</sub> for a contained resource of 50.8 million pounds using a 0.5 ft-% Grade Thickness (GT) cutoff.
- > Data from previous operators was

consolidated and digitized resulting in a database of 1.667 drill holes totaling approximately 1,841,545 feet of drillina.

ditional mineral resources.

The Church Rock Project is a compilation of significant historical work completed by tier one mining and energy companies. This is the first time since discovery that the Project has been combined under one banner without significant rovalty burden and this impressive initial resource at Church Rock clearly demonstrates the District scale potential of the asset. Combined with the NRC license and other permitting work already completed by previous operators, Laramide is well positioned to benefit from a likely renewal of US domestic uranium production when market conditions warrant.

What are the main catalysts for your company within the next 6 months?



The report highlighted areas for immediate follow up exploration to both improve confidence in the Resource Estimate and potentially discover ad-



Marc Henderson, CEO



The Company intends to advance the Church Rock Project to a Preliminary Economic Assessment ("PEA"). This will be the first economic study on the consolidated Properties acquired in 2017. The PEA would also have the benefit of the previously completed Feasibility Study on Section 8 completed by a previous operator.

The Company will also start working toward the commencement of a resource estimate on the Crownpoint Project. The Church Rock Project's Resource Estimate did not include the Company's 100% owned Crownpoint project, located 25 miles east of Church Rock. The Laramide team plans to begin the process of digitizing the significant data for Crownpoint in the coming months which will allow for a resource estimate on the Crownpoint property.

What is your opinion about the current conditions of the uranium market?

Laramide Resources Ltd.



(Source: BigCharts)

CA51669T1012 ISIN: WKN: 157084 FRA: L4R TSX: LAM ASX: LAM

The uranium spot price (\$21/lb approxi-

mately) is unsustainable for even the

most efficient producers. Fortunately, the

maxim that the "cure for low prices is low

prices" seems to be bearing out as signi-

ficant production curtailments and closu-

res have been progressively announced

over the course of 2017. According to

most industry analysts, the market reba-

lancing presently underway will almost

certainly lead to future deficits and a dra-

matic improvement in the uranium price,

with only the expiry of long-term utility

contracts yet to be priced in. We believe

this turning point may be close at hand.

Shares issued: 114.8 million Options: 8.8 million Warrants: 23.5 million Fully diluted: 147.1 million

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## **Skyharbour Resources**

Top uranium projects in the Athabasca Basin Region and strong development partners on its side

> Skyharbour Resources is a Canadian uranium and thorium development company specializing in exploration projects in the Athabasca Basin. The company holds the majority rights to five projects comprising in total 230,000 hectares in the Athabasca Basin.

#### Moore Lake Uranium Project -Location and Deal

Skyharbour Resources' current flagship project, Moore Lake, is located in the southeast of the Athabasca Basin 10km southwest of Denison Mines' Wheeler River mega project and between Key Lake Mill and the producing McArthur River Mine. In July 2016 Skyharbour Resources acquired from Denison Mines the Moore Lake Project comprised of 12 contiguous claims with a total area of 35,705 hectares. For the acquisition of the 100% interest in Moore Lake Skyharbour Resources issued 18 million Skyharbour shares to Denison Mines making Denison the largest single shareholder of Skyharbour. In addition, the company had/has to pay CA\$500,000 in cash and CA\$3.5 million in exploration expenses over a period of five years. An absolute bargain price considering that to date, over CA\$35 million were invested into the exploration at Moore Lake. This amount was used, among other things, for 370 drill holes with a total length of over 135.000m.

#### Moore Lake Uranium Project -Historic exploration successes

Since 1969, the Moore Lake Uranium Project has undergone episodic exploration by several companies including Noranda, AGIP, BRINEX, Cogema, Kennecott/JNR Resources and IUC/Denison. The focus was, among other things, on airborne and ground electromagnetic and magnetic surveys, ground gravity, seismic, and geochemical surveys, mapping, sediment sampling programs and the drilling of 370 drill holes in total.

From mid-2000 onwards, the primary focus of exploration has been the 3.5-kilometre-long Maverick structural corridor in the southwestern part of the license area where pods of high grade uranium mineralization have been identified. Some of the best intercepts were 4.03% U<sub>2</sub>O<sub>2</sub> over 10m including 20% U<sub>2</sub>O<sub>2</sub> over 1.4m at a depth of 264.68m. Two additional drill holes returned intercepts with high-grade uranium mineralization of 5.14% U<sub>2</sub>O<sub>2</sub> over 6.2m and 4.01% U<sub>2</sub>O<sub>2</sub> over 4.7m.

In addition, drilling in several other areas has intersected structural disruptions, alterations and anomalous uranium and pathfinder element concentrations.

#### Moore Lake Uranium Project recent exploration successes

After completion of the transaction with Denison Mines, Skyharbour started an initial drill program comprised of 3,500m in February 2017. Three of the five initial drill holes returned high-grade radioactivity and uranium mineralization. The first drill hole in the so called Main Maverick Zone contained 20.8% U<sub>2</sub>O<sub>2</sub> over 1.5m within a 5.9m long interval with 6.0% U<sub>2</sub>O<sub>2</sub> at a depth of 262m. The fourth drill hole returned 5.6%  $U_3O_8$  over 1.8m within an interval with 1.4%  $U_3O_8$  over 10.7m at a depth of 267m. The special fact: the fourth drill hole was drilled 100m to the east of the high-grade Main Maverick Zone and returned a new discovery!

Due to the initial drill success, the original drill program (3.500m) was expanded two times for a total of 5.450m in 15 drill holes. In May 2017 Skyharbour Resources announced additional significant drill results. Drilling in the Main Maverick Zone returned 2.25% U<sub>2</sub>O<sub>2</sub> over 3.0m and in the area of the new discovery named Maverick East Zone 1.79% U<sub>2</sub>O<sub>2</sub> over 11.5m including 4.17% U<sub>2</sub>O<sub>2</sub> over 4.5m and 9.12% over 1.4m.

In August 2017, Skyharbour Resources started an additional 4,000m drill campaign focusing on the eastern area of the Maverick Structure.

In December 2017 the company reported fantastic results from this area, among other things, 7.4% U<sub>2</sub>O<sub>2</sub> over 1.8 m within 9.3 m with 2.23% U<sub>O</sub>. At that point only 1.5 kilometers of the 4-kilometer-long corridors are drill tested.

Currently the company continues to work on the compilation of historical airborne and ground electromagnetic as well as magnetic surveys, gravitation and seismic surveys as well as geochemical programs, mapping, sediment sampling and data from 370 drill holes in total to integrate in a modern database. This will allow for better identifying and defining priority targets.

In February 2018, the company started another 4,000m drill program.

#### Preston Uranium Project – Location and exploration work

The Preston Uranium Project is located in the southwest, just outside of the Athabasca Basin in the Patterson Lake Region. To the north it borders Fission 3.0's and NexGen's project areas. The 121,000-hectare Preston Project (50% Skyharbour Resources; 50% Clean Commodities Corp., Skyharbour's partner) is not far from the top-class discoveries of NexGen (Arrow) and Fission Uranium (Patterson Lake South).

To date the two partners have spent CA\$4.7 million for the exploration of the vast license areas. They identified 15 areas with similar indicators as at Patterson Lake South and Arrow. In addition, many other drill targets provide a high exploration potential.



#### Preston Uranium Project – **Option agreement with AREVA**

In March 2017 Skyharbour Resources and its partner Clean Commodities Corp. signed an option agreement with AREVA Resources Canada which provides ARE-VA an option to acquire up to a 70% interest in the 49,600-hectare western portion of the Preston Uranium Project by investing CA\$7.3 million into the exploration of the project within 6 years and contributing an additional CA\$700,000 in cash. AREVA may acquire an initial 51% interest by funding exploration expenditures in the total amount of CA\$2.8 million over a 3-year period and making cash payments totaling CA\$200,000.



Skyharbour started an initial drill program comprised of 3,500m in February 2017. (Quelle: Skyharbour Resources)



#### Preston Uranium Project -**Option agreement** with Azincourt Uranium

Also, in March 2017 Skyharbour Resources signed a second option agreement with Azincourt Uranium Inc. for the so called East Preston Uranium Project which is located in the eastern part of the overall Preston Project and comprises an area of 25,300 hectares. Azincourt can acquire a 70% interest in the East Preston Uranium Project by issuing 4.5 million shares to Skyharbour Resources and the partner Clean Commodities Corp. as well as paying CA\$1 million in cash within three years and investing an additional CA\$2.5 million in the exploration and development of the project area.

Due to these top deals (in total CA\$9.8 million in development expenditures from AREVA and Azincourt) Skyharbour Resources and partner Clean Commodities Corp. can be reassured that the exploration of the project area continues whereas they don't have to bear the exploration costs and can focus on Moore Lake. In addition, they will receive CA\$1.7 million (50% for Skyharbour Resources) at their free disposal.

#### Other top projects

Besides Moore Lake and Preston Skyharbour Resources holds other top projects. Among those is the Falcon Point Uranium & Thorium Project. This project, totaling 79,000 hectares is located 55km east of the Key Lake Mine. In 2015 Skyharbour Resources announced a NI 43-101 resource for Falcon Point containing 6.96 million pounds of U<sub>2</sub>O<sub>2</sub> and 5.34 million pounds of ThO2. The geological and geochemical features of the project show distinct similarities to some of the best projects in the Athabasca Basin such as Eagle Point, Millennium, P-Patch and Roughrider. Recent sampling at the

north end of the property returned up to 68% U<sub>2</sub>O<sub>2</sub>.

Another top project is Mann Lake which borders directly the joint venture project of Cameco. Denison and AREVA with the same name. Mann Lake is located strategically 25km southwest of Cameco's McArthur River Mine and 15km northeast of Cameco's Millennium uranium deposit. In 2014 a drill campaign of Cameco returned, among other results, 2.31% U<sub>0</sub>O<sub>2</sub> over 5.1m including 10.92% U<sub>0</sub>O<sub>2</sub> over 0.4m.

#### Upcoming catalysts

For 2018 one can expect several significant developments from Skyharbour Resources and their partners. Skyharbour Resources is carrying out a winter drill program to make a discovery within the Maverick Structure at Moore Lake, ARE-VA and Azincourt Uranium started exploration and development work at the Preston project in February 2018. AREVA began, among other things, a 4,500 m diamond drill program, Azincourt a survey and general exploration program. Azincourt identified several drill targets by means of geophysical studies. In addition, Skyharbour is planning within their "Prospect Generator Models" to find additional partners for their projects to advance those as well as to raise additional funds for the ongoing development of the flagship project Moore Lake.

#### Summary: top projects, strong partners and a good business model

Due to its top projects, strong partners and the good business model Skyharbour shines. The flagship project Moore Lake speaks for itself. Top grades and a tremendous exploration potential in the immediate vicinity of some of the best uranium deposits in the world. Some top news can be expected! The company could attract two top development partners for the huge Preston Project. They will not only pay the exploration costs during the coming years and guickly advance Preston, they will also pay a lot of cash to advance Moore Lake. Therewith. Skyharbour's Prospect Generator Business Model is paying off. With the largest single shareholder, Denison Mines, whose CEO David Cates has a seat in Skyharbour Resources' Board of Directors.

the company has a technical development partner on its side. Therefore, Skyharbour Resources is one of the top picks in the uranium sector for years which could possibly make several big discoveries.

## **Exclusive interview with Jordan Trimble**, **CEO of Skyharbour Resources**

What did you and your company achieve within the last 12 months?

Winter/spring 2017: Skyharbour completed its first diamond drilling program at its flagship, high grade Moore Uranium Project consisting of 5,450 meters in 15 holes.

- All holes intersected uranium mineralization on the Maverick corridor; shallow (260 meters depth), high grade mineralization was intersected in 7 of 15 holes with new high grade mineralized lenses being discovered along strike at the Maverick corridor
- Results included 20.8% U<sub>2</sub>O<sub>2</sub> over 1.5 meters within an interval returning 6.0% U<sub>2</sub>O<sub>2</sub> over 5.9 meters in hole ML-199 as well as 9.12% U\_O\_ over 1.4 meters within an interval returning 4.17% U<sub>2</sub>O<sub>2</sub> over 4.5 meters in hole ML-202

Summer/fall of 2017: Skyharbour completed another diamond drilling program at the Moore Uranium Project consisting of 4.035 meters in 11 holes

Hole ML17-10 at the Main Maverick Zone returned 2.23% U<sub>2</sub>O<sub>o</sub> over 9.3 meters including 7.4% U<sub>v</sub>O<sub>v</sub> over 1.8 meters.

Brought in Strategic Partners with Option Agreements at it Preston Project ("Prospect Generator Model"):

- over 3 years

What are the main catalysts for your company within the next 6 months?



Skyharbour finalized an option agreement with AREVA (now Orano) - to earn up to a 70% interest in the Preston Project through \$8.0MM of total project consideration over 6 years Skyharbour entered into an option agreement with Azincourt Energy Corp. whereby Azincourt may earn a 70% interest in the East Preston Project through the upfront issuance of 4.5MM shares of Azincourt as well as \$3.5MM of total project consideration



Jordan Trimble, CEO



Skyharbour will carry out drilling programs at its flagship Moore Uranium Project over the course of the upcoming year to expand on the known high-grade zones as well as discover new uranium mineralization. This will be Skyharbour's most active exploration season yet as its Moore project will provide steady news flow over coming months supplemented by news from the Preston project where exploration and drilling are being funded by Orano (previously AREVA) and Azincourt.

What is your opinion about the current conditions of the uranium market?

After a prolonged bear market in uranium spot pricing over the last several years, the uranium market has bottomed and turned the corner. The start of this reversal can be attributed to several factors including major supply-side developments:

- 1) Cameco announced the suspension of production at the world's largest uranium mine, McArthur River. The production curtailment is expected to cut approximately 15mm - 18mm pounds of U<sub>2</sub>O<sub>2</sub> from global supply in 2018 (approx. 10%).
- 2) The world's largest producer Kazatomprom - announced additional production cuts of ~28.6 million pounds of U<sub>2</sub>O<sub>2</sub> over the next 3 years (approx. 20%) on top of its previous 10% cut announced early in 2017.

World Nuclear Association forecasts steady demand growth for uranium through 2030 and beyond. Demand growth is underpinned by a robust pipeline of 57 nuclear reactors under construction. With long-term supply contracts expiring, demand growth, and production cuts, the supply/demand landscape has shifted from a supply surplus to a supply deficit (per Ux Consulting).

## **Skyharbour Resources Ltd.**



(Source: BigCharts)

ISIN: CA8308166096 WKN: A2AJ7J FRA: SC1P TSX-V: SYH

Shares issued: 53.5 million Options: 4.2 million Warrants: 25.0 million Fully diluted: 82.7 million

#### Contact:

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## **Uranium Energy** Four permitted mining projects and a central processing plant provide large leverage

Uranium Energy, a former U.S. uranium producer, is within a small circle of a few companies that will revive the dormant U.S. uranium industry in the case of the most likely rebound of the uranium sector. Besides the former producing Palangana mine, Uranium Energy will produce from the Goliad Project and the recently permitted Burke Hollow Project in the future. The recently acquired Reno Creek Project and the Alto Paraná titanium project will add additional resources.

#### Palangana Project is ready at anv time

"Former U.S. uranium producer": because the company did operate its Palangana Project, Texas, in the past. The Palangana ISR Project is completely licensed and received the final production permit in 2010. The production began in December 2010 and was halted due to the uranium price development in July 2014. The Palangana Project contains a resource of 3.3 million pounds of U<sub>a</sub>O<sub>a</sub>. The company estimates capital costs of US\$10 million to re-commission Palangana within 6 months. The production cash costs are below US\$22 per pound of uranium, according to the company.

#### Uranium friendly Texas

Texas is one of the few U.S. states which environmental agency can grant mining permits independently from the U.S. federal agencies. The Texas Commission on Environmental Quality granted a mining permit for the Goliad Project, which is the only one of its kind granted to a corporation during the past 10 years. Within the past 35 years all applications for production licenses were granted in Texas. The southern Texas uranium trend extends over 300km crossing 54 counties in Texas. 26 of 31 deposits within this trend were or are amenable for the low cost in-situ recovery (ISR) mining.

The second advanced ISR Project, Goliad, has had a final production license since December 2012. The Goliad Proiect, like Palangana, is near the Hobson processing plant and is the biggest ISR uranium project in Texas. It hosts a NI 43-101 resource of close to 7 million pounds of U<sub>2</sub>O<sub>2</sub> with 5.5 million pounds in the category measured and indicated. The remaining 1.5 million pounds are in the category inferred. This independent estimate is based on a total of 487 historic drill holes and 599 drill holes drilled by Uranium Energy. The Goliad Project provides additional potential because the mineralization is open to all sides. It is expected that the actual resource can be largely expanded.

#### Permit for Burke Hollow

The third top ISR project, Burke Hollow, received the complete mining permit in December 2016. Burke Hollow contains a current resource (as of November 2017) of 7.09 million pounds of U<sub>2</sub>O<sub>2</sub> and is located 54 kilometers from Hobson. In total five independent uranium trends were identified on the license area. Only half of the license area was explored for uranium deposits to date. The drill campaign completed in 2017 provided quick initial promising results (uranium grades averaging 0.067%) and therefore was expanded from the original 90 drill holes to 132. This resulted in the aforementioned resource estimate which is 38% higher than the former. Several mineralized trends were identified and extended to a length of more than 4.5 miles. A significant success, considering that Burke Hollow was initially an absolute grass roots project. The company expects to expand this resource further. In 2018 the company will receive the last necessary permit for the construction of the appropriate production operation.

#### **Goliad Project fully permitted**



#### Hobson production plant an ace up the sleeve!

The Hobson production plant is a completely permitted, and for the production, a licensed production facility that originally could produce one million pounds of "Yellow Cake" per year. The facility was completely refurbished in 2008 and is up to date. The production was doubled by a vacuum dryer and the fully licensed Hobson production facility has now a production capacity of two million pounds of U<sub>2</sub>O<sub>2</sub> per year.

#### Reno Creek Project

In May 2017 Uranium Energy announced the acquisition of Reno Creek Holdings Inc. and thereby, 100% of its fully permitted Reno Creek in-situ recovery ("ISR") uranium project located in Wyoming. In February 2017 Reno Creek was issued a Source and By Product Materials License from the U.S Nuclear Regulatory Commission in connection with a Final Environmental Impact Statement and Record of Decision, the last important production license! Now Uranium Energy can start the construction of the ISR fields and a central processing plant to mine and produce up to 2 million pounds of U<sub>2</sub>O<sub>2</sub> per year!

Reno Čreek contains a large NI 43-101 resource of 21.98 million pounds of U<sub>2</sub>O<sub>2</sub> in the category measured and indicated plus 930,000 pounds in the category inferred. Uranium Energy increased its resource base by approximately 70% with this acquisition! A pre-feasibility-study from the year 2014 confirms a high profitability at low capital and operating costs. Uranium Energy issues to the controlling shareholder of Reno Creek, the Pacific Road Resources Funds holding 97.27% of all shares, only 14 million of its shares (value of US\$17 million) plus 11 million warrants and a 0.5% royalty capped at US\$2.5 million.

Including the remaining 2.73%, which

Baywater Uranium Corporation is conceding to Uranium Energy, Uranium Energy is paying less than US\$20 million for a fully licensed ISR project with a resource of over 20 million pounds of U<sub>2</sub>O<sub>2</sub> and a much larger exploration potential! Although the previous owner of Reno Creek has paid more than US\$60 million for the exploration and development! Uranium Energy is working on a new optimized pre-feasibility-study.

#### **Reno Creek North**

In November 2017 Uranium Energy secured additional claims adjacent to the Reno Creek Project. For the Reno Creek North Project, the company paid US\$ 5.39 million in cash and shares to the previous owner Energy Fuels. The projects host 4.3 million pounds of U<sub>2</sub>O<sub>2</sub> in the category indicated. A bargain price considering that this project is almost completely located within the permitting area of Reno Creek and can be connected to a central processing plant immediately after receipt of the production permit.

#### Alto Paraná Titanium Project

In July 2017 Uranium Energy acquired CIC Resources (Paraguay) Inc. and thereby over 70.000 hectares land in Paraquay were the Alto Paraná Titanium Project and its pilot plant is located. Until then CIC Resources and its former joint venture partner Tronox had invested about 25 million dollars in the project. In accordance with the terms of the share purchase and option agreement, Uranium Energy had to issue to the Vendor 664,879 restricted common shares of the company, at a deemed issuance price of US\$1.5363 per share, for aggregate consideration of US\$1.021.453. In addition to the consideration, the Company has granted the Vendor a 1.5% net smelter returns royalty on the Property. Uranium Energy previously had acquired all of the

issued and outstanding shares of JDL Resources Inc. pursuant to the terms of the share purchase and option agreement, in June 2016. The Company acquired JDR in exchange for a cash payment of \$50,000 and the issuance of 1.333.360 shares to the vendor. JDR holds additional titanium mineral concessions that border the property.

The Alto Paraná Titanium Project is an advanced exploration stage project located in eastern Paraguay, within the department of Alto Paraná, approximately 100 km north of Ciudad del Este. The property covers an area of 70,498 hectares under five mining permits. The proiect is near Itaipu, the second largest hvdro-electric dam in the world and a source of cost-effective power. Work to date on the Property has included an extensive program of pitting and auger drilling, development of a small test mine, construction of a pilot plant to evaluate the proposed beneficiation flow sheet, bench scale smelting tests, production of approximately 110 tons of concentrate for a large-scale smelting tests and associated engineering, marketing, logistical and environmental work.

In September 2017 Uranium Energy released its own resource estimate for Alto Paraná. The total inferred resource has been estimated at 4.94 billion tons grading 7.41% titanium oxide ("TiO<sub>2</sub>") and 23.6% iron oxide ("Fe<sub>2</sub>O<sub>2</sub>") at a 6<sup>5</sup>/<sub>2</sub> TiO<sub>2</sub> cut-off, making Alto Paraná one of the highest-grade and largest-known Ferro-Titanium deposits. For 2018 Uranium Energy plans to monetize the project. By 2019 the titanium market will boast a deficit which in the case of Alto Parana might create interest at the major companies.

#### New acquisition of Diabase

In February 2018 Uranium Energy reported the closing of a definitive Property Purchase Agreement with Nuinsco Resources Limited to acquire 100% of the Diabase project located on the south rim of the Athabasca Basin uranium district in Saskatchewan, Canada. The Project comprises 21,949 hectares and covers a very prospective regional-scale corridor less than 75 kilometers from Cameco's Kev Lake mill. Uranium Energy paid US\$ 500,000 for the acquisition in aggregate consideration consisting of US\$ 240,000 in cash and 139.418 common shares at a deemed price of US\$1.60 per share. A bargain price considering that more than US\$ 20 million were invested in the exploration of the concession area including over 21,000m of diamond drilling, geophysical surveying and surficial sampling.

#### Other potentially top projects in the pipeline!

tentially top projects. on a uranium price of US\$ 65.

54Mlbs M&I 45Mlbs Infe	and
Infrastructure Hobson Processing Pla of 2M lbs/year	int - Pro
Texas Hub & Spoke IS	SR Port
Project Name	Stage
Palangana (Fully Permitted)	(NT)
Goliad (Fully Permitted)	(NT)

Vorkman Slick Rock (U30



Besides the projects in Texas and the Reno Creek Project Uranium Energy has the majority in a series of additional po-

The Anderson Project in Arizona contains over 29 million pounds of U<sub>2</sub>O<sub>2</sub> and a positive economic assessment was completed giving an Internal Rate of Return (IRR) of solid 63% before tax based

The Slick Project in Colorado contains

Uranium Energy has a large resource base including 100 million pounds U<sub>2</sub>O<sub>2</sub> plus vanadium and titanium. (Source: Uranium Energy)





over 15.7 million pounds of  $U_2O_2$  and has a pre-tax IRR of 33%.

Uranium Energy has two prospective projects in Paraguay. Yuty contains resources of over 11.1 million pounds of U<sub>2</sub>O<sub>2</sub> and Oviedo's exploration target is 23 to 56 million pounds of U<sub>2</sub>O<sub>2</sub>.

#### Top CEO as guarantor of success

President and CEO Amir Adnani is an entrepreneur with excellent contacts within the mining and financial world. He founded, among other things, Blender Media Inc. a company considered as fastest growing company in Canada. Besides Uranium Energy he manages Gold-Mining Inc. a so called "Mineral Bank" with a resource base of over 24 million ounces of gold.

#### Summary: solid project pipeline, strong leverage on uranium price

Contrary to five years ago when Uranium Energy was a uranium producer, the company can now mine instead of one (Palangana), four projects in the future and use to capacity its Hobson processing plant. The highlight is the fact that the Palangana Project has a mining permit already, meaning a production can be started in a very short time frame. In addition, the Palangana Project, Uranium Energy's second and third licensed uranium projects Goliad and Burke Hollow are located in close proximity to the Hobson production facility.

Together with the recently acquired Reno Creek Project (including Reno Creek North) that is also fully licensed, the company has close to 100 million pounds of U<sub>0</sub>O<sub>2</sub> and the possibility to produce 4 million pounds of U<sub>2</sub>O<sub>2</sub> per year in the future instead of 2 million pounds of U<sub>2</sub>O<sub>2</sub>. As a final touch the company could secure a well-advanced titanium project for little money which offers future potential. Uranium Energy combines all expected advantages of the coming supply deficit at the uranium market, of a low-cost mining method, central processing plants and a uranium friendly environment.

In South Texas, we completed a 132hole drill campaign at Burke Hollow project and reported updated estimates of an Inferred mineral resource of 7.09 million pounds of uranium ("U<sub>2</sub>O<sub>2</sub>") at a weighted average grade of 0.088% U<sub>2</sub>O<sub>2</sub> contained within 4.06 million tons - increasing the previous inferred mineral estimate by about 2 million pounds (+38%) of U<sub>3</sub>O<sub>8</sub>.

UEC also closed a definitive agreement to acquire 100% of the Diabase project located on the south rim of the Athabasca Basin uranium district. The project is a low cost, high value project that fits well in our pipeline of projects to be developed.

#### What are the main catalysts for your company within the next 6 months?

We will continue to advance our growth plans within the framework of our corporate strategy:

1) remain 100% unhedged for maximum exposure to a turn-around in uranium prices;

ISIN: US9168961038 WKN: A0JDRR FRA: U6Z NYSE: UEC

Shares issued: 155.9 million Options: 14.0 million Warrants: 31.0 million Fully diluted: 200.9 million

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# bottom of the cycle; and

guay.

Global market fundamentals for uranium are strengthening, through a combination of reduced supply from ongoing major foreign-producer cutbacks and heightened demand spurred by a growing international need for zero-emission, base-load electricity. Concurrently, fundamentals for uranium production in the U.S. are also improving, because the extreme dependence on foreign supply is raising national security concerns, gaining the attention of top congressional and executive branch decision makers.



Amir Adnani CEO

## **Exclusive interview with Amir Adnani, CEO of Uranium Energy**

What did your company achieve within the last 12 months?

UEC expanded its resource base, acquiring the fully permitted (2 million lbs/yr.) Reno Creek in-situ recovery project in Wyoming's prolific Powder River Basin with an NI 43-101 Measured and Indicated resource of 27.47 million tons grading 0.041% U<sub>2</sub>O<sub>2</sub> yielding 21.98 million lbs. We also entered into an agreement

to acquire 100% of the advanced stage North Reno Creek project located immediately adjacent to and within UEC's existing Reno Creek Project permitting boundary - increasing UEC's Reno Creek's combined Measured and Indicated resource by 20%, based on previously reported NI 43-101 Measured and Indicated resource of 3.8 million tons grading 0.056% U<sub>2</sub>O<sub>2</sub> yielding 4.3 million lbs.

CA:UEC Daily -

Volume =



2) make accretive acquisitions near the 3) grow and de-risk our low-cost ISR

portfolio in Texas, Wyoming and Para-

There is also another objective on the horizon: to maximize the value of our Alto Paraná titanium project for the benefit of UEC shareholders.

#### What is your opinion about the current conditions of the uranium market?



**Uranium Energy Corp.** 

(Source: BigCharts)







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