

# **Uranium Report 2023**

Everything you need to know about uranium!



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### **Imprint**

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#### **Preface**

Dear Readers,

With this issue of the Uranium Report 2023, we are already in the seventh year of this special report series for which we were ridiculed for many years. We started thinking early on about how to charge all those electric cars. And lo and behold, you need low-emission, base-load electricity that's available 24 hours a day. Uranium and nuclear power are the issue of the hour! The market and many countries have now understood this, unlike Germany. The price of uranium has broken out to the upside and continues unabashedly toward the first major target at US\$100 per pound. As expected, the imbalance of weak supply coupled with rising demand has now translated into massively rising prices. In the longer term, we see uranium prices rising well above US\$100 per pound, but we can also imagine US\$150 or US\$200 per pound in the next few years. Led by the uranium ETF Sprott Physical Uranium Trust, but also other market participants and even companies like UEC and URC made sure that the uranium spot market was really emptied out. Then there are also new vehicles like the Uranium Managed Account of ZURI INVEST in Zurich. They all buy up real physical stocks and thereby further tighten the market.

Just now, the U.S. government has also continued to buy for its national uranium reserve. Uranium and nuclear power have never been as valuable as they are today. Russia is cutting off Europe's energy supply, and nuclear power is a way out of the dilemma, even if the German government has been completely naive so far and has shut down all its nuclear power plants, while at the same time crying because there is too little electricity and industry is moving away. Almost all countries that already operate nuclear power are building more new nuclear power plants. This is because they have realized that e-cars actually have to be charged at favorable and predictable electricity prices. Otherwise, they will no longer be bought, no matter how much they are subsidized.

We also see a bright future for what we call Small Modular Reactors (SMRs). These are nuclear reactors that are smaller than conventional reactors and can be manufactured in a factory and then moved to an assembly site. This would make it possible to produce more decentralized power and not have to move so many new power grids across the country.

Investors such as Buffett and Gates have long recognized that solar and wind power will not be able to meet base load requirements until adequately large storage facilities for electricity from renewable energy sources are created, and they have made funds available for research and construction of SMRs.

This report is intended to provide interested investors with an overview of the uranium industry and the real facts.

Of course, we also present some interesting companies in the industry with facts and figures. This is to be understood as a suggestion and not as a recommendation to buy, as there are only very few listed companies left at all.

Raw materials are the basis of our entire economic life. Without raw materials, there are no products, no technical innovations and no real economic life. We need a reliable and constant basic energy supply for our highly industrialized world.

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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



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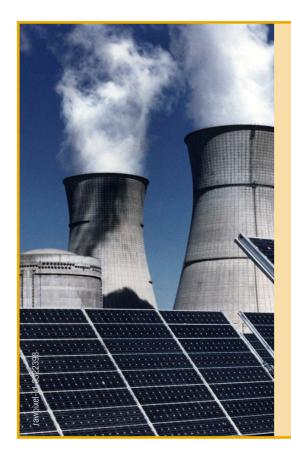
# The uranium sector is facing a gigantic reassessment: stagnant supply meets empty stockpiles, a sudden explosion in demand and technical production problems

Nuclear power has just moved back into the public spotlight in view of an almost exploding demand for CO<sub>o</sub>-free energy. But clean nuclear power cannot be produced simply at the push of a button - especially if there is not enough raw material available. This raw material is called uranium, and the price of it has recently gone through the roof. The uranium spot price, which for years after Fukushima had been hovering around a range of less than US\$20 per pound, managed to jump above the US\$70 mark in September 2023. But even this price level is likely to be only an intermediate step on the way to new alltime highs, because the supply-demand situation is just getting rapidly worse!

The energy suppliers' (utilities) stocks, which were well filled just a few years ago, are almost empty, and the uranium spot

market, which can only satisfy a fraction of demand anyway, has dried up. The world's two largest uranium producers, Kazatomprom and Cameco, recently reported that their entire expected production into 2025 was already "sold out." At the same time, many utilities have failed to ensure timely replenishment through appropriate long-term supply contracts.

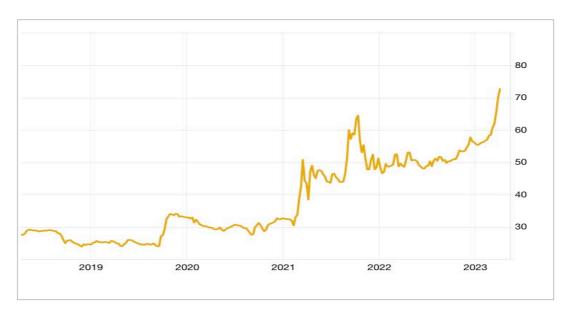
All of this meets a supply that has been lagging behind the corresponding demand volume by between a quarter and a third for years. This is primarily due to uranium mines – some of which have been closed for years – which were closed when uranium prices were around US\$20 and cannot be restarted within days. In addition, the higher demand is causing problems in uranium enrichment. Corresponding capacities are limited and with higher demand,



# What is baseload capability and why is it so important?

Base load capability is the ability of a power plant to provide continuous, reliable electrical power. This includes nuclear power plants, coal-fired power plants, gas-fired power plants, oil-fired power plants and steam power plants fired with substitute fuels. Combined heat and power plants, biomass and biogas power plants can also be base-load capable under certain conditions, although fossil or renewable raw materials must also be fired for this purpose. The only base-loadcapable electricity generation from renewable energy is by means of hydroelectric power plants, but this often requires a major intervention in nature.

Due to their often strongly fluctuating generation and thus feed-in, photovoltaic and wind power plants are not base-load capable, at least not until adequate storage media are available.



Uranium price development over the last 5 years (source: own representation)

the enrichment centrifuges can no longer run as long to "squeeze out" as much as possible from the feedstock uranium hexafluoride. This means the final product is less enriched than it was a few years ago, when demand was lower, and centrifuges could run longer. Accordingly, demand from utilities is once again rising sharply - for technical reasons.

In addition, many established nuclear power nations such as China, India, Japan, the UK, France and the USA are working on recommissioning, extending the operating lives of or building new nuclear reactors, and many more nations are planning to build reactors. In the medium term, much smaller reactors - so-called "Small Modular Reactors", or SMRs for short, which can be manufactured in factories on a modular basis and installed at almost any desired location - will provide an additional explosion in demand.

A supply of about 145 million pounds of triuraniumoctoxide ( $U_3O_8$ ) is expected in 2023, which will meet only three-quarters of the demand for 190 million pounds of  $U_3O_8$ . However, new mines take an aver-

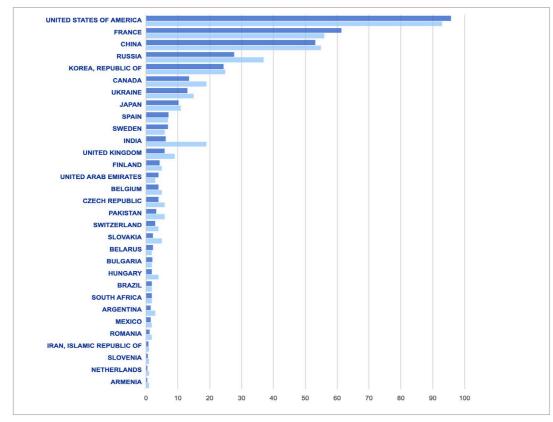
age of at least 10 years from the discovery of a deposit through permitting and construction to the start of production. This glaring undersupply of uranium, plus other problems such as the fact that Russia controls a good 45% of the world's uranium enrichment capacity, creates excellent opportunities for interested investors to participate in the uranium market. Some interesting investment opportunities can be found in this report.

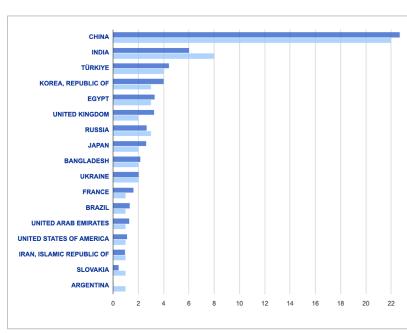
# Nuclear reactor fleet back on growth track after shutdowns in Germany

Although the number of nuclear power reactors on the grid declined in 2022 and 2023, mainly due to several closures in Germany, the global reactor fleet has been on a growth trajectory again since May 2023 - both in terms of the number of reactors and net electrical output.

Since the beginning of 2023, 4 new nuclear power reactors have been brought online worldwide, including two in Europe (Belarus + Slovakia) and one in the USA (Vogtle-3). In addition, Takahama-1, a Japanese reactor that had been offline for

Overview of currently operating reactors (light blue) and net electrical power (blue). Source: www.iaea.org/PRIS





Overview of reactors currently under construction (light blue) and the corresponding net electrical capacity (blue) per country (source: www.iaea.org/PRIS).

a long time, was brought back online. At the same time, construction began on 4 new reactors, including one in Egypt. Thus, by the end of September 2023, 32 nations were operating 411 reactors with a total net electrical capacity of about 369.4 gigawatts. 26 others were in maintenance status at that time.

The current leading nuclear power nation with 93 reactors in operation is the USA. However, emerging economies such as China, India, Turkey and several Arab nations are leading the way in terms of new construction, as they require more and more energy and have been focusing on a massive expansion of their nuclear power capacities for some time. For example, 58 additional nuclear reactors with a total net electrical capacity of around 60.2 gigawatts are currently under construction - 22 of them in China alone. Planning has already been completed for around 125 additional ones, and more than 300 others are in the pipeline worldwide.



# Only with uranium are nuclear fission chain reactions commercially possible

Uranium is 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 all isotopes are radioactive. Naturally occurring uranium in minerals consists of about 99.3% isotope 238U and 0.7% 235U.

The uranium isotope 235U is fissionable by thermal neutrons and thus, apart from the extremely rare plutonium isotope 239Pu, is the only known naturally occurring nuclide with which nuclear fission chain reactions are possible. For this reason, it is used as a primary energy source in nuclear power plants and nuclear weapons.

#### **Occurrence**

Uranium does not occur in pure form in nature, but always in oxygenated minerals. There are a total of about 230 uranium minerals that can be of local economic importance.

There is a wide range of uranium deposits from magmatic hydrothermal to sedimentary types. The highest uranium grades are achieved in unconformity-bound deposits with average uranium grades of 0.3 to 20%. The highest grades are over 70% U<sub>2</sub>O<sub>0</sub>!

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

#### **Uranium mining**

In uranium mining, a distinction is basically made between two processes: Conventional extraction and extraction by in-situ leaching or in-situ recovery (ISR). The exact extraction method depends on the characteristics of the ore body, such as depth, shape, ore content, tectonics, type of surrounding rock and other factors.

#### **Conventional extraction**

The majority of uranium is extracted by deep mining. The deposits are accessed via shafts, adits, ramps or spirals. Problems are often posed by the penetration of mine water and the so-called ventilation (technical measures to supply mines with fresh air). The exact mining method is chosen accord-

ing to the characteristics of the deposit. Above all, the shape of the ore body and the distribution of the uranium in it are decisive. In deep mining, an ore body can be mined in a targeted manner, resulting in much less overburden than in open pit mining.

Near-surface or very large ore bodies are preferably extracted by open-pit mining. This allows the use of cost-effective large-scale technology. Modern open pits can be from a few meters to over 1,000 meters deep and several kilometers in diameter. Open pit mining often produces large quantities of overburden. As in deep mining, large quantities of water may have to be lifted for an open pit, but ventilation is less of a problem.

#### ISR extraction

In the ISR method, water and small amounts of CO<sub>2</sub> and oxygen are injected into the

sandstone layers with the help of so-called injection wells, the uranium is extracted and pumped back to the surface for further processing with the help of so-called recovery wells. The entire process therefore takes place completely underground. The advantages of this process are therefore obvious: there is no need for major earthmoving as in open-pit operations, and there are no tailings piles or discharge ponds for heavy metals and cyanides. Only the wells are visible on the surface, and the land around the wells can continue to be farmed without restrictions. The ISR process also makes lowgrade deposits economically mineable, and capital costs for mine development are greatly reduced. Moreover, the entire process can be carried out with a minimum of labor, which also drastically reduces operational costs. According to a study by the World Nuclear Association, 25% of uranium mined outside Kazakhstan recently came from ISR mines.

### The current demand situation

# 190 million pounds of U<sub>3</sub>O<sub>8</sub> per year

The U.S. is extending power plant lifetimes, has brought a new power plant online after many years, and plans to add more in the future

With 93 reactors, the USA has by far the largest active nuclear power plant fleet in the world. In 2023, Vogtle-3, a new reactor, was connected to the grid for the first time in a long time. Nevertheless, the USA is threatened by a collapse in energy supply. The United States is still the country with the highest per capita consumption of electricity in the world. Thus, the U.S. has no choice but to increase the number of its nuclear reactors in the coming years. Accordingly, the expansion of the nuclear power plant fleet is also part of the "Green New Deal" initiated by President Biden, which is intended to lead the country toward CO. neutrality. Alongside the expansion of wind and solar energy, nuclear power is the top priority.

In recent years, more than 60 U.S. nuclear reactors have applied for lifetime extensions to at least 60 years of total operation. In addition, there are about 40 applications for the construction of new nuclear power plants. Currently, one additional plant is under construction, and another 20 are in the concrete planning phase.

# China will soon overtake France as the second largest nuclear power nation

For several years now, it has been China that has been setting the pace in the construction of nuclear power plants. 55 reactors with a total net electrical capacity of 53.2 gigawatts are operated by the Middle

Kingdom, which until now has primarily used coal to generate electricity. Of these, 18 new reactors alone have been commissioned since the beginning of 2018. It is expected that China will soon replace France (56 reactors) as the current number two in nuclear power - also in terms of net electrical output.

The Chinese government plans to build more than 80 new nuclear reactors in the next 15 years and over 220 new nuclear reactors by 2050. By 2030, a total of 110 reactors are to be connected to the grid, which will mean that the USA will have been replaced as the current leader. A total of 22 nuclear reactors are currently under construction. In the first eight months of 2023 alone, China started the construction of three reactors, and in 2022 there were five.

#### India shifts up several gears

India, now officially the world's most populous nation, plans to expand its nuclear energy capacity by at least 70 gigawatts in the face of an ever-increasing hunger for energy.

Currently, a total of 19 Indian nuclear reactors (6.3 gigawatts) are in operation. India mainly owns small reactors with only 202 megawatts but will increasingly rely on large reactors with more than 1,000 megawatts in the future.

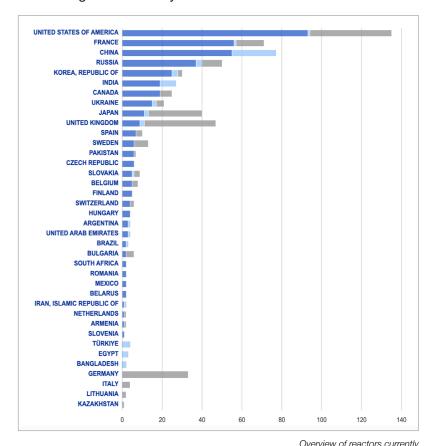
Currently, 8 nuclear reactors are under construction in India, with 40 more to follow by 2050.

#### Russia continues to expand

Russia has also started a massive expansion of its nuclear power plants. The country currently operates 37 nuclear reactors with about 27.7 gigawatts. 3 plants are in the construction phase. In addition, Russia plans to build more than 40 additional nuclear power plants, which will increase the share of nuclear energy in Russia's energy mix from the current 15% to more than 25%.

# Japan makes 180-degree U-turn and returns to power plant construction

Once the world's second-largest nuclear power producer, Japan is already operating 11 of its former 50 reactors again twelve years after Fukushima. These have undergone a strict safety protocol and are already running at full capacity again. Twenty-two more reactors are currently in maintenance and inspection mode and could follow in the coming months and years. But some-



thing else is interesting: Japan has returned to the ever-growing circle of nations building new reactors. According to this, 2 larger reactors are currently under construction again in the land of the rising sun. Japan is also planning to extend the operating lives of existing nuclear power plants to over 60 years. The goal is to generate about 25 percent of electricity from nuclear power by 2030. Before Fukushima, the share was 30 percent, but in 2020 it was only five per-

cent.

in operation (blue), reactors currently shut down (gray) and reactors under construction (light blue). (Source: www.iaea.org/PRIS)



Pilot plant of a molten chloride reactor of the company TerraPower (Source: TerraPower)

# Several other nations are likewise increasing their nuclear power capacity or launching their nuclear power careers

In addition to the 32 nations that already have nuclear reactors on the grid, nuclear power plants are under construction in 17 countries. These include Argentina, Bangladesh, Slovakia, Egypt and Turkey. Other countries, such as Jordan and Indonesia, are planning to build several reactors in the coming years.

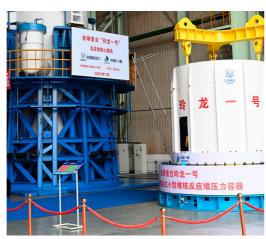
#### SMRs will provide cheap energy and an additional demand boost for uranium in the future

At the moment, the nuclear energy sector is dominated by large reactors with rated outputs of well over 1,000 megawatts in some cases. However, a huge future growth market for uranium is just emerging. This is what are known as "Small Modular Reactors" - or "SMRs" for short - small 5-300-megawatt units that can be built in a factory in a modular fashion and transported to the eventual site of operation. These scalable units can provide carbon-free benefits while competing on cost with cheap natural gas or diesel and can coexist with grid-intensive renewables because of their load-sensing characteristics and zero-emission operation. Individual SMR units

are mostly under 300 megawatts and can operate for 3 to 5 years without fuel reloading - without interruption. The development of SMRs is by no means new, dating back to the 1950s when a way was sought to safely power aircraft carriers and submarines. SMRs offer the advantage that they can be installed almost anywhere in the world, making them ideal for decentralized power supply and especially attractive for smaller grids, island states or remote locations (including mining and military bases). Significant progress has already been made in the UK, Canada, Belgium and the USA in terms of government financial support for these innovative, carbon-free energy sources.

Microsoft founder Bill Gates, among others, is working on the development of such small reactors and is pushing for the construction of a corresponding plant in Wyoming to replace a coal-fired power plant there. Gates' company TerraPower is to have a sodium-cooled fast reactor with a capacity of 345 megawatts. Using molten salt storage technology, the plant's output can be increased to 500 MW for more than five and a half hours if needed, supplying power to about 400,000 homes.

An existing example of such a power plant is the Akademik Lomonosov, which Russia commissioned in 2019 as a floating power plant in northern Siberia to supply several mines and a settlement of 4,000 people.



The core module of the world's first commercial small modular reactor (SMR) passed construction acceptance on July 13, 2023. (Source: China Central Television)

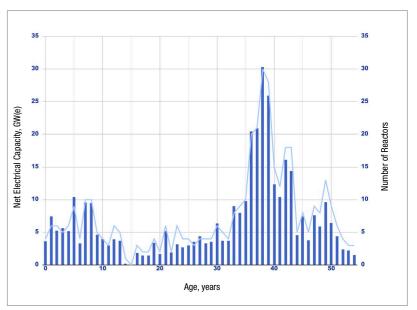
China commissioned two SMRs in 2021, each with 250 MW of thermal capacity. Nuscale Power is developing small, ready-to-use reactor modules with a capacity of 50 MW. Individual modules are to be transported by heavy haulage to their sites of operation, where up to twelve independently operable modules with a combined output of 600 MW are to be housed in one building. Design approval in the USA was granted in January 2023.



Demonstration model of a NuScale small reactor (Source: Oregon State University/Wikimedia Commons).

Rolls-Royce has also long since entered the future billion euro SMR business and has developed a pressurized water reactor with an electrical output of 470 MW. The individual parts of the reactor blocks are to be transportable by truck and mass-produced. Approval in the UK is expected by 2024, with the first reactor coming online in 2029. The list of such projects can be extended, with Eastern European countries currently at the forefront of efforts to operate such plants.

Belgium has already earmarked 100 million euros in funding for research into the development of smaller modular nuclear reactors in 2021. Furthermore, Poland, Romania, Estonia, the Czech Republic, Sweden and the Netherlands have released corresponding subsidies or started research work. The use of SMRs also appears to be particularly interesting for heavy container freighters, which until now have run on expensive diesel oil.



All in all, a huge market appears on the horizon that could flood the entire uranium sector with unimaginable demand from 2030 at the latest.

Overview of the age of currently operating reactors.

Many will (have to) be replaced by more powerful ones in the coming years.

(Source: www.iaea.org/PRIS)

# Nuclear power operators conclude new long-term supply contracts

The previous cycle of contracting, dominated by the uranium price spikes of 2007 and 2010, resulted in plant operators signing up to higher-priced contracts with very long terms of around 8 to 10 years. The vast majority of these old contracts have long since expired, with many utilities not vet looking for replacements for these supply volumes and instead serving themselves on the completely oversaturated spot market. This has now all but dried up. Unmet demand is therefore expected to exceed one billion pounds of U<sub>2</sub>O<sub>2</sub> over the next 10 years. At the same time, more than 75% of expected reactor demand through 2028 is not contracted. For a commodity as thinly traded as uranium, this return to more "normal" longterm contracts is likely to put tremendous pressure on both long-term and spot prices. As a result, there are now increasing signals from international plant operators towards increased buying activity or towards the conclusion of new, long-term contracts.

## The current supply situation

# 145 million pounds of U<sub>3</sub>O<sub>8</sub> per year

#### Uranium production in sharp decline

In 2022, around 130 million pounds of  $U_3O_8$  were produced from mines worldwide. This was significantly less than at the peak in 2016, when more than 160 million pounds of  $U_3O_8$  were produced. For 2023, leading uranium experts expect production of around 145 million pounds of  $U_3O_8$ .

# Kazakhstan is the undisputed leader in uranium production

While nearly all established uranium producers are struggling to expand their uranium production, one region has now moved past all others to the top of uranium production: Central Asia. There, Kazakhstan in particular has been able to multiply its uranium production in recent years. From 2000 to 2019. uranium production in the former Soviet republic rose from 1,870 to over 22,808 metric tons. As a result, Kazakhstan also passed the previous leader Canada in 2009 and is now responsible for around 45% of total global uranium production. In 2020, production fell to 19,477 metric tons due to production cuts caused by low prices and the effects of the Corona pandemic. In 2021, Kazakhstan produced about 21.800 tons of uranium, and in 2022 about 21,200 tons.

# Former producing nations struggled with weak uranium prices

The established uranium-producing nations of Australia, Canada, Russia and Niger were already having problems expanding their production before the Corona crisis. All four countries together produced just under 16,430 tons of uranium in 2021. In 2009, the figure was 28,000 tons of uranium. In some cases, mines were shut down due to the weak uranium spot price or the lack of further reserve availability.

# U.S. uranium production was recently nonexistent

Although the U.S. remains the largest consumer of uranium on the globe, the U.S. uranium industry has virtually ground to a halt. Since 1980, virtually nothing has been invested in developing new deposits, and nearly 95% of the uranium needed has been obtained from the disarmament programs. U.S. nuclear reactors consume about 21,000 tons of uranium annually. Accordingly, an increase in capacity would require an increase in the amount of uranium needed. The World Nuclear Association (WNA) projects that by 2035, about 35,000 metric tons of uranium will be needed annually in the U.S. alone. U.S. uranium production peaked in 1980, when about 29,000 metric tons of uranium were extracted from the ground. After the end of the Cold War. disarmed nuclear weapons in particular became the most important source of U.S. uranium requirements. This led to a decline in U.S. uranium production to a most recent 75 tons of U<sub>2</sub>O<sub>2</sub> in 2022. As a direct result, much of the infrastructure and licensed production facilities were simply closed or completely dismantled. Currently, only a few mining licenses remain in Texas, Arizona and Wvoming. Recently, however. several companies have been working on new licenses for their processing plants. Overall, the U.S. has a production capacity of about 30 million pounds of U<sub>2</sub>O<sub>2</sub> per year, but only about half of that has a production permit.

# Massive production cuts lead to stabilization of uranium price

Although Kazakhstan is one of the nations that can currently mine uranium at the lowest cost, the country is no longer prepared to sell off its uranium deposits at rock-bottom prices. In early 2017, the state-owned

Kazatomprom announced that it would cut its own uranium production by at least 20%. In May 2018, Kazatomprom announced further production cuts. In addition, production had to be further reduced due to Corona.

But Kazatomprom is not the only uranium producer to cut production in light of the weak uranium price. Uranium major Cameco also announced production cuts and closed its McArthur River mine and Kev Lake facilities in January 2018, initially indefinitely. The Rabbit Lake mine was also closed, both of which are among the ten largest uranium mines in the world. Mc-Arthur River was the mine with the second highest uranium production and grades in the world. With the temporary closure, 10% of the world's total production was taken off the market in one fell swoop. Production has since restarted, although full capacity will not be reached again until 2024. Due to the fact that Key Lake was not in operation for a long time, the company recently struggled with processing difficulties, which is why part of the production from McArthur River had to be stockpiled. In addition, Cameco has been acting as a uranium buyer itself for some time in order to service long-term, higher-priced supply contracts with corresponding uranium volumes at the spot price.

From 2017 to 2022, Kazatomprom reduced its uranium production by about 15% and Canada by about 45%. In addition, there are closures at Moab Khotseng in South Africa and at the Chinese-owned Husab and Rössing mines in Namibia, to name only the most important. The spot market, whose supply is mainly composed of uranium mined as a by-product in other mines, has also recently seen a decline in supply due to various mine closures.

# Huge gap in supply has already existed for years

Even before the Corona pandemic, the supply deficit was about 40 million pounds of uranium per year. In 2020, the supply deficit was about 57 million pounds of U<sub>3</sub>O<sub>8</sub>, which

was about one-quarter of global annual demand. In 2021, the International Atomic Energy Agency (IAEA) recorded a supply deficit of 50 million pounds of  $U_3O_8$ , and in 2022, 40 million pounds of  $U_3O_8$ . Most of the current demand is being met from stockpiles, which are thus rapidly running out. A de facto supply shortfall has already existed since 2017, with consumption at the current level of 411 nuclear reactors worldwide at about 190 million pounds of  $U_3O_8$ , of which only about 145 million pounds are expected to be covered by global uranium production in the current vear

Over the past five years, global production has lagged behind global uranium consumption by about 40-60 million pounds per year.

# Deposits are stable - There is an acceptable range at higher uranium prices

At a market price of US\$40 per pound of uranium, experts estimate that there are just under 715,000 metric tons of economically recoverable uranium. With annual consumption currently at around 70,000 metric tons of uranium, these deposits would therefore be sufficient for just 10 years, provided the market price remained constant at at least US\$40 during this period and demand also remained constant. However, demand will inevitably increase.

If the market price for uranium were to rise and justify extraction costs of US\$80 per pound of uranium, about 1.28 million tons of uranium could be mined economically. Range at current consumption: 18 years.

If the uranium price were US\$130 per pound, about 3.79 million tons of uranium could be economically mined. The known reserves would then last for about 54 years at current consumption levels.

# Summary: The existing supply deficit will accelerate in the future

# A future supply deficit at the current spot price is almost inevitable

The IAEA estimates that new nuclear power plant construction will increase global uranium demand to as much as 260 million pounds of  $\rm U_3O_8$  per year in 2030. Over the past 5 years, there has already been a de facto supply shortfall of between 40 to 60 million pounds per year. In its most recent Nuclear Fuel Report, the World Nuclear Association projected a 3.1% annual increase in demand through 2040.

#### From underfeeding to overfeeding

Another challenge is posed by a simple technical circumstance: Enrichment. At times of lower demand, enrichment plants can run their centrifuges longer and thus extract correspondingly more enriched uranium from the delivered feedstock (underfeeding). At times of higher demand and scarce available capacity, less time is available for enriching the feedstock. The yield is correspondingly lower (overfeeding). Thus, if one wants to maintain the amount of enriched uranium, one needs more of the feedstock as input for the enrichment process. It can therefore be assumed that. due to the enrichment problem alone, about 20 million pounds more uranium are currently required than during the underfeeding period.

# Uranium price must rise to increase production

It is thus clear that the apparently cheapest and only base-load-capable CO<sub>2</sub>-free way of generating electricity can only continue to be used if the market price for the initial product uranium continues to rise. In the case of uranium, too, demand and supply

regulate the market price. However, if the market price no longer permits economic extraction, it must and will inevitably rise. In the case of uranium, there is also the fact that demand will also rise sharply due to the construction of several hundred new nuclear reactors, so that the market price will benefit twice over, so to speak. And with it, of course, those investors who have recognized this trend early enough.

#### A high proportion of demand is currently unmet - new supply contracts can only be served by means of higher subsidies

Unmet demand is expected to exceed one billion pounds of U<sub>3</sub>O<sub>8</sub> over the next decade. In this context, more than 75% of the expected reactor demand will not be contracted by 2028, although some utilities have already signed new supply contracts with Cameco, Orano, and others. For a thinly traded commodity like uranium, this return to more "normal" long-term contracts is likely to put tremendous pressure on both long-term and spot prices. The fact is that the world's two largest uranium producers, Cameco and Kazatomprom, are already sold out into 2025.

# USA wants to reduce dependence and relies on uranium from its own mines

The U.S. is working to implement SMR technology, as are many private companies. To date, the U.S. Department of Energy has funded over \$160 million in projects under its new Advanced Reactor Demonstration Program.

Furthermore, the country is trying to become less dependent on the immensely



U.S. and EU increasingly rely on nuclear power as a green, baseload energy source (Source: adobestock.com)

high uranium imports, mainly from successor states of the former Soviet Union. To this end, the U.S. Congress approved a budget that will provide \$150 million annually over the next 10 years to create a strategic uranium reserve. This reserve is to come entirely from uranium from U.S. mines. A first bidding phase by U.S. companies started recently. The Biden administration even wants to increase this part up to \$4.3 billion for the next 10 years.

# Uranium investors buy spot market empty

Only recently, several other strong market players have joined in and are now securing U<sub>3</sub>O<sub>8</sub> on the spot market at a small price, mostly from mines where uranium is a by-product. In addition to Cameco, which is now a buyer, the Sprott Physical Uranium Trust and Yellow Cake Plc. have also been able to purchase larger quantities of uranium. All these players took more than 100 million pounds of U<sub>3</sub>O<sub>8</sub> from the spot market since the beginning of 2021.

Furthermore, uranium companies such as Uranium Energy, Denison Mines and Boss Energy also purchased physical uranium in order to be able to act flexibly and fulfill supply contracts in the event of an early production start-up.

# The best uranium stocks promise multiplication potential!

The current situation of a uranium spot price that continues to be too low and does not reflect reality, plus the massive supply deficit that continues to exist, has prompted us to provide you with a compact summary of promising uranium stocks. In doing so, we focus primarily on development companies with extremely promising projects, as these also offer a high takeover opportunity in addition to the actual appreciation due to a higher uranium spot price in this context.

The two expert interviews, which provide additional information and investment ideas, should also be noted.

# Interview with Scott Melbye – CEO of Uranium Royalty, Executive Vice President of Uranium Energy and Ex-Advisor to the CEO of Kazatomprom



Scott Melbye is a 37-year veteran of 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<sub>3</sub>O<sub>8</sub>. 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. was VP-Commercial for Uranium Participation Corporation and was Advisor to the CEO of Kazatomprom the world's largest uranium producer in Kazakhstan, Melbye received a Bachelor of Science in Business Administration with specialization in International Business from Arizona State University in 1984.

Mr. Melbye, nuclear power is experiencing a true rebirth. Many nations are planning to build new reactors to generate environmentally friendly, CO<sub>2</sub>-free energy. To what extent is nuclear energy CO<sub>2</sub>-free and how can nuclear energy contribute to improving the world's climate and energy supply?

As the global economy struggles with the triple challenge of securing energy supplies that are clean, economic and reliable, Nuclear Energy has a key role to play in addressing all of these, and as such, we have seen an unprecedented embracement of nuclear power for its abundant. affordable and carbon-free attributes. For the first time in the modern history of nuclear energy, we are seeing broad support for nuclear power from the political Right and Left, the investment community, and both environmentalists and industrialists. Whether one values the clean energy benefits of this leading green-energy technology, or prioritizes the reliability and affordability of 24/7, baseload power, nuclear energy delivers on all accounts. It is as carbon-free and safe as wind and solar, yet runs 95% of the time versus 30% for intermittent renewables. Moreover, its energy-dense uranium fuel serves as a price hedge against volatile fuel costs compared to fossil-fired generation. It is not surprising then that in the past 9 years the world has seen 69 large, modern nuclear power plants connected to the global electric grid and 60 more commence construction. The September 2023 edition of the World Nuclear Association (WNA) Uranium Supply and Demand Report projects a 75% increase in nuclear generation by 2040 (138% in the high case). The WNA's aspirational initiative, "Net Zero Nuclear", calls for a tripling of capacity over this period as the required level that nuclear needs to contribute if the world is going to meet its decarbonization goals.

There are currently around 436 operable nuclear reactors worldwide. To what extent will the reactor landscape change over the next two decades and will we see small modular reactors experience growing acceptance, deployment and market share?

Large traditional, nuclear reactors continue to be fuelling these robust growth rates in nuclear generation. This comes from both new builds in countries that seek to add substantial, sources of baseload electric power to their grids, and from the uprating and extension of existing units in the established nuclear markets. Given the growth and modernization in the emerging markets, and the further electrification of the developed world, particularly in transportation and advanced technologies, nuclear will continue to grow in helping to meet those needs. Furthermore, we are now seeing very exciting developments in the deployment of small modular, or advanced, reactors (SMR's). These are not the 1500-megawatt massive power stations that we have become accustomed to, but rather smaller 50-300-megawatt units that can be constructed in a factory with lower up-front capital, shipped on site and built in a scalable, modular manner. Once these innovative plants can get past the first-build hurdles in the latter half of this decade, they promise to be safe, affordable, clean and flexible energy sources. They can adapt well to large grids already burdened with substantial intermittent renewable sources and present viable alternatives to retiring coal fired power plants. They can also serve as a main source of power to remote communities, or for uses in industrial or mining applications. Whether it is GE Hitachi in Canada, Rolls Royce in the United Kingdom, or X-Energy, TerraPower or NuScale in the United States, these SMR's and advanced designs are receiving substantial commercial interest that is being boosted by strong government support in terms of their initial deployment. In a significant 2021

announcement, the U.S. State of Wyoming will see a Bill Gates, TerraPower, Natrium reactor constructed on the site of a retiring coal-fired power station (Warren Buffett's Pacific Corp. utility being the buyer). Not only can this advanced reactor make a clean energy transition, but it can also connect into existing grid infrastructure, and jobs can be preserved in the impacted fossil fuel sector. On the Texas Gulf Coast, X-Energy has partnered with Dow Chemical to power their massive petrochemical facilities with 24/7, carbon-free nuclear power. Central Europe is proving to be a promising market for this technology as these countries are facing a number of energy challenges. While historically dependent on coalfired power generation, they are being pushed towards lower carbon alternatives by the European Commission. At the same time, they want to avoid the dangerous reliance on Russian natural gas. Large western reactors and SMR's are proving to be the desired fit under those constraints and challenges. For example, in Poland, the large copper producer, KGHM, has partnered with NuScale to have their scalable SMR's supply carbon-free electricity to produce "green copper" in their energy-intensive industry. The Polish Ministry of Climate and Environment has also already given the green light to twin Westinghouse AP-1000 reactors with a capacity of 3750 Mwe, and other reactor projects are in the proposed and planning stage.

Uranium Prices recently broke above \$73 per pound. This is up significantly from the bear cycle lows of \$17.70 per pound in November 2017, but still well below previous highs. What is behind this bull market move in uranium prices and what can we expect from here?

Uranium prices have indeed been on a dramatic recovery which can be attributed to a number of basic supply and demand fundamentals, in combination with a mix of global mega-trends and geopolitical developments. This confluence of factors has created a very real supply-squeeze in the period 2024-26 where new supplies are desperately needed while existing mines are fully committed under contract, and new mines (only beginning to be incentivized) will be slow to materialize. To make matters more extreme, we now have the demand bar being raised again with robust growth in nuclear generation.

We have been talking about the rebalancing of supply and demand factors for some time, and recent events have only accelerated that development. Following a period of uranium over-supply brought on by the impacts of Fukushima, global uranium producers began to take steps to rationalize their production plans around the time long term contract hedges were beginning to roll out of supplier portfolios. Despite falling prices throughout the decade, global production had increased and peaked in 2016. From 2017 onward, however, we finally saw supplier discipline translate into reduced production levels and the shut-in of mines around the world. In fact, over the past 7 years, global production has lagged global uranium consumption by about 415 million pounds. This has had the impact of drawing down global secondary supplies to help bring the market into balance. Some producers, like Cameco, not only shut-in production, but entered the market as buyers to backfill their substantial long term contract commitments.

A couple of major developments also came along to throw gasoline on the fire. The COVID-19 pandemic, for one, impacted roughly 50% of global uranium production at its peak, yet fortunately spared the nuclear power plant, uranium-consumers who operated reliably as essential services throughout this time. As such, uranium demand was unimpacted while major mining operations, like those in Kazakhstan and Cigar Lake in Saskatchewan, Canada, saw

their output decreased, even beyond the discretionary mine cutbacks. Additionally, on the production side, the uranium market is experiencing the end-of-mine-life of several key operations. This includes the Ranger mine in Australia (which ceased operations in 2021), the Akdala mine in Kazakhstan, and the Cominak mine in Niger. Additionally, the decade of low uranium prices did very little to incentivize the pipeline of new projects or encourage the restart of idled mines. This will dramatically impact the production response in this emerging supply squeeze as mines are not permitted, licensed or developed overnight, and in fact, can take 6-10 years to accomplish (with no guarantee of success). Market observers should also not ignore the impacts of global inflation on the price thresholds of mine restarts and development. There may be a general misperception of the level at which uranium prices will incentivize new mines.

In 2023, we have also witnessed the vulnerability of the fuel cycle to geopolitical events (beyond Russia/Ukraine). The sub-Saharan African nation of Niger has seen its democratically elected President deposed by a military coup. This major uranium jurisdiction has been supplying a quarter of European needs for many years, particularly into former colonial power, France. French diplomatic relations have been severed and their sizeable military presence expelled. With border closures affecting inbound supplies and outbound uranium exports, this not only impacts existing uranium mines, but also those currently under development.

With this sort of production/consumption gap prevailing for so long, have we finally made a dent towards drawing down the over-hang of global inventories?

Yes, most definitely, and more than just a dent. Most market observers agree that the era of excess inventory and secondary supplies has come to a close. These voluntary

and involuntary reductions in global mine production allowed the market to fully draw down the over-hang of inventories. The excess uranium supply which built up from the effects of Fukushima and, frankly, overproduction throughout the first half of the decade has effectively been removed from the market. This has been dramatically accelerated through the purchasing activities of non-traditional uranium buyers. Such category of buyers would include producers, like Cameco, backfilling contract commitments from the open market and smaller producers like UEC, establishing low-cost inventories at near the bottom of the cycle. There has also been speculative buyers including Uranium Royalty Corp., Yellow Cake Plc., Sprott Physical Uranium Trust (SPUT). Zurlnvest, who are accumulating holdings of physical uranium on behalf of their shareholders seeking price exposure to uranium. Similarly, we have seen hedge funds make direct purchases of spot uranium in which they hold to realize capital appreciation of the asset. Collectively, these categories of buvers have had a profound impact on the rebalancing of the uranium market, having purchased over 100 million pounds in the past two years. SPUT has been the major player in all this, having raised over \$1.7 billion from its at-the-market financing vehicle since August 2021. Sprott reloaded this ATM facility in September 2023 with an additional US\$250 million in potential purchasing power. While I am reluctant to describe these developments as "catalysts", preferring to reserve that term for the major underlying supply and demand fundamentals, I would clearly describe these events as a major tipping point in the market re-balancing. The rather thinly traded and inefficient uranium market was already heading from over to under-supply from both traditional supply and demand trends, however, the magnitude of spot buying appears to have accelerated the market recovery forward by a couple years. The significance being, the market has now transitioned from being inventory-driven, to one reliant on the cost and timing of production from new and restarted mines. Many market observers, both suppliers and

"Central European utilities face a more daunting task in refueling their Russian designed VVER reactors with western fuel, including the fabricated fuel designs now being manufactured by Westinghouse for the Ukrainians and Czechs."

consumers see this translating into a classic supply squeeze in the 2024-26-time frame as demand and purchasing have returned to robust levels at the same time inventories have been depleted and new mine production cannot respond quickly enough.

Given Russia's role as a major global nuclear fuel cycle supplier, and the invasion of Ukraine going on close to two years, how has their isolation and sanctioning impacted the uranium market?

If the supply and demand rebalancing, COVID-19 impacts, and non-traditional uranium buving was not enough, the appalling and unprovoked invasion of sovereign Ukraine by Russia may prove to permanently reshape the uranium market in a number of ways going forward. The Rosatom uranium enrichment complex represents 45% of global installed capacity, and closely aligned Kazakhstan is the worlds largest uranium producer. In the United States for example. 20-25% of the enriched uranium comes from Russia and close to 50% of natural uranium supplies are sourced from Russia. Kazakhstan, and Uzbekistan. The Russian (Rosatom) fuel purchases amount to roughly US\$1.0 billion in hard currency per year towards Putin's war efforts. Western Europe would have similar levels of reliance. We would be correct in pointing out the risk management folly of putting that many eggs in Putin's basket, but the reality faced today is not whether to move away from Russian fuel reliance, but how quickly can this be achieved without harm to the nuclear power plant consumers. Not only are these sup-

plies potentially subject to sanctions (the U.S. Congress have proposed a complete ban with phased timelines), they could also be subject to a Kremlin export embargo knowing how strategic these energy supplies are to the West. Yet, other companies have remained true to their moral and ethical values and have voluntarily ceased Russian purchases (Swedish Vattenfall having made this decision on the first day of the invasion). Other utilities are facing mounting pressure to act from shareholders and customers, as this hardly reflects leading social responsibilities and ESG best practices. Central European utilities face a more daunting task in refueling their Russian designed VVER reactors with western fuel, including the fabricated fuel designs now being manufactured by Westinghouse for the Ukrainians and Czechs. Having said that, they and other neighboring countries, are fully committed to the transition given the first-hand perspective of Russia's carnage and the exodus of refugees. From a supply and demand perspective, we have to assume perhaps a permanent shift away from Russian uranium fuel reliance. While this may have dramatic impact on uranium prices in the near term, it is a signal of a strategic shift towards more geopolitically stable suppliers that are not under the influence of Russia or China. The 118th United States Congress, recognizes this vulnerability and have advanced the Nuclear Fuel Security Act towards becoming law. It has passed the U.S. Senate as part of the National Defense Authorization Act and has been introduced for consideration In the U.S. House of Representatives (with bipartisan support in both cases). If passed, and signed into law by the current U.S. President, the current Strategic

# "The Swedish Parliament dramatically changed course in their energy policy, calling for a 10-fold increase in their nuclear generating capacity."

Uranium Reserve would be expanded and extended to include U.S. produced enrichment services. This is the condition precedent in which the Russian Uranium Ban would be passed in separate legislation with likely overwhelming bipartisan support.

One country at a crossroads of these geopolitical developments, is Kazakhstan, the world's largest uranium producer. While they do not fall under Russian sanctions, the export of their uranium to the West through the Port of St. Petersburg has grown increasingly difficult. Much of 2022 and 2023 was spent trying to develop an alternative logistic route through the Caspian Sea. through Armenia and Azerbaijan to a Turkish Black Sea port. While proven feasible, it brings its own unique complexities and increased costs. It can also be reasonably speculated that a globally sanctioned Russia will exert its influence in the region to retain more of these supplies for their own use. The outbreak of a full-blown war in the Armenian Azerbaijani province of Nagorno-Karabakh, further complicates the transportation of sensitive uranium shipments. Kazakhstan also shares a geographic border with China, the world's fastest growing nuclear market. Both of these countries already have significant uranium production assets in Kazakhstan and that footprint is being aggressively expanded. Russia's Rosatom/Uranium One have acquired the largest new mine in Kazakhstan, Budenovskoye, through a controversial sole-source transaction blessed by the Astana sovereign wealth fund. Samruk-Kazvna. Russia now controls over 50% of Kazakh uranium production. These moves bring on even greater strategic significance given Moscow's increasing global isolation. China will not be outdone and are rapidly consolidating the other half of Kazakh uranium production. This is evidenced by increased direct ownership in Kazakh joint ventures, like substantial Ortalyk mine, huge recently announced export contracts, and the global trading hub established in Alashankou, a rail port of entry into China, which will all ensure more uranium being directed towards Beijing, and less to the UK, Europe, North America (and Russia).

#### How has this Russia/Ukraine conflict impacted nuclear power in global national energy policies?

The humanitarian catastrophe that is the Russian invasion of Ukraine will impact society in many ways for years to come. Perhaps the most lasting impact on global energy will be the renewed and keen awareness towards energy independence and security. Energy Ministers from around the world are reassessing how their energy is produced and from where it is coming from. No longer will it be acceptable to outsource strategic energy supplies (and other critical minerals, goods and services) to countries that do not have shared values and interests. Multinational cooperation will still exist, but a much greater emphasis will be placed on domestic control of strategic resources. Nuclear energy has a very important role to play in this societal shift. Nowhere has this become more evident than with the failed energy policies of Germany over the past 15 years. The Merkel approach of "Energiewende" promised abundant clean and affordable electricity though billions of Euros invested in green energy renewables, and a very deliberate and unequivocal phase out of nuclear energy. The result has been quite the opposite. Germany has instead "succeeded" in achieving electricity prices over 100% higher than neighboring nuclear France, while making very little progress in its carbon reduction goals, losing their largest source of carbon-free energy (nuclear) and instead increasing reliance on dirty lignite coal. However, the most disturbing result of this policy was the overwhelming reliance on Russian natural gas. The latter causing not only supply shocks to the German economy but conflicting the German Government in taking stronger ethical geopolitical positions during this profound humanitarian crisis. Last year's acts of sabotage to the Nord-Stream pipeline certainly raised the stakes in this "energy war".

In Europe alone, we are seeing the reversal of phaseouts of nuclear power in countries like Belgium, the Netherlands, and Sweden, and a renewed commitment to nuclear energy like we are seeing in the United Kingdom and France. The Swedish Parliament dramatically changed course in their energy policy, calling for a 10-fold increase in their nuclear generating capacity. On a broader perspective, the European Commission's taxonomy debate conclusions ultimately yielded to the pronuclear member arguments and deemed nuclear energy a green and sustainable energy source for the Community's energy needs (albeit with conditions). Nowhere is this more abundantly clear than in Central Europe where the threat of Russian aggression and energy weaponization is not a new concept. Countries such as Poland. Romania. Czech Republic, Slovenia, and Slovakia are not only placing increased value on their existing fleet (switching fabricated fuel suppliers from Russia's Rosatom to Westinghouse) but are engaging in new build of large western reactor designs and fully embracing the benefits of small modular and advanced reactors. Put simply, the EU (and society atlarge) is encouraging their shift away from the current heavy reliance on coal, and Russian gas is not an option. Renewables can contribute up to point but cannot be a baseload 24/7 source of uninterruptable electricity.

## What does this all mean for uranium investors?

As we have been saying for some time, the market fundamentals have been ripe for a significant and sustained recovery in uranium prices. We are now seeing this come together in a very big way, assisted by the mega-trend towards energy decarbonization and supply shocks that have been brought on by a global pandemic and geopolitical situations. We should remember the last bull market in uranium began from a place of very weak uranium demand, little to no investment in uranium exploration and development, and flat uranium prices below global costs of production. The resumption of new reactor builds in the nuclear renaissance, combined with supply shocks at major production centers (floods and fires in Canada and Australia), resulted in a period of uranium prices trading in the \$70 to \$137 per pound range. I can't help but draw the comparisons to today where even stronger, broad-based support of nuclear energy has emerged along with supply shocks and uranium speculation in historic proportions.

Early investors in this cycle are now being rewarded for their patience and foresight, and new investors are finding the nuclear energy and uranium story to be an extremely compelling sector in which to focus their capital for growth in the coming years. Given that we have only recently emerged from a period where the name of the game for uranium producers was to simply "leave it in the ground", to one of needed uranium expansion and growth, we are still in the very early stages of this cycle. Investors will be wise to focus on the companies that have positioned themselves through an extremely challenging time of survival to be ready to seize on these significant opportunities going forward. Indeed, very exciting times for uranium as the promise of clean, reliable, safe and resilient nuclear energy becomes more widely appreciated in a lower-carbon world.

#### Interview with Dr. Christian Schärer -

# Manager of the Uranium Resources Fund and Partner of Incrementum AG





Dr. Christian Schärer is a partner at Incrementum AG, responsible for special mandates. During his studies he started to search for the strategic success factors of successful business models. A topic that still fascinates him today and inspires him in the selection of promising investment opportunities. He studied business administration at the University of Zurich and earned his doctorate while working at the Banking Institute Zurich with an analytical study on the investment strategy of Swiss pension funds in the real estate sector. He has acquired comprehensive financial market knowledge in various functions as investment advisor, broker and portfolio manager. Since the summer of 2004. Schärer has been focusing on various investment themes with a tangible asset character as an entrepreneur, consultant and portfolio manager. He also brings his practice-oriented financial market knowledge to companies as a member of the board of directors He is married and father of a son. In his free time, he enjoys cooking for friends and family, hiking in the Ticino mountains or reading the biography of a fascinating personality.

Mr. Schärer, nuclear power is currently regarded as an environmentally friendly, i.e. low-CO<sub>2</sub> energy generation method that should at least serve as a bridging technology to a possible future 100% energy generation from regenerative energy sources. To what extent can the uranium sector benefit from this?

Against the backdrop of the global climate debate, governments are looking for answers to the question of what their country's optimal energy mix should look like in the future. Geopolitical concerns, economic interests, national egoisms and the laws of nature (physics) must all be taken into account. This is an extremely complex issue, because ultimately, policymakers must ensure that the energy and power supply for their national economies is clean, secure and affordable

able. According to the goals of the Paris Climate Agreement, energy supply in the future should be based less on fossil fuels. It is undisputed that the intended electrification of industry and mobility will lead to a disproportionately growing demand for electricity. Accordingly, alternative energies (wind, solar, hydropower) are to be strongly expanded. In recent years, a great deal of time and commitment has been devoted to defining globally binding climate targets that are as ambitious as possible. Ideological and moral arguments often had a high priority in the context of these discussions. This has changed considerably against the backdrop of the war in Ukraine and the energy crisis it has triggered. Questions about the availability and cost of energy supply are suddenly at the center of political debate. The dependence on fossil energy imports from Russia is to be reduced as quickly as possible and the energy supply is to be secured in the coming winters. This means that the time has come for concrete energy policy implementation. In this context, the limiting factors of time and money are beginning to take effect. Accordingly, realpolitik is increasingly taking

the reins in the search for feasible energy

policy compromises. The time of the energy policy pragmatists seems to be dawning... Underlying all these policy approaches is the recognition that the unavoidable fluctuations in the production of alternative energy sources must be balanced out in order to maintain a stable power grid at all times. This requires reliable power generation from non-fossil sources that is available around the clock, seven days a week. Because nuclear power is produced with low CO<sub>a</sub> emissions, nuclear power plants are a possible solution for many governments to provide this base load in the power grid. Against this background, alternative energy sources and nuclear power can form a "green" symbiosis. We do not see the opposition of "alternative" versus "nuclear" in energy policy, but rather low CO versus "fossil".

Thanks to this green stamp, nuclear power plants will probably also benefit from economic stimulus programs and government subsidies in the future. A notable example of this is the Inflation Reduction Act in the USA. Investor funds can also be tapped more easilv. For Europe, the USA and Japan, we expect that this will make it easier to modernize existing nuclear power plants with the aim of extending their operating lives. By contrast, we do not expect numerous new projects for the construction of current-generation reactors. Japan is a special case in this context. In the coming years, the country will bring many of the reactors decommissioned after the Fukushima nuclear accident back online. We see more potential for new reactor concepts that are safer, more flexible and less expensive than the current generation of nuclear power plants. The research funds required for this can now be mobilized more easily in the context described.

Whereas in the established industrialized countries the short and medium term aim is to extend the operating life of existing nuclear power plants, in the emerging economies in the Middle East and Asia the focus is on the accelerated expansion of reactor fleets. China is particularly ambitious in this re-

spect. The country plans to build around 150 new reactors in the next 15 years! More than the rest of the world has built in the past 35 years. India is also pursuing very ambitious growth targets for the nuclear industry. Are these plans realistic? That remains to be seen. The example of the United Arab Emirates gives cause for optimism in this respect. There, under Korean project management, it has been possible to realize ambitious construction projects for new reactors and put them into operation on schedule and within budget.

Overall, the prospects for nuclear energy have brightened considerably in the last two years. Particularly for power plant operators in the western industrialized countries, visibility has improved significantly. Against the background of political support and increased acceptance by the general public, planning certainty for operators has increased significantly. This will also be reflected in stockpiling. More nuclear fuel will again be stored to safeguard the future operation of the nuclear power plants. With the start of this new storage cycle, the opportunity-risk profile for the uranium sector is improving sustainably. The significant price recovery on the physical uranium market in recent weeks should be seen against this background.

After around 18 months, the uranium market has ended its consolidation phase and has been picking up speed again since early summer. Who are currently the driving forces behind supply and demand in the uranium sector that have pushed the spot price above the US\$60 per pound mark (as of the end of August 2023) and thus also helped uranium shares to perform well?

After a long bear market, the uranium price was able to complete the bottoming out in 2021 against the backdrop of significant production cuts and increased demand. The multi-year high in April 2022 confirmed this

development. As part of this process, the uranium price has already traveled an impressive distance, recovering from a price low well below US\$20 per pound to over US\$60. This rise was consolidated in 2022 as part of a protracted sideways movement or correction.

On the uranium market, too, the price reflects the current supply/demand situation. Because demand for uranium has already been higher than mine production for some time, this prolonged consolidation has disappointed many investors. Apparently, the existing supply gap has so far been covered by the depletion of existing stockpiles as well as with supply from secondary sources. Moreover, investors who participated in this first wave of price recovery sat on nice price gains. This tempted profit-taking. The market was probably simply running ahead of its economic realities.

It is often difficult to analytically isolate a single impulse and identify it as the trigger for a new price movement. This is also true for the uranium market in 2023. From a fundamental perspective, we are talking about the same trends and development today as at the beginning of the year. However, there are two additions to this. 1. the time axis: the operation of nuclear power plants runs over many decades. Accordingly, it often takes a longer time for the changes in the fundamental factors to be perceived and processed by the relevant decision-makers, 2. the trend: in every market constellation there are positive and negative arguments that influence the market participants. Otherwise. there would be no transaction in the market. However, when prices are rising, buyers often find it easier to jump on the bandwagon and weight the positive arguments accordingly. But if you want to participate in the promising medium- to long-term prospects of the uranium sector beyond the short-term trend, you have to understand the market structure. Otherwise, sooner or later you will be shaken out of the market by the periodic wild price movements. The operation of nuclear power plants requires





extensive infrastructure to ensure the supply of fuel. Provision must be made for the mining of uranium ores, the extraction of uranium from the ores, conversion and enrichment, and the fabrication of fuel assemblies. Anyone who wants to understand the price development of uranium must keep an eve on the entire value chain (fuel cycle) and be aware that we are dealing with a very longterm business. Changes in the supply and demand constellation take time to manifest themselves in corresponding price changes. Obviously, however, the unclear situation in Niger (uranium producer No. 6) and a large number of concluded supply contracts (Cameco and Kazatomprom are sold out for the years 2023 and 2024) have further increased the pressure to act.

For the current year, demand is expected to be around 190 million pounds and mine production around 145 million pounds. Because destocking (overhang from the 10-year bear market) is already well advanced and supply from secondary sources will be significantly reduced, the recovery in the uranium price should continue. The significant year-on-year increase in transaction volumes also supports this assessment.

In addition, a distinction must be made with regard to the price development of uranium. Uranium is traded both on the spot market and under long-term supply contracts between producers and buyers. In the historical context, the long-term supply contracts are more significant in terms of volume. On the spot market, typically only the "shortterm peaks" are traded. However, under the impression of the good availability of uranium, the picture has been somewhat distorted in recent years. The spot market enjoyed more attention than usual. Here, too, the picture seems to be changing. In view of the continuing supply shortfall, the demand side is increasingly trying to secure uranium under long-term supply contracts. The transaction volumes of the current year (as of the end of August) confirm this development. On the spot market, 35.5 million pounds were transacted in 233 transactions (full year 2022: 58 million pounds). In addition, the delivery of 119.6 million pounds was securitized in 33 long-term delivery con"Western power plant operators are currently very focused on securing some of the world's scarce capacity on a contractual basis."

tracts (full year 2022: 114 million pounds). On an anecdotal basis, we hear of severely limited availability of physical uranium on the spot market. This despite a widespread absence of financial market participants. The consolidation that has been underway since April 2022 was largely due to the "risk-off" environment in global financial markets. This was also reflected in the discount to intrinsic value at which the "Sprott Physical Uranium Trust" has traded since the last price high in April 2022. Since August 2021, the "Trust" has provided financial investors with a vehicle for participation in the uranium spot market. The Trust invests its funds exclusively in the spot market. Because it can only purchase physical uranium but cannot sell it (or can sell it only to a very limited extent), inflows of funds by financial investors have an immediate effect on increasing demand. However, due to unfavorable market conditions, the inflows have failed to materialize, relegating the Trust to a passive role on the sidelines of the spot market. It is a feature of the recent price increase that it has been driven mostly by industrial demand (power plant operators) rather than by financial investors.

More relevant for uranium producers, however, is the price development for long-term supply contracts. These prices are reported by the consulting firm "UxC" and stand at around US\$58 per pound as of the end of August 2023. However, the informative value of the reported prices is controversial because the conditions of these contracts are usually subject to confidentiality and the prices are also often set dynamically (X% fixed, Y% variable, plus "floor" and "cap"). In

each case, UxC reports only the lowest price offered. It should also be noted that the price component is only one component of the agreed terms and conditions. In addition, options to extend the contract term and/or to adjust the delivery volumes are usually also agreed. From this point of view, a higher price is usually the last negotiating option in the contract drafting process. In confidential discussions, involved contracting parties confirm the impression that negotiating power is increasingly shifting in the direction of the suppliers. The market is evolving from a "buyer's" to a "seller's" market. Transaction volumes have also increased significantly year-on-year to around 119.6 million pounds (as of the end of August 2023). It is expected that this trend will become established and that transaction volumes will continue to rise. An indication of the potential in this regard is provided by the current replacement ratio. Assuming an annual consumer demand of 190 million pounds, the value last year was around 0.6. A value of 1 (complete replacement of the uranium consumed in the current period with newly acquired material) probably represents a reasonable medium-term target and this could already be achieved in the current year.

#### Does Russia's isolation have any effect on the world's supply of uranium to nuclear power plants, and thus on the world's energy supply?

Security of supply is a key issue for nuclear power plant operators. This is explained, among other things, by the cost structure of these power plants. Unlike fossil-fueled power plants, in the case of a nuclear power plant the capital costs are the dominant factor in the total cost calculation for electricity production. With a share in the high single-digit percentage range, fuel costs (uranium) are of secondary importance. Accordinaly, the industry usually shows little price sensitivity to rising uranium prices. However, when an operator invests billions in the construction of a nuclear power plant, he also wants to operate it around the clock, seven days a week. A possible bottleneck in the fuel supply must be prevented accordingly. Russia is not only a uranium producer, but with "Rosatom" also a major player in the conversion and enrichment of uranium as well as in fuel production. The country holds significant market shares in these areas. However, because about 70% of the global reactor fleet is located in the Western industrialized countries, but they hold only about half of the capacities in conversion and enrichment as well as fuel production, there is a strong dependence on Russia from the Western perspective.

Accordingly, Western power plant operators are currently focused on securing a share of these scarce capacities in the Western world on a contractual basis. The price development to be observed in this area of the fuel cycle clearly shows how tight the "downstream" market currently is. However, this scarcity and the associated price increases will not remain a phenomenon at the back end of the fuel cycle. Due to various feedback effects, this demand and price pressure will also show up in the market for U<sub>o</sub>O<sub>o</sub> (uranium). One such feedback effect is driven by tight enrichment capacity. In times of low demand, suppliers of this service can run their centrifuges longer and thus extract correspondingly more enriched uranium from the delivered feedstock (UF6) (this is referred to as "underfeeding"). The process can be compared to squeezing an orange. If you have more time available, you can squeeze more juice from the same fruit. The situation is different in times of high demand and scarce available capacity. There is less time available for the enrichment of the starting material. The yield is correspondingly lower (this is referred to as "overfeeding"). If one wants to produce the same amount of enriched uranium as before, one needs correspondingly more of the starting material as input for the enrichment process. Currently, this swing from underfeeding to overfeeding in the uranium enrichment process results in an estimated additional annual demand of up to 20 million pounds of uranium (U<sub>2</sub>O<sub>2</sub>). This in a market environment that is already verv tiaht.

In the medium term, against the background outlined above, we expect massive struc-





tural shifts on the uranium market: On the one hand, Western power plant operators will seek to diversify their supply sources and conclude long-term supply contracts with suppliers from politically reliable jurisdictions. A willingness to self-sanction can already be observed today. Western power plant operators are refraining from purchasing enriched uranium and nuclear fuel from Russian sources wherever possible. Thus, a geopolitically driven division of the uranium market is emerging (bifurcation).

On the other hand, power plant operators will also address the issue of strategic supply security with more comprehensive stockpiling. As the latest quarterly statements of the Canadian uranium producer "Cameco" have already shown, power plant operators are indicating an increased willingness to stockpile uranium. This means that a new inventory cycle on the demand side has probably definitely started. In our opinion, this was the last missing piece of the mosaic in the picture of a multi-year and sustainable uranium bull market.

The structural deficits in the fuel cycle described above are likely to keep the uranium market busy for years. This starting position differs significantly from that at the start of the last major uranium bull market (2004-2010). Despite this promising starting position, it should be noted once again at this point that the adjustment processes in this long-term business are sluggish and take time.

# What advice would you currently give to investors who want to invest in the uranium market?

We have tried to show that the fundamentals for the uranium sector and the risk-reward profile of the companies involved have continued to improve. Well-managed companies have strengthened their balance sheets and consistently advanced their projects. Some of these companies are also making the transition from project developer to uranium producer in the next 18 to 36 months. This makes them attractive from an investor's perspective, because with the start of

production, the execution risk is significantly reduced, the cash flow profile becomes positive, and the market grants these companies a revaluation (higher multiples for profit and CF).

On the other hand, the volatility of these shares is extraordinarily high due to their low market liquidity and implicit project risks. Anyone who puts all their eggs in one basket in this speculative constellation is therefore playing for high stakes - possibly even too high. The most recent example of an unexpected setback was the highly praised "Global Atomic" in Niger, which we also value. The use of a fund or ETF that invests diversified within the investment theme seems reasonable to us. In addition, we recommend a staggered build-up of positions. Also, the volume of an investment (position size) should definitely be adjusted to the risk capacity and risk tolerance of the investor.

# You manage a uranium fund, what is important to you in selecting the appropriate positions and what position do you currently hold?

The investment strategy of the Uranium Resources Fund is based on the investment hypothesis that the existing supply gap in the uranium market will be closed over the next three to five years. This will only succeed if a significantly higher uranium price provides the incentives for new production capacities or those temporarily shut down for economic reasons to find their way onto the market.

The Fund typically holds around 25 positions in the portfolio and is suitable for the long-term investor who wishes to participate in the interesting prospects of the uranium sector. The assets are invested globally in companies that have a direct link to the uranium sector, in accordance with the principle of risk diversification. The investment strategy aims at absolute value growth and is not oriented towards a benchmark.

Due to its risk profile, the Uranium Resources Fund is suitable as a supplementary component in a diversified portfolio and not as a basic investment. The Fund is licensed

"Power plant operators are indicating an increased willingness to stockpile uranium. In our opinion, this would be the last missing piece of the mosaic in the picture of a multi-year and sustainable uranium bull market."

for public distribution in Liechtenstein, Germany and Austria and is tax transparent. In Switzerland, it is open for subscription to professional investors.

After a long bear market, the uranium market has bottomed out and made a sustained upward turn. In view of the growing supply gap and the further improving fundamental data, there are good prospects for a continuation of the bull market despite the price gains to date. However, interim setbacks and high volatility remain a feature of this tight market. We intend to consistently exploit the profit opportunities that present themselves, while accepting controlled risks!

Against this background, our portfolio stands on four pillars. As a first pillar, we maintain a strategic liquidity ratio of up to 5% in a normal market environment. This ensures our ability to act at any time. In this way, we take advantage of attractive entry points that regularly open up due to the volatile price performance of many uranium stocks.

With the second pillar, we want to participate directly in an improvement in the uranium spot price. Without higher uranium prices, a sustainable recovery of uranium producers is difficult to imagine. That is why two investment companies, which have invested their funds mainly in physical uranium, form the core of the portfolio. If our view is correct, the supply gap in the uranium market will be filled via a rising uranium price. "Sprott Physical Uranium Trust and Yellow Cake Plc. should therefore be the first and most immediate beneficiaries of this price recovery. The third pillar focuses on the shares of the uranium producers as well as on the group of "standby" producers with approved and/ or realized projects, but which are currently not yet in production. When uranium prices start to rise, the producers who can place

significant uranium production on the market will benefit. Only those who produce can also deliver. To be on the safe side, we focus on companies that have low production costs on the one hand and a good order book of long-term supply contracts on the other. Significantly represented in the portfolio are the two industry leaders "Cameco" and "Kazatomprom". Both companies have a broad portfolio of first-class production sites. This group is supplemented by investments in companies to which we would give the status of "standby producer". These are companies that have a portfolio of approved production sites and processing capacities. Production could be launched within a foreseeable period of time as soon as the economic conditions (i.e. a higher uranium price) are met. We include Boss Energy, Paladin Energy, enCore Energy and Energy Fuels in this group.

Under the fourth pillar, we focus on explorers and developers who are advancing worldclass development and mining projects. These are particularly interesting if they can significantly advance their projects in the time window of the expected supply gap. They will then be able to benefit from a correspondingly attractive performance of their projects. In addition, these assets should have the necessary size to also qualify as takeover targets. After all, we assume that a wave of consolidation will take place on the uranium market once the price turnaround has occurred and that mining companies from outside the sector may also want to position themselves in the uranium business. This would make sense not least because of the low cyclical sensitivity and the comparatively high visibility of uranium demand. For example, the companies "NexGen Energy", "ISO Energy" or "Denison Mines" can be assigned to this group.

## **Anfield Energy**

# New PEA opens opportunity for rapid, economical production ramp-up



Anfield Energy is a Canadian uranium-vanadium development company seeking to become a uranium and vanadium producer in the United States. Its near-term strategy focuses on advanced uranium and vanadium projects in Utah and Colorado - Velvet-Wood, West Slope and Slick Rock supported by its own Shootaring Canyon mill, one of only three licensed conventional mills in the US. A fresh PEA confirmed the possibility of a rapid and relatively low-cost production ramp-up. The longer-term production strategy includes the acquisition of complementary assets with the potential to feed additional uranium and vanadium resources into the Shootaring Canyon mill.

#### **Shootaring Canyon Mill**

The Shootaring Canyon Mill is located approximately 77 kilometers south of Hanksville in the U.S. state of Utah and is one of only three conventional processing facilities fully licensed for production in the United States. It is a conventional acid leaching plant with a licensed capacity of 750 tons per day. In the vicinity of the plant, which was in operation for only a short period of time, there are stockpiles that still hold approximately 370,000 pounds of U<sub>3</sub>O<sub>8</sub>. Further, the company is evaluating the possibility of adding a vanadium circuit to the Shootaring Canyon Mill.

#### **Artillery Peak Project**

Beginning in November 2022, Anfield Energy secured larger land packages in several steps in the so-called Artillery Peak area in Mohave County, Arizona. The total of 238 claims are adjacent to Anfield's current project in the Date Creek Basin and expand Anfield's uranium acreage in the area. Historical records indicate a potential uranium resource in the Artillery Peak/Date Creek Basin area of approximately 2.8 million pounds of U308. The Company has en-

gaged the engineering firm of BRS Inc. to prepare a NI 43-101 uranium resource report for its combined Date Creek Basin/Artillery Peak projects for further verification.

#### Slick Rock Project

Slick Rock is located in San Miguel County, Colorado, approximately 24 miles north of the town of Dove Creek. The project hosts a high-caliber deposit containing a historic inferred resource of 11.6 million pounds of  $\rm U_3O_8$  and 69.6 million pounds of  $\rm V_2O_5$  (2.549 million tons at an average grade of 0.228%  $\rm U_2O_8$  and 1.37%  $\rm V_2O_5$ ).

Uranium and vanadium were mined on the property from 1957 to 1983. The project site has extensive infrastructure including existing shafts, portals with road and power connections and is in close proximity to an existing mill.

Slick Rock is located in close proximity to the Company's West Slope project in the Uravan Mineral Belt of Colorado, consolidating properties in a prolific and historic uranium mining region.

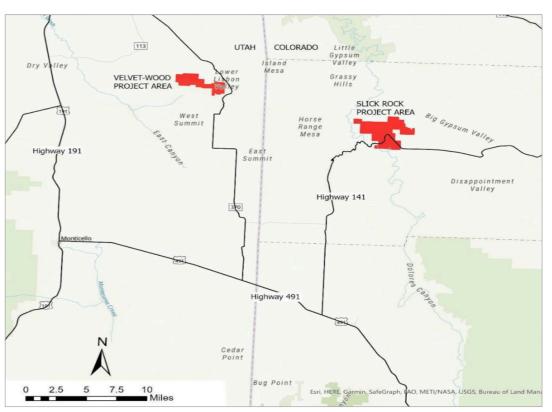
#### **Velvet Wood mine**

The Velvet-Wood Mine, which Anfield Energy acquired from Uranium One in 2015 just like the Shootaring Canyon Mill and which the company owns 100%, is also located in Utah. It covers approximately 2,425 acres and has a current resource of about 5.2 million pounds of  $\rm U_3O_8$ .

The Company is currently working to update the operating plans and environmental studies commissioned to continue the advanced permitting and licensing work previously undertaken by Uranium One.

#### PEA for Slick Rock and Velvet-Wood

In March 2023, Anfield Energy published a combined economic assessment (PEA) for



Velvet-Wood and Slick Rock are relatively close to each other.

(Source: Anfield Ernergy)

Slick Rock and Velvet-Wood. The PEA showed a pre-tax internal rate of return (IRR) of 40% and a net present value (NPV) of US\$238 million, based on an 8% discount rate and a uranium price of US\$70 per pound and a vanadium price of US\$12 per pound. Accordingly, average annual production is approximately 750,000 pounds of uranium and 2.5 million pounds of vanadium per year over the 15-year mine life. The combined feed through the Velvet-Wood and Slick Rock mines is designed to meet the existing tonnage capacity at shootaring of 750 tons per day. In a second step, it would be possible to increase the daily mill capacity up to 1,250 tons. Estimated mill-related capital expenditures at Shootaring, including a 25% contingency for each item, are US\$31.4 million for general upgrades; US\$13.4 million for the installation of a modern vanadium circuit; and US\$20 million for the upgrade of the tailings treatment facility. Estimated mine-related

capital expenditures, including engineering and design, mine facilities, mine equipment, and the reopening of the Velvet decline and sinking of two production shafts at Slick Rock with a 25% buffer are US\$15.3 million for Velvet-Wood and US\$27.2 million for Slick Rock.

#### **West Slope Project**

The West Slope project hosts nine historic uranium and vanadium mines. An updated resource estimate revealed 5.4 million pounds of  $U_3O_8$  in the indicated category plus 26.9 million pounds of  $V_2O_5$  in the inferred category. In addition, there are historical resources with an additional 3.9 million pounds of  $U_3O_8$  and 20.0 million pounds of  $V_2O_5$ . West Slope covers about 6,900 acres and produced about 1.3 million pounds of uranium and 6.6 million pounds of  $V_2O_5$  from 1977 to 2006. The project site



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





The Shootaring Canyon Mill has a license for radioactive source materials in standby status.

(Source: Anfield Ernergy)

has historic adits, underground workings, open pit mines, and associated infrastructure such as access to roads and the power supply.

Anfield plans to quickly prepare a PEA for the four deposit areas and an updated resource estimate. In addition, prospective areas for further exploration work are to be identified by reviewing historical data.

## Other projects with a large resource base

In addition, Anfield Energy has other conventional projects in the U.S. states of Arizona. Colorado and Utah, such as Frank M (2.3 million pounds of U<sub>2</sub>O<sub>2</sub>), Findlay Tank (954,000 pounds of U2O2) and Henry Mountains. Furthermore, the Company owns some stockpiles in Utah that can generate significant cash flow in the short term. All of these assets are located within a radius of only 125 miles of the Shootaring Canvon Mill. Recently, the Company acquired a 100% interest in 65 unpatented mining claims and historical data at the Marysvale uranium project in Beaver County, Utah, and a 100% interest in 26 unpatented mining claims and historical data at the Calf Mesa uranium project in Emery County. Utah. In addition, in February 2023, the Company acquired the Dripping Springs Quartzite uranium project, which includes 115 unpatented mining claims covering more than 2,300 acres. There are eight past

producing uranium mines in the immediate vicinity. In addition, the Marquez-Juan Tafoya uranium project, located in the Grants Uranium Mineral District, 50 miles west-northwest of Alberquerque, New Mexico, was acquired in June 2023. Juan Tafoya hosts a historical indicated uranium resource, based on a preliminary economic assessment, of approximately 7.1 million tonnes at an average grade of 0.127%, yielding 18.1 million pounds.

#### Short- to medium-term catalysts

Anfield Energy will prepare a full suite of resource estimates for its Utah, Colorado and Arizona assets in the coming months. Further, key milestones will be achieved in the permitting of production. Anfield Energy continues to focus on upgrading, expanding and re-starting its conventional processing capabilities, most notably the Shootaring Canyon Mill and Velvet-Wood Mine. In addition, the company is looking for other acquisition opportunities of conventional assets.

# Summary: Production start-up within reach

Anfield Energy is one of the very few companies that will be able to set up a significant new U.S. uranium production facility within 2 or 3 years. This is made possible by a conventional plant and various options for supplying it with sufficient material. This flexibility as well as rapid production possibilities make Anfield Energy an absolute top pick in the entire uranium and vanadium sector at the current share price level.

The estimated cost of restarting Slick Rock, Velvet-Wood and Shootaring Canyon is not an insurmountable obstacle to rapid production ramp-up. Smart acquisitions within reach of the plant round out Anfield Energy's good impression.

The Company executed a financing in July 2023 that provided the Company with CA\$5 million in fresh funding, which will be more than sufficient for the work ahead.

# What have you and your company achieved in the past 12 months?

We have been extremely busy over this period of time. We commissioned and received a Preliminary Economic Assessment (PEA) for our Velvet Wood and Slick Rock uranium and vanadium properties. underpinned by the Shootaring Canyon mill, which helped to validate our hub-andspoke production strategy. We engaged Precision Systems Engineering to complete a reactivation plan for the Shootaring Canyon mill, the last engineering study required prior to physical refurbishment of the mill, and through this process determined that we will increase the uranium production capacity at the mill. We also acquired the Marquez-Juan Tafoya uranium project in New Mexico - our first asset in the state - an asset which will fit into our longer-term production strategy. Finally, we have completed both an equity and debt financing which has allowed us to both acquire and advance our assets which limiting near term share dilution.

# What are the most important catalysts for the next 6 to 12 months?

We expect to update our Velvet-Wood/ Slick Rock PEA using costs from the Precision Systems Engineering report, including a production capacity increase, and begin procurement of required mill equipment necessary for Shootaring's restart. We also expect to add staff to further facilitate our advancement of our core assets to production. Finally, we remain opportunistic with regard acquisitions which complement our current uranium and vanadium portfolio.



Slick rock sample with scintillometer, (Source: Anfield Ernergy)

# How do you see the current situation on the market for uranium?

The market is very positive. The supply/ demand imbalance continues to grow, and many countries continue to transition to nuclear as a long-term baseload power option. China is looking to secure its uranium needs through a burgeoning relationship with Kazakhstan. The uranium spot market is somewhat depleted, and additional financial players are entering the market to secure what little material remains there. Finally, the continued disruption of uranium flows from East to West has put further pressure on US utilities to seek alternative sources, especially at a time when these utilities have to not only buy for near-term consumption but also to replenish its previously-drawn-down inventories. All of these points are positive for the small number of US-based uranium producers or near producers in existence, such as Anfield.



Corey Dias, CEO

# Anfield Energy Inc.

ISIN: CA03464C1068 WKN: A2JSG9

FRA: 0AD TSX-V: AEC

Fully diluted: 1.42 billion

#### Contact:

Anfield Energy Inc. phone: +1-780-920-5044 contact@anfieldenergy.com www.anfieldenergy.com

## **Blue Sky Uranium**

(Source: Blue Sky Uranium)

## On track to supply its own uranium to Argentina's new reactors



Blue Sky Uranium is a Canadian uranium development company that owns several large uranium projects in the Argentine provinces of Rio Negro and Chubut, which are expected to be relatively easy to exploit in low-cost surface operations. This gives the company an enormous cost advantage, promising not only faster mining but also high margins. The goal is to supply Argentina's nuclear power plants with uranium from within the country. Blue Sky Uranium has already demonstrated a large resource for one of three subprojects and has presented a positive economic analysis. Another priority objective is to identify a cluster of deposits at the flagship Amarillo Grande project.

#### Amarillo Grande Uranium-Vanadium **Project: Location and Resources**

Blue Sky Uranium's flagship project is called Amarillo Grande and consists of the three sub-projects Anit, Ivana and Santa



Barbara. The three license areas cover a total of approximately 261,000 hectares and are located in Argentina's Rio Negro province, Anit, Ivana and Santa Barbara lie within a 145-kilometer trend that hosts several known uranium occurrences. In addition to near-surface uranium mineralization, Amarillo Grande also hosts significant vanadium resources. The uranium and vanadium-bearing rocks range in depth from 0 to 25 meters, and the deposits can extend for several kilometers. The overburden consists of only slightly compacted sand, which results in not only favorable mining costs, but also extremely favorable drilling costs. Mining is usually carried out by means of a so-called scraper, which removes the rock layers and loads them directly onto a truck driving alongside by means of a conveyor belt. There is no need for drilling or blasting, which drastically reduces mining costs. In addition, most of the excavators normally required are not needed. The rock material can be processed in a plant centrally located between the three subprojects using leaching, which is also cost-effective. All these advantages make it possible to exploit even low-grade deposits. The additional presence of vanadium as a by-product strongly contributes to an improvement of the economic efficiency.

#### **Amarillo Grande Uranium-Vanadium Proiect: Ivana**

The largest subproject by area and the southernmost is Ivana. It covers about 118,000 hectares and hosts an anomaly more than 25 kilometers long. Sampling and drilling there encountered high-grade mineralization that was consistent with previous radiometric surveys. Up to 1.81% U<sub>2</sub>O<sub>2</sub> was detected over 0.75 meters. This sample was only 2 meters below surface. The majority of the known resource is very near surface to a maximum depth of 25 meters.

Drilling has intersected several high-grade intervals including 3,136ppm U<sub>2</sub>O<sub>2</sub> over 1 metre, 2,182ppm U<sub>2</sub>O<sub>2</sub> and 1,285ppm V<sub>2</sub>O<sub>2</sub> over 2 metres and 2.087ppm U.O. and 1,892ppm V<sub>o</sub>O<sub>e</sub> over 1 metre within significant uranium and vanadium mineralization up to 20 metres thick. All of these drill results were from depths up to 23 meters. Additional drilling also returned additional high-grade results including 10,517ppm U<sub>2</sub>O<sub>2</sub> over 1 metre and 8,618ppm U<sub>2</sub>O<sub>2</sub> also over 1 metre, each within 8 metre intervals of over 2,200 and 2,800ppm U<sub>2</sub>O<sub>2</sub> respectively. In 2018, the Company encountered over 20,000ppm U<sub>2</sub>O<sub>2</sub> (equivalent to over 2% U<sub>2</sub>O<sub>2</sub>) over 1 meter, among others. This successfully confirmed the initial grades of over 1% U<sub>2</sub>O<sub>2</sub>! In March 2023, Blue Sky Uranium launched another exploration program focused on the Ivana East sector, which was an extension of the previous series of drilling campaigns in the other sectors Ivana North. Ivana Central and Cateo Cuatro.

#### Ivana: Resource estimation and positive economic analysis.

A 2019 resource estimate returned an inferred resource of 22.7 million pounds of U<sub>2</sub>O<sub>2</sub> and 11.5 million pounds of V<sub>2</sub>O<sub>5</sub> for

Based on the exploration work and resource estimate presented, a preliminary economic assessment (PEA) for Ivana was prepared in 2019. Based on a uranium price of US\$50 per pound U<sub>2</sub>O<sub>2</sub> and a vanadium price of US\$15 per pound V2O5, the PEA calculated a net present value (NPV, discounted at 8%) of US\$135.2 million and an internal rate of return (IRR) of a very good 29.3% after tax. Based on a daily mining volume of 13.000 tonnes (including overburden) and a daily processing volume of 6,400 tonnes, this results in an annual production of 1.35 million pounds of U<sub>2</sub>O<sub>2</sub> and a total production of 17.5 million pounds of U<sub>3</sub>O<sub>8</sub> over a 13-year life. The initial capital



Ivana samples (Source: Blue Sky Uranium)

cost was estimated at US\$128 million and the all-in sustaining cost at US\$18.27 per pound of U<sub>2</sub>O<sub>2</sub>. This results in a payback period of 2.4 years. This would place Ivana in the lower quartile globally for operating costs.



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



# Amarillo Grande uranium-vanadium project: Anit

The second subproject. Anit, covers approximately 24.000 hectares and is centered between Ivana and Santa Barbara. Anit lies on a 15-kilometer trend of near surface uranium mineralization. Historical exploration work has averaged grades of 0.03% U<sub>2</sub>O<sub>2</sub> and 0.075% V<sub>2</sub>O<sub>5</sub> over 2.6 meters for 81 drill holes. In the western and central zones, 103 pits with uranium grades greater than 50ppm were encountered, averaging 1.97 meters of 0.04% U<sub>2</sub>O<sub>2</sub> and 0.11% V<sub>2</sub>O<sub>5</sub>. One drilling campaign detected uranium grades up to 1,114ppm U<sub>2</sub>O<sub>2</sub> and up to 3,411ppm V<sub>2</sub>O<sub>5</sub>. In particular, the very high-grade vanadium resource encountered attracted management inter-

Test work also showed that a large part of the existing uranium and vanadium resources can be significantly improved by socalled wet screening, since coarse gravels in particular have hardly any uranium content. This would reduce transportation and processing costs and allow simultaneous extraction from several satellite projects.

# Amarillo Grande Uranium-Vanadium Project: Santa Barbara

The third subproject, Santa Barbara, is located northwest of Anit and is still in its infancy. Blue Sky Uranium has already identified several anomalies there and intends to make a new discovery soon.

# Grosso Group as an important back-up

Blue Sky Uranium is part of the Grosso Group of companies. The Grosso Group is a management company that has been in existence since 1993, specializing in South America, particularly Argentina, during which time it has made 3 multi-million-

ounce precious metal discoveries in Argentina alone. In addition, partnerships with commodity giants such as Barrick, Areva, Rio Tinto, Teck and Yamana have been established. Company CEO Joe Grosso was named Argentina's Mining Man of the Year in 2005. Grosso Group has an extensive network of industry and political contacts in Argentina. Grosso has been a director and chairman of Blue Sky Uranium since October 2017.

# Summary: Well financed with big steps forward

Blue Sky Uranium has a realistic chance of having its own production opportunity in Argentina, as the Chinese state-owned company China National Nuclear Corporation (CNNC) and the Argentine stateowned company Nucleoeléctrica Argentina have just signed an EPC (Engineering Purchase and Construction) contract in February 2022 for the supply of a Chinese HPR-1000 turnkey nuclear power plant. with construction starting in 2022. The Company has already made significant exploration and development progress on its advanced projects within Amarillo Grande. In addition to uranium, the rocks at Ivana and Anit also host significant vanadium resources that are expected to be exploitable via surface mining. Both together also promise a very good chance of early production due to several existing high-grade intersections and, above all, low-cost production that also requires only a fraction of the capital costs of similar conventional mines. With several oversubscribed financings of CA\$2.1 million (up from a planned CA\$1.05 million) in mid-2022 and CA\$1.8 million (up from a planned CA\$1 million) in late 2022 and CA\$1.6 million in mid-2023 (up from a planned CA\$1.5 million) plus CA\$1 million in October 2023, the upcoming activities are adequately funded.

# What have you and your company achieved in the past 12 months?

We have been working on a two-pronged approach - both advancing our Ivana deposit and exploring for new resources in the district. At Ivana, the most recent drill data was incorporated into the database for the mineral resource model, and additional process design test work was completed. The latest leach testing results returned 96% uranium recovery in the alkaline stage. Other engineering and process design test work is on-going, including membrane filtration tests. Outside of the Ivana deposit. we completed the drill program at our Ivana Central target and moved on to the new Ivana East target. This work is part of the Company's staged approach to evaluating targets within several tens of kilometres from the Ivana deposit that could add to the project's resource base.



Drilling at Ivana Project (Source: Blue Sky Uranium)

# What are the most important catalysts for the next 6 to 12 months?

Potential catalysts over the next year include results from drilling at new targets like Ivana East and Cateo Cuatro, additional results from the on-going engineering work at the Ivana deposit, and potentially an updated economic study for the Ivana deposit.



Nikolaos Cacos, CEO

# How do you see the current situation on the market for uranium?

We see good evidence of a strong uranium market moving forward, with a favorable supply-demand scenario providing support into the long-term.



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

Fully diluted: 368.2 million

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#### **Latitude Uranium**

# Establishment of two new high profile uranium mining districts

LATITUDE U R A N I U M

Latitude Uranium is a Canadian mining development company focused on the exploration and development of uranium projects in the Canadian provinces of Nunavut and Labrador. The company has acquired several projects there that have discovered numerous targets of uranium, copper and IOCG-style mineralization. Using machine learning (ML), the Company has located numerous potentially high-grade uranium prospects that are currently being further explored for mineralization. With the acquisition of the new flagship Angilak project during 2023, Latitude Uranium made the leap to a developer with a very high uranium resource.

#### **Angilak**

Angilak was finally acquired by ValOre Metals Corp. in June 2023. The project area is located in southern Nunavut and covers approximately 68,552 hectares. Angilak includes the Lac 50 Trend deposit, a 15-kilometer-long. 3-kilometer-wide trend that is one of the world's highest-grade uranium resources outside the Athabasca Basin and hosts historic inferred mineral resources of 2,831,000 tonnes at an average grade of 0.69% U<sub>2</sub>O<sub>2</sub> and 0.17% molybdenum, containing 43.3 million pounds of U<sub>2</sub>O<sub>2</sub> and 10.4 million pounds of molybdenum. Significant expenditures have been made on Angilak in the past, with over \$95 million spent on exploration and resource delineation, including approximately 95,000 meters of drilling. The historical mineral resource at this covers only 5 kilometers of the identified 12-kilometer Lac 50 trend. with nine extension targets identified along the trend using a proven and effective targeting methodology. Outside of the Lac 50 trend, additional targets have shown potential for significant uranium mineralization in the Dipole and YAT targets drilled by ValOre during the last field season. During the 2023 field season, the Company completed an aggressive work program that included drilling, exploration of extensions to existing mineralized areas in the Lac 50 trend. a property-wide airborne radiometric survey

and additional soil sampling. Airborne surveys immediately identified several new targets. The first phase of the subsequent drill program consisted of 15 holes totaling 4,750 meters and focused on the main Lac 50 trend zone. Drilling identified a potential new lens immediately south of the Main zone and continuity on the west and east sides of the Main zone. Phase 2 discoveries included two new wide intercepts of 41 metres and 21 metres with radioactivity up to 6,200 counts per second (cps) below the historic drilling. One of the drill holes intersected a similar ~200-meter interval of intermittent uraniferous structures at up to 8.000 cps.

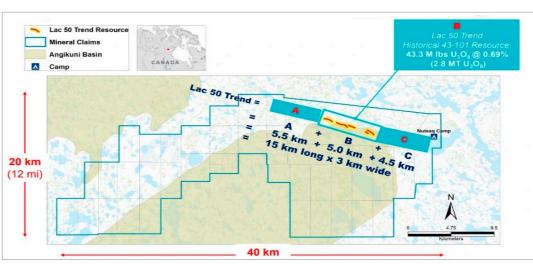
The 2024 drill program will focus on follow-up of the 200-meter intercept, including the two new wide intercepts from Phase 2 and follow-up of the potential new lens identified immediately south of the Main Zone mineralization with up to 11,000 cps of radioactivity from Phase 1.

#### **Central Mineral Belt**

The Central Mineral Belt is an approximately 260 kilometer by 75 kilometer resource belt considered to be very rich in copper and uranium mineralization. Countless exploration campaigns have historically identified hundreds of copper, uranium, silver, gold, rare earth, iron and molybdenum deposits. The abundance of different commodities can be explained by the fact that the Central Mineral Belt lies over the intersection of four major geological provinces within which significant magmatic and orogenic events occurred. Initially, exploration companies focused primarily on the copper potential, although the entire region appears to be much more interesting for uranium.

#### CMB project

Latitude Uranium's CMB project covers approximately 152,000 hectares. It hosts several known uranium occurrences as well as numerous copper, gold, silver and iron oc-



The Lac 50 Trend deposit is a 15 kilometer long and 3 kilometer wide trend that is one of the world's highest grade uranium resources outside the Athabasca Basin.

(Source: Latidude Uranium)

currences with a strong correlation between copper and gold occurrences and magnetite grades. The uranium present is associated with alteration in breccias and shear zones. Part of the vast project area has undergone significant exploration by several private and public companies in the past and therefore a large database of geological data is available. The Company has been exploring since 2022 for overlooked, potentially large mineral systems that are or have been unidentifiable by standard, field and remote sensing techniques for a variety of reasons including extensive overburden or lack of drilling. This will involve Latitude Uranium's experienced team of geologists taking a closer look at stratigraphy, alteration, fault and fracture systems as well as folding and intrusive contacts, among others. Analysis of mineral occurrences and exploration data will help compile training data sets on which to train machine learning (ML) algorithms.

#### **Moran Lake Project**

The Moran Lake uranium and vanadium project is located in the western area of the CMB project, approximately 140 kilometers northeast of Happy Valley-Goose Bay. Historical exploration work worth more than CA\$25 million has been carried out on the project area. Uranium mineralization in this area is structurally controlled, typically

within fracture systems and to a lesser extent within shear zones. Moran Lake hosts the C Zone, which was the subject of significant exploration activity between 2006 and 2013 and combines two distinct zones. Upper C and Lower C. The Upper C Zone also contains vanadium mineralization. The Upper C Zone also contains vanadium mineralization. In March 2011, a previous operator released a combined uranium and vanadium resource estimate in accordance with Canadian Resource Calculation Standard NI43-101, indicating that Moran Lake has 9.6 million pounds of U<sub>2</sub>O<sub>2</sub> and 136.4 million pounds of V<sub>2</sub>O<sub>5</sub>. Vanadium is often associated with uranium and has attractive fundamentals that are also related to clean energy. The project and area are also prospective for iron-oxide-copper-gold (IOCG) mineralization similar in style to BHP's Olympic Dam mine in Australia. Latitude Uranium is currently working on a resource estimate update. To this end, initial drilling was initiated in July 2022. The current exploration program includes exploring the extent of known historical uranium occurrences/resources and delineating conceptual uranium and IOCG (iron oxide copper gold) targets derived from the ML.

In late 2022, the Company also acquired the Moran Lake B project site, which is a strategic addition to the Moran Lake trend and is located 3 kilometers from the Moran Lake deposit.



# **Exclusive interview with John Jentz, CEO of Latitude Uranium**



#### **Mustang Lake Project**

Current exploration work in the CMB area includes preparatory work for ground geophysics in the Mustang Lake area, where the objective is to find uranium mineralization similar to Paladin Energy's Michelin deposit. The Mustang Lake project comprises 256 claims covering 6,400 hectares, is located in the eastern area of CMB, only about 10 kilometers northeast of Paladin Energy's Michelin deposit (approximately 127 million pounds of U<sub>2</sub>O<sub>2</sub>) and hosts multiple uranium occurrences consisting of numerous radioactive rocks and lower mineralized outcrops. The mineralization is hosted in felsic to intermediate volcanic rocks, with the felsic rocks resembling those of the mineralization in the Michelin deposit. The more intermediate rocks, on the other hand, have similarities to the rocks of mineralization in the Jacques Lake deposit. Mustang Lake hosts three main deposits: Mustang Lake, Irving Zone and Mustang Lake North. The project also hosts potential IOCG style mineralization. Historical diamond drilling has intersected uranium grades of 0.12% U<sub>2</sub>O<sub>2</sub> over 9.11 meters.

#### Anna Lake project

The Anna Lake project contains historic Inferred Mineral Resources of 5.1 million tonnes at an average grade of 0.044%  $\rm U_3O_8$ , containing 4.91 million pounds of  $\rm U_3O_8$ . Anna Lake is located along strike from the Melody Hill property, previously owned by Bayswater Uranium Corporation, where high-grade uranium grades of up to 28.2%  $\rm U_3O_8$  occur in granite blocks. Mineralization was first identified on the property in the 1970s with the discovery of an extensive radioactive boulder chain.

Reconnaissance work conducted by Latitude Uranium during the 2022 field season to the northeast of the Anna Lake property identified a similar rock trend to that described by Bayswater at the Anna Lake deposit.

#### **Notakwanon Project**

The Notakwanon Project is located in northern Labrador, approximately 60 kilometers from the coast and is currently accessible only by air. Former owner Altius Minerals completed a baseline exploration program in 2006 that led to the discovery of a uranium mineralization type unique to Labrador, Previous exploration work identified a cluster of uranium deposits with more than 20 occurrences. Radiometric surveys by Altius Minerals indicated broad, elevated responses around the occurrences. Three main zones of trace highgrade uranium mineralization were identified, including Rumble, where grab samples returned grades up to 3.49% U<sub>2</sub>O<sub>2</sub> and saw-cut samples up to 0.48% U.O. over 2.5 meters. The Oldschool area had grab samples up to 2.08% U<sub>2</sub>O<sub>2</sub> and Notak-1 grab samples up to 1.81% U<sub>2</sub>O<sub>2</sub>. Overall, the Notakwanon project is an untested, drill-ready project with multiple targets.

# Summary: First direct hit should lead to significant revaluation

Latitude Uranium has built a portfolio of excellent uranium projects in two of the most potentially high-profile uranium districts in the future. With the acquisition of Angilak, Latitude Uranium has joined the ranks of advanced developers. Initial drilling tests on priority targets have already led to new discoveries. In April 2022 Latitude Uranium was able to raise CA\$10 million through an oversubscribed financing and in April 2023 another CA\$12.5 million, which will finance the upcoming exploration activities and provide for an increased news flow.

# What have you and your company achieved in the past 12 months?

I had the privilege of joining the Company in April 2023, leading it through a transformative 6 months. Our most important achievement this year was the acquisition of the Angilak Project in Nunavut, Canada. Angilak is one of the highest-grade uranium historical resources outside of the Athabasca Basin, boasting 43.3 million pounds of  $\rm U_3O_8$  at an impressive grade of 0.69%.

Following the acquisition of Angilak, and a C\$12.6m financing, we embarked on two exploration programs. The drill program at Angilak consisted of 18 holes in 5,665 meters of drilling, and with preliminary cps (counts per second) results, it has already yielded promising results. We identified a potential new lens and continuity along the west and east of the existing mineralization. Simultaneously, the program in the CMB consisted of airborne survey and geophysics.

## What are the most important catalysts for the next 6 to 12 months?

Our primary objective is to expand the mineralization at the Angilak Project. We eagerly anticipate the assay results from Angilak, which are expected by November 2023. These results will provide critical insights into the quality and extent of the mineralization. Additionally, we await the results of the airborne survey conducted across the CMB later in the year. Based on the findings and outcomes of Angilak and the CMB, we will make an informed decision on our exploration plans for 2024, shaping our strategic direction going forward.

# How do you see the current situation on the market for uranium?

I'm bullish on the long-term prospects of uranium. As countries increasingly seek decarbonization and transition to cleaner energy sources to combat climate change, uranium's role as a low-carbon, dense energy provider becomes more prominent. Also, given the current unstable geopolitical landscape, energy security is crucial domestic production of a reliable source of energy reduces dependence on volatile energy supply chains. Lastly, the uranium market is experiencing a widening supply deficit. There is a notable lack of near-term production and an aging nuclear reactor fleet that requires a steady supply of uranium fuel. This supply-demand imbalance is creating favorable conditions for uranium miners.



John Jentz, CEO

# 

**ISIN:** CA51830A1066 **WKN:** A3EGU2

FRA: EI1 CSE: LUR

Fully diluted: 240.0 million

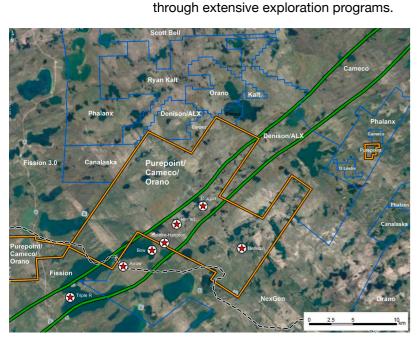
#### Contact:

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## **Purepoint Uranium**

# **Major Partners Facilitate Extensive Exploration Programs**

Purepoint Uranium is a Canadian mining exploration and development company focused on developing high-profile uranium projects in Canada's Athabasca Basin, the richest uranium region in the world. The company is taking an aggressive, systematic approach to identifying key projects with solid indicators and historical significance in the Basin. Based in the Athabasca Basin since 2002, Purepoint's management team is comprised of an independent, highly skilled group of professionals with extensive provincial and government relationships and decades of experience in the Athabasca Basin. Purepoint Uranium also works with two of the largest uranium producers in the world, Cameco Corporation and Orano Resources Canada, making it easier to land significant new discoveries



Hook Lake is in the midst of significant uranium discoveries (Source: Purepoint Uranium)

#### Focus on eastern Athabasca basin

Since 2002, Purepoint Uranium has acquired and explored over 500,000 hectares of property throughout the Athabasca Basin, quickly and efficiently abandoning the least prospective projects. What remains is a portfolio of well-understood projects with dozens of clearly defined uranium-bearing targets. In total, the company

currently holds 10 projects in the eastern part of the Athabasca Basin. In addition, there are two other projects in the southwest of the basin, which include the current flagship Hook Lake project.

#### Hook Lake

Located in the Patterson Uranium District, the Hook Lake project is jointly owned by Cameco Corporation (39.5%), Orano Canada Inc. (39.5%) and Purepoint Uranium (21%), with Purepoint Uranium being the operator of Hook Lake and receiving a 10% management fee. The project consists of nine claims totaling 28,598 hectares, including the high-grade Spitfire discovery. which has already returned phenomenal uranium grades of 53.3% U<sub>2</sub>O<sub>2</sub> over 1.3 meters, within a 10-meter interval of 10.3% U<sub>o</sub>O<sub>o</sub>. The depth of the unconformity in this area of the Athabasca Basin is very shallow, ranging from zero to 350 meters. Three prospective structural corridors have been defined on Hook Lake, each corridor consisting of multiple electromagnetic conductors confirmed by drilling and originating from prospective graphitic shear zones. Patterson is one of these structural corridors, extending at least 50 kilometers along the southwestern margin of the Athabasca Basin and hosting, among others, Fission Uranium's Triple R deposit, NexGen's Arrow deposit and Purepoint Uranium's Spit-

During 2023. Purepoint Uranium conducted drilling in one of the most interesting areas of Hook Lake, the Carter Corridor. This involved 2.710 meters of diamond drilling in six holes to test the Carter Corridor. Hole CRT23-05 returned peak radioactivity of 8,850 counts per second (cps) with three intercepts of anomalous radioactivity over 34.8 metres, including 0.9 metres at 3,950 cps and 2.2 metres at 1,660 cps. This included the Company detecting 0.08% U.O. over 0.4 meters. Drill hole CRT23-06, a 100-meter extension of CRT23-05 to the south, returned peak radioactivity of 3,225 cps in an anomalous radioactive zone averaging 1,745 cps over 3.1 meters. The Cart-

er corridor is a long-lived, reactivated graphitic fault zone that runs between the Clearwater Domain granitic intrusions to the west and parallels the Patterson structural corridor to the immediate east. The 25-kilometer strike length of the structural/ conductive Carter Corridor is thereby located almost entirely within the Hook Lake JV project and also very close to the Clearwater Domain, a hydrothermal heat source. A 2019 Targeted Geoscience Initiative-funded airborne gravity survey has provided results indicating that uranium deposits can form near gravity highs. Purepoint Uranium believes that the gravity peaks of the first vertical derivative reflect ultramafic intrusions within granodioritic gneisses. The density contrast of the two lithologies could form zones of weakness along their contacts where structural traps for uranium-rich fluids preferentially form.

#### **Red Willow**

In addition to Hook Lake, Purepoint Uranium is currently exploring a second potentially high-grade uranium project for deposits. Called Red Willow, it consists of 22 claims totaling approximately 40,000 hectares, is 100% owned by the Company, and is located in the far northeast corner of the Athabasca Basin, 10 kilometers northeast of Oranos JEB Mine and east of Cameco's Eagle Point Mine, respectively. The detailed airborne VTEM survey conducted by Purepoint Uranium at Red Willow returned magnetic results that provide an excellent basis for interpretation of the structures, while electromagnetic results outlined over 70 kilometers of conductors, most of which represent favorable graphitic lithology. A total of twenty-one conductive zones were identified as priority exploration targets, of which only seven were drilled in the first pass. Purepoint Uranium ultimately identified 8 areas at Red Willow that could host potential uranium deposits. The 2022 winter drill program intersected 1.2 kilometers of uranium mineralization at the Osprey Zone. Near-surface uranium intercepts of up to 0.47% U<sub>2</sub>O<sub>2</sub> were encountered. The best drill hole to date is from 2019 and contained 0.19% U<sub>3</sub>O<sub>8</sub> over 4.0 metres and 3.03% U<sub>3</sub>O<sub>8</sub> over 0.1 metres. In 2023, 3,854 metres of diamond drilling was completed in 15 holes at the Red Willow project in the Osprey, Geneva and Radon Lake zones. The Company is now planning programs at Red Willow to test first pass geophysical targets in the Dancing Lake, Long Lake, Topping Island, Golden Eye, Ghost Lake, Horse Lake, Boundary, Jeffrey, Dominic and Cunning Bay areas (46 kilometers of combined conductor).

Purepoint |

#### **Tabbernor block**

The Tabbernor Project has been staked along three major trends of the Tabbernor fault system, a deep-lying, 1,500 kilometer long crustal shear system that runs north through the Athabasca Basin. The system hosts over 80 historic mines and gold deposits and also intersects the basin's mine trend and is associated with eight of the basin's largest uranium discoveries. The Tabbernor Project consists of 31 claims totaling 70,598 hectares. The original block of three north-south trending claim groups (23 claims) covering the Tabbernor structures has now been supplemented by an additional 8 claims covering a strong east-northeast trending belt of conductive rocks. Purepoint Uranium has completed its initial review of the 2,962 line-kilometer VTEM survey on its Tabbernor project and from this has delineated over 70 kilometers of EM conductors within seven target areas. Further airborne geophysical surveys and field mapping are planned.

#### **Turnor Lake**

Purepoint Uranium is planning a third drill program in 2023 at the Turnor Lake project. Purepoint Uranium's 100% owned Turnor Lake project consists of four claims totaling 9,705 hectares in the eastern portion of the Athabasca Basin. The Company has defined four distinct exploration areas there the Serin conductor, the Laysan zone, the





Turnor Lake zone and the Turaco zone. The Serin conductor lies within the La Rocque corridor, which hosts Orano's Alligator project (3.8% U<sub>2</sub>O<sub>2</sub> over 10.5 metres), Cameco's La Rocque deposit (29.9% U<sub>2</sub>O<sub>2</sub>) over 7.0 metres) and IsoEnergy's Hurricane zone, which returned 38.8% U.O. over 7.5 metres, among others. The Laysan zone hosts, among others, the historic OD-1 drill hole which returned 0.06% U<sub>2</sub>O<sub>3</sub> over 3.4 metres. The Turnor Lake zone is a target associated with numerous high-grade occurrences to the south, including 2.7% U<sub>2</sub>O<sub>6</sub> over 1.2 metres at Oranos property. Extensive geophysical surveys and initial drilling have been completed by Purepoint Uranium on the Turaco Zone. Turnor Lake is primarily associated with the Kelsev Dome Granite, a magnetic high in the shape of a cog surrounded by clusters of graphitic conductors and numerous high-grade uranium showings. The La Rocque Uranium Corridor bisects the northern portion of the project area and lies along the western margin of the Kelsey Dome Formation. Extensive geophysical programs have enabled Purepoint Uranium to outline approximately 34 kilometers of conductors throughout the Turnor Lake Project. The Company then created a 3D lithological model from interpreted cross sections, drill hole information

and surface/rock geology. Geophysical data was added in close integration with the geological model and newly created geophysical inversions, allowing the geophysical data to be represented by a 3D distribution of physical rock properties. Mira Geoscience's GOCAD Mining Suite targeting workflow was used to integrate the geological, geochemical, and geophysical datasets and refine the exploration drill targets.

# Summary: Further exploration results expected

Purepoint Uranium has built a unique portfolio of uranium projects in the Athabasca
Basin during a largely prevalent downturn in
the uranium sector over the past 20 years
and is now in the process of unlocking the
potential of these select projects. In addition to having two strong partners in
Cameco and Orano, who are also assuming
a portion of the management costs, the
company has launched several fully funded
drilling campaigns to make the first new
discoveries. Thus, increased news flow in
the form of drill results can be expected in
the coming months, which will draw further
attention to Purepoint Uranium.



Chris Frostad, CEO

# **Exclusive interview with Chris Frostad, CEO of Purepoint Uranium**

What have you and your company achieved in the past 12 months?

Earlier in the year, Purepoint completed a drill program at the Hook Lake Joint Venture at the Carter Corridor. The Hook Lake Project is a joint venture between Cameco Corporation (39.5%), Orano Canada Inc. (39.5%), and Purepoint (21%) and lies on trend with high-grade uranium discoveries including Fission Uranium's Triple R Deposit and NexGen's Arrow Deposit.

This was the Company's first pass drilling of the project's Carter Corridor, so the main conductive trend was tested using large 800 metre step-outs towards the north in order to identify the most prospective geology. We were thrilled when the fifth hole of the program, CRT23-05, encountered elevated radioactivity associated with graphitic shearing and intense clay alteration. The downhole gamma results are the highest counts-per-second we've seen outside of our Spitfire discovery.

In addition to the outstanding results from the Hook Lake JV, we were happy to share that our drilling efforts at the Osprey, Geneva, and Radon Lake Zones on the Red Willow Project continue to show that uranium mineralization and alteration is present throughout the property. Purepoint also made significant progress with our Tabbernor Project by utilizing the results of our recent VTEM survey to secure additional prospective ground.



The Hook Lake Joint Venture (Source: Purepoint Uranium)

## What are the most important catalysts for the next 6 to 12 months?

Our highest priority at the moment is developing a proposal and budget for the next phase of drilling at the Hook Lake Joint Venture. Our partners, Cameco and Orano are anxious to continue advancing what they feel may be one of the last untested prospects for a Tier 1 deposit in the Athabasca Basin.

We are also preparing a program for the coming year at our Smart Lake joint venture with Cameco.

## How do you see the current situation on the market for uranium?

We recently saw the Spot price cross a significant milestone of US\$60 per pound  $\rm U_3O_8$ . The spot price has seen \$60 only twice in the last 12 years. Shortly after Japan's tsunami in 2011 the spot price passed \$60 but it was on its way down eventually dropping to below \$25.

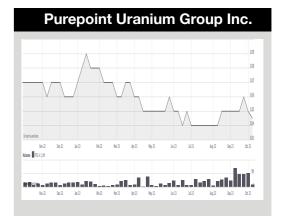
The price did not see \$60 again until last April of 2022, but it was short lived, almost

immediately dropping back to \$45.50 over the following month.

The difference this time is that last year's jump was a market reaction to Cameco calling a new uranium contracting cycle. The spot price rose \$20 over a 2-month period and then fell off again giving back all of those gains.

This time, the spot has taken a more leisurely route, calmly inching up over the last 16 months to now pass that \$60 threshold. Rather than reacting to a single event, the spot now seems to be moving based on pure demand fundamentals – a trend we expect to see continue.

We also believe that it is a good sign to see the Long-Term price of uranium following close behind closing August at US\$58.00 per pound  $\rm U_3O_8$ . This beats the terms last reported high of \$57 back in June of 2013. Both of these price moves, represent a steady foundational path to incentive levels necessary to see uranium mines turned back on again.



ISIN: CA7462341032 WKN: A0H0GT FRA: P5X TSX-V:PTU

Fully diluted: 587.9 million

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 $8 \hspace{1.5cm} 49$ 

## **Skyharbour Resources**

# Prospect generator model delivers continuous progress + own projects as special bonus



Skyharbour Resources is a uranium development company that has acquired world-class exploration projects at attractive valuations, totaling over 518,000 hectares throughout the Athabasca Basin. The Company owns 100% of the Moore uranium project, which hosts the high-grade Maverick zone, among other properties. However, the Company is primarily focused on its prospecting generator model to drive and fund exploration at its other projects in the Basin and has brought on board several strategic partners (including Orano Canada, Azincourt Energy, Valor Resources, Basin Uranium, Tisdale Clean Energy and Medaro Mining, North Shore Energy Metals) who are reporting steady good exploration progress.

# Moore Lake Uranium Project – Perfect Location

The Moore Lake project is located approximately 15 kilometers east of Denison Mines' Wheeler River development project and midway between the Key Lake Mill and the McArthur River Mine. The high-grade Moore Lake project consists of 12 contiguous claims totaling 35,705 hectares.

# Moore Lake Uranium Project - Top Drilling Results

Skyharbour Resources has already demonstrated high-grade uranium mineralization, with notable new discoveries in the Main and Maverick East zones in particular. Drill program highlights included 20.8%  $\rm U_3O_8$  over 1.5 meters within a 5.9-meter interval at 6.0%  $\rm U_3O_8$ , 5.6%  $\rm U_3O_8$  over 1.8 meters within a 10.7-meter interval at 1.4%  $\rm U_3O_8$ , 2.25%  $\rm U_3O_8$  over 3.0 meters and 4.17%  $\rm U_3O_8$  over 4.5 meters including 9.12%  $\rm U_3O_8$  over 1.4 meters in the Maverick East zone.

# Preston Uranium Project – Location and Exploration

The Preston uranium project covers approximately 70,000 hectares and is located in the southwest quadrant, directly adjacent to the high-profile discoveries of NexGen (Arrow) and Fission Uranium (Patterson Lake South).

# Preston Uranium Project – Joint Venture with Orano Canada

In March 2021, Orano received a 51% interest in Preston (western portion) and formed a joint venture together with Skyharbour Resources and Dixie Gold. Preston has a total area of 50,000 hectares and is currently being explored for high-grade targets.

#### East Preston uranium project – Option agreement with Azincourt Energy

The East Preston Project comprises the eastern portion of the Preston Project and covers an area of approximately 20,000 hectares. Azincourt Uranium has acquired a 70% interest in the East Preston uranium project until February 2021. Extensive alteration and indications of east-west crossing structures were intersected at the project site. One drill hole sample returned 14.6 ppm uranium and a uranium/thorium ratio of 1.5. five times the expected values. Azincourt conducted an extensive drilling program in 2023, which included approximately 3,000 meters of drilling in 13 diamond drill holes. The primary target area at the East Preston project is the conductive corridors from the A Zone to the G Zone and from the K Zone to the H and Q Zones. Recent drilling has confirmed that the identified geophysical conductors include structurally disturbed zones hosting accumulations of graphite, sulphides and carbonates. Hydrothermal alteration, anomalous radioactivity and elevated uranium values were detected within these structurally disrupted conductor zones. Analysis of the results showed uranium enrichment within the previously identified clay alteration zones along the K and H target zones. Uranium enrichment is identified as uranium values and a uranium/thorium ratio above what would normally be expected in the particular rock type or area. Drilling in the northeast trending G Zone has encountered extensive hydrothermal alteration and evidence of east-west cross-cutting structures along the southern portion of the zone. The primary rock types in the alteration zone are granodiorite and diorite gneiss with average expected values of 2-3 ppm U and U/Th ratios of 0.25-0.3.

# Hook Lake Project – Option Agreement with Valor Resources

The Hook Lake project is located 60 kilometers east of the Key Lake uranium mine and covers approximately 26,000 hectares. Optionee Valor Resources encountered 9.2%  $\rm U_3O_8$ , 499g/t Ag, 5.05% TREO (rare earth oxides), 14.4% Pb, 57.4% U308, 507 g/t Ag, 3.68% TREO, 14.5% Pb, and 46.1%  $\rm U_3O_8$ , 435 g/t Ag, 2.88% TREO, 8.8% Pb, among others, in suspended and rock chip samples. Three of the drill holes in the S Zone had elevated radioactivity and associated alteration of varying widths. One hole intersected a zone of elevated radioactivity and alteration at a depth of 104.3 to 108.0 meters.

# Yurchison Project – Option Agreement with Medaro Mining

The 55,934-hectare Yurchison project was optioned to Medaro Mining Corp. in November 2021. Historical trenching near old trenches returned significant uranium (between 0.09% and 0.30% U<sub>3</sub>O<sub>8</sub>) and molybdenum mineralization (between 2,500 ppm and 6,400 ppm Mo). Two historic drill holes below the trenches returned strongly anomalous molybdenum values up to 3,750 ppm and anomalous uranium values up to 240 ppm. The property has high discovery potential for both bedrock uranium mineralization and copper, zinc and molybdenum mineralization.

#### **Russell Lake Project**

In 2022. Skyharbour Resources secured an initial 51% interest in Rio Tinto's Russell Lake project. Russell Lake comprises a total of 26 claims covering 73,294 hectares and is an exploration property where numerous prospective targets and several highgrade uranium occurrences and drill hole intercepts have been identified. The property is centrally located between Cameco's Key Lake mill to the south and the McArthur River Mine to the north. Russell Lake is also located only about 5 kilometers from Denison Mines Phoenix project. The company started a 10,000-meter, multi-phase drilling program in January 2023. It has also contracted Condor Consulting Inc. to conduct

geophysical and geological data acquisition and interpretation work on Russell Lake.

# Mann Lake Project – Option Agreement with Basin Uranium

The Mann Lake project is adjacent to the ioint venture project of the same name between Cameco, Denison and Orano. It is strategically located approximately 25 kilometers southwest of Cameco's McArthur River Mine and 15 kilometers northeast of Cameco's Millennium uranium deposit. In April 2022, partner Basin Uranium, launched an initial exploration campaign at Mann Lake, including 3,000 meters of drilling. During this campaign, the Company encountered 323 ppm U<sub>2</sub>O<sub>2</sub> over 0.5 meters. among other assays. In addition, significant traces of rare earths were encountered, including a peak of 5,028 ppm over 0.5 metres within a wider 50 metre interval of anomalous mineralization that started 20 metres below the unconformity. Drilling continued to intersect notable pathfinder elements, targeting uranium mineralization typically associated with unconformity mineralization in the Athabasca Basin.

# South Falcon and South Falcon East projects – option agreements with Tisdale Clean Energy and North Shore Energy Metals

The South Falcon project comprises eleven mineral claims covering approximately 42.908 hectares, approximately 50 kilometers east of the Kev Lake mine. The historic uranium mineralization discovered at South Falcon is shallow and hosted in a variety of geological settings, including classic Athabasca-style basement mineralization associated with well-developed EM conductors. At the EWA target, up to 0.492% U<sub>2</sub>O<sub>2</sub> and 1,300 ppm lead have been found in outcrop samples. In May 2023, Skyharbour Resources optioned the project to North Shore Energy Metals. which can earn up to a 100% interest in South Falcon. The South Falcon East project covers approximately 12,464 hectares and is located 18 kilometers outside the Athabasca Basin, approximately 55 kilo-





meters east of the Key Lake mine. Zone B alone at the southern end of the property hosts at least 6,960,681 pounds of U<sub>2</sub>O<sub>2</sub> and 5,339,219 pounds of ThO<sub>a</sub>. In October 2022, Skyharbour Resources optioned the project to Tisdale Clean Energy, which can earn up to a 75% interest in South Falcon Fast.

#### Further, potentially high-profile projects have recently been acquired

The search for additional potentially highgrade uranium projects led to several acquisitions in 2023. These included the acquisition of Denison Mines' South Dufferin project, which covers a total of 12,282 hectares in eight claims and is located immediately south of the southern margin of the Athabasca Basin in northern Saskatchewan. The property covers the southern extension of the Virgin River shear zone, which hosts known high-grade uranium mineralization at Cameco Corp.'s Dufferin Lake zone approximately 13 kilometers to the north (highlighting drill results of 1.73% U<sub>2</sub>O<sub>2</sub> over 6.5 metres) and at Cameco Corp. 's Centennial deposit approximately 25 kilometers to the north (including drill intercepts of up to 8.78% U<sub>2</sub>O<sub>2</sub> over 33.9 metres).

In addition, the Highway, CBX Project, Shoe, Snow, Elevator, 914, 914N, 914W and Karin projects were acquired or staked.

All of the newly acquired projects are strategically located and geologically prospective, with very little modern exploration having been conducted on them to date. They complement more advanced exploration assets, including Russell Lake, Moore and South Falcon Point, and provide additional land that the Company can sell to new partner companies or put into joint ventures as part of its prospect generation business.

#### Summary: Steady news flow boosts share price

Skyharbour Resources, with its world-class portfolio of high-grade uranium projects in the Athabasca Basin, is very well positioned to benefit from a rising uranium price. The Company continues to advance its Moore Lake high grade uranium project on one side, while more and more partner companies are taking over the exploration and development of the other projects, financing them and creating newsflow and added value. The Company received a total of CA\$3.2 million in fresh funding through the exercise of warrants in the current 2023 year, providing excellent financing. Furthermore, one participates of course in the success of the partners through corresponding share packages, which were received for the transfer of the projects.

over 1.5m in previous drilling. The company completed a drill program in 2022 and continued to delineate new zones of uranium mineralization.

Skyharbour added to its property portfolio in the Athabasca through staking and through the acquisition of 100% of the South Dufferin Project from Denison. Skyharbour now has 24 projects covering over 518,000 ha of land, with 8 partner companies advancing 9 of these projects. The company's prospect generator business was bolstered by two new partner companies, Tisdale Clean Energy and North Shore Energy, at the South Falcon East and South Falcon projects, respectively.

#### What are the most important catalysts for the next 6 to 12 months?

An important catalyst for Skyharbour includes assay results from the recently completed drill program at the Russell Lake Project as well as the commencement of a follow-up drill program. The company plans to continue to advance the project using systematic and proven exploration methodologies coupled with new geological models and targeting strategies. Skyharbour is also planning to issue a NI 43-101 Mineral Resource Estimate at the Moore Lake Project followed by additional drilling in 2024.

The company has several partner companies that will be carrying out field and drill programs shortly with programs expected from Orano, Tisdale, North Shore, Basin Uranium and Medaro at the Preston, South Falcon East, South Falcon, Mann Lake and Yurchison projects, respectively. Skyharbour has now signed 8 option agreements that total to over \$85 million in cash in combined project consideration (exploration funding, cash and share payments from partners). Skyharbour will continue to execute on its prospect generator model by acquiring projects at attractive valuations and bringing in partner companies to advance these secondary projects.

#### How do you see the current situation on the market for uranium?

The uranium price has been moving higher over the last several years and has broken out more recently. Supply chain uncertainties, geopolitical conflict, nuclear utilities facing expiring contracts, and new financial entities like SPUT buying physical material in the spot market, are adding to an already strained supply side as the nuclear fuel market continues to tighten. On the demand side, many countries have announced they recognize the importance of nuclear energy and are extending the lives of old reactors and building new reactors while committing to new nuclear technologies like SMR's. In addition, many countries are trying to achieve carbon reduction objectives that will rely on nuclear energy as the only source of clean, reliable, baseload electricity. These strong underlying fundamentals should underpin a continued move higher in the sector in 2024.

# Skyharbour Resources Ltd.

ISIN: CA8308166096 WKN: A2AJ7J

FRA: SC1P TSX-V: SYH OTCQB: SYHBF

Fully diluted: 192.1 million

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

#### What have you and your company achieved in the past 12 months?

Skyharbour has been very active with several kev developments including carrying out an inaugural 10,000m drill program at the Russell Lake Project recently optioned from Rio Tinto. Russell Lake is a 73,000-ha advanced-stage exploration property strategically located between the McArthur River Mine, the Key Lake Mill and Denison's Wheeler River Project. The drill program followed up on notable historic findings and tested additional regional targets at the proiect with follow-up drilling currently being planned.

Adjacent to Russell Lake is Skyharbour's other flagship asset, the 100% owned Moore Lake Project which is host to highgrade mineralization including 21% U<sub>2</sub>O<sub>2</sub>

## **Uranium Energy**

# Two hub-and-spoke operations in the U.S. to begin operations soon

Uranium Energy Corp is a uranium mining and exploration company based in the USA. In South Texas and Wyoming, Uranium Energy has two hub-and-spoke operations that guarantee uranium production within a few months. In addition, the company is currently working feverishly on the final details in order to be able to profit quickly from the rising uranium price.

In addition, the company controls a pipeline of uranium projects in Canada and Paraguay and one of the world's highest grade and largest undeveloped ferrotitanium deposits, located in Paraguay. Recently, it was awarded a contract to supply physical uranium to the U.S. government.

The company generated \$163.95 million in revenue from the sale of 3,150,000 pounds of uranium stockpiles on the spot market in fiscal year 2023 and earned a gross profit of \$49.60 million for the year ending July 31, 2023. All this despite not currently producing any uranium of its own.

#### **Hub-and-spoke operation in Texas**

Uranium Energy owns several uranium projects and a processing plant in South Texas. The Palangana In-situ Recovery (ISR) project is fully licensed and has a measured and indicated resource of 1.1 million pounds and an inferred resource of 1.2 million pounds of U<sub>3</sub>O<sub>8</sub>. Historically, production cash costs have been less than US\$22 per pound of uranium.

The Goliad ISR project is also fully licensed for production and, like Palangana, is located near the Hobson processing plant in South Texas. It has a NI 43-101 compliant resource of 5.5 million pounds of measured and indicated U308 and 1.5 million pounds in the inferred category.

UEC's largest ISR project in South Texas is Burke Hollow and covers approximately 20,000 acres. Burke Hollow has an inferred resource of 7.09 million pounds of U<sub>3</sub>O<sub>8</sub> and is located approximately 50 miles from Hobson. Since 2019, Uranium Energy has conducted several drilling campaigns at Burke Hollow, which included delineation drilling and installation of monitoring wells

to advance the project toward uranium recovery.

The Hobson production facility in South Texas is a fully licensed processing plant with a capacity of 4 million pounds of U<sub>3</sub>O<sub>8</sub> per year. The facility has been completely renovated and is state of the art. Hobson serves as the hub in the Company's huband-spoke strategy, processing uranium from the various low-cost ISR mines in South Texas.

Most recently, Uranium Energy Corp has aggressively advanced exploration and delineation work at its Burke Hollow and Palangana ISR projects, which are slated for further near-term development in preparation for uranium recovery.

In total, Uranium Energy has about 19 million pounds of U<sub>2</sub>O<sub>6</sub> in Texas.

# Hub-and-spoke operation in Wyoming

Uranium Energy created another hub-andspoke operation with the acquisition of Uranium One Americas. The Irigaray processing plant is located approximately 45 miles from the main Reno Creek project and has a licensed capacity of 2.5 million pounds of U<sub>o</sub>O<sub>o</sub> per year. Reno Creek has a large NI 43-101 resource of 26 million pounds of U<sub>2</sub>O<sub>2</sub> in the M&I category. A 2014 pre-feasibility study confirmed that Reno Creek is a highly economic project with low capital and operating costs. In total, Uranium Energy paid less than \$25 million for this fully licensed ISR project with a resource of approximately 27.5 million pounds of U<sub>2</sub>O<sub>2</sub>, plus the fully integrated Reno Creek North project acquired in November 2017. In addition, the project has much higher exploration potential.

In addition, the Christensen Ranch ISR project, with four fully installed wells and six additional ISR satellite projects permitted or under development, can be integrated and combined with the Reno Creek project. Christensen Ranch and the other newly acquired projects host approximately 37.6 million pounds of U<sub>3</sub>O<sub>8</sub> in historically estimated measured and indicated resources





The Hobson production facility in South Texas has been fully renovated and is state of the art.

(Source: Uranium Energy)

and 4.3 million pounds of U<sub>3</sub>O<sub>8</sub> in historically estimated inferred resources with significant growth potential.

In mid-2023, the Company's plan to accelerate the steps required to restart operations was completed, allowing for a faster restart of the in-situ recovery project in Wyoming. As part of this restart program, the Company recently completed the first phase of the resource expansion campaign at Irigaray and Christensen Ranch.

In 2022, Uranium Energy could also acquire 25 additional ISR projects from Anfield Energy to serve as an additional project pipeline in Wyoming. In total, Uranium Energy has approximately 81 million pounds of U<sub>2</sub>O<sub>2</sub> in Wyoming.

#### Canadian projects

Uranium Energy's Canadian portfolio consists of over 30 uranium projects covering key areas in the producing east and developing west of the prolific Athabasca Basin.

#### Roughrider

By far the largest project is called Roughrider and could be acquired from Rio Tinto in October 2022 for US\$150 million in cash and shares. It has 27.8 million pounds of U<sub>2</sub>O<sub>2</sub> in 389,000 tons grading 3.25% U<sub>2</sub>O<sub>2</sub> in the Indicated category and 36.0 million pounds of U<sub>2</sub>O<sub>2</sub> in 359,000 tons grading 4.55% U.O. in the Inferred category. There are more than 20 uranium deposits, five current and past producing mines and two uranium mills within 100 kilometers of Roughrider, providing excellent infrastructure for future development, including all-weather road infrastructure, an all-weather airstrip within seven kilometers and a robust power grid fed primarily by renewable hydroelectric power. It offers synergies with the previously acquired Raven-Horseshoe, Hidden Bay and Christie Lake projects. Rio Tinto has already completed extensive pre-production and environmental baseline work, which provides a solid foundation and significant value for the completion of upcoming technical reports, efficiently moving the project towards a production decision. An S-K 1300 Initial Assessment Economic Study has commenced for Roughrider.

6 of the other 30 projects are at advanced resource stages and are already involved in strong joint venture partnerships with established uranium mining companies. These project interests include a 49.1% in-



terest in Shea Creek, currently one of the largest undeveloped deposits in the Athabasca Basin, which hosts 67.57 million pounds of U<sub>2</sub>O<sub>2</sub> in indicated resources and 28.06 million pounds of U<sub>2</sub>O<sub>2</sub> in inferred resources. Further, a 100% interest in Horseshoe-Raven, an open pit project located iust 4 kilometers from Cameco's Rabbit Lake Mill that hosts 37.43 million pounds of U<sub>o</sub>O<sub>o</sub> in indicated resources. As well as an 82.8% interest in Christie Lake, a resource-stage asset in the Athabasca Basin that hosts 20.4 million pounds of U<sub>2</sub>O<sub>2</sub> in inferred resources and from which 68.7% eU<sub>2</sub>O<sub>2</sub> over 2.1 meters, 23.2% eU<sub>2</sub>O<sub>2</sub> over 3.4 meters and 15.94 eU<sub>2</sub>O<sub>2</sub> over 7.0 meters were recently reported.

Uranium Energy also owns the Diabase Project, located on the southern edge of the uranium district in the Athabasca Basin. This covers 21.949 hectares of land and overlies a highly prospective regional corridor less than 75 kilometers from Cameco's Key Lake operation. Recent acquisitions include Rio Tinto's Athabasca exploration project portfolio, which includes 60% of Henday, 100% of Milliken and 50% of Car-

#### **Titanium Project Alto Paraná**

In Paraguay, Uranium Energy holds more than 70,000 hectares of land on which the Alto Parana Titanium Project and its pilot plant are located. The Alto Parana Titanium Project is an advanced exploration project located in eastern Paraguay in the departments of Alto Parana and Canindevú.

A proprietary resource estimate for Alto Paraná returned an inferred resource of 4.94 billion tonnes grading 7.41% titanium oxide ("TiO2") and 23.6% iron oxide ("Fe2O3") at a 6% TiO2 cut-off, making Alto Paranà one of the largest known and highest-grade ferrotitanium deposits in the world. Uranium Energy plans to monetize the project at some point in the future. As the titanium market will soon face a supply shortfall, it is expected that large producers will be interested in the project.

# Further potential top projects in the

In addition to the projects listed above, Uranium Energy has a number of other excellent projects. For example, the Anderson project in Arizona, which hosts at least 32 million pounds of U<sub>2</sub>O<sub>2</sub> and could have an average production of more than one million pounds per year, with total production of 16 million pounds of uranium over a 14year mine life and direct operating costs of \$30.68 per contained pound of U<sub>2</sub>O<sub>2</sub>.

Uranium Energy also has two promising ISR uranium projects in Paraguay with geology very similar to that in South Texas. The Yuty project has resources of 11.1 million lb. U<sub>o</sub>O<sub>o</sub>. The Oviedo project has an exploration target of 23 to 56 million pounds of U<sub>0</sub>O<sub>0</sub> under NI 43-101 criteria.

#### **Summary: Funding launch within** reach

Uranium Energy's recent acquisitions not only provide it with two fully licensed, lowcost ISR hub-and-spoke operations in South Texas and Wyoming with a current capacity of 6.5 million pounds of U<sub>2</sub>O<sub>2</sub> per year. With its low-cost ISR projects in Texas and Wyoming, Uranium Energy is thus ideally positioned to supply the U.S. government's announced 10-year uranium reserve program, which has a total budget of \$1.5 billion for the purchase of domestically mined uranium. That uranium will be supplied to the Strategic Reserve in the future seems obligatory based on the initial order. Until the actual resumption of production, which is currently being aggressively pursued by the company, future demand can be met by existing stockpiles. Debt-free since January 2022, Uranium Energy is well positioned to resume uranium production in the U.S. shortly and to benefit from rising uranium prices. In addition, it has the third largest uranium resource base in the Athabasca Basin after Cameco and Orano, which means an excellent project pipeline.

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



#### What have you and your company achieved in the past 12 months?

2023 proved to be another year of significant achievements as we continued to build the premier North American focused uranium company. We made more accretive acquisitions and advanced our projects with resource expansions and production restart programs. We continue to focus on a strategy aimed at developing a robust uranium supply from the stable and secure jurisdictions of the U.S. and Canada, with near term U.S. ISR production and a pipeline of high-grade Canadian projects with exceptional growth potential. We are debt free and 100% unhedged to take advantage of further price appreciation.

We booked record revenue of \$163.95 million from spot market sales of 3,150,000 pounds of uranium inventory, realizing a gross profit of \$49.60 million for the fiscal year ended July 31, 2023. Proceeds from realized gains materially reduced capital reguirements for accretive acquisitions. We completed \$340 million in acquisitions to create the largest diversified North American focused portfolio. These acquisitions have grown our resources that now total 226.2 million pounds U<sub>o</sub>O<sub>o</sub> in the Measured and Indicated Categories and 102.7 million pounds U<sub>2</sub>O<sub>2</sub> in the Inferred category, securing our status as one of the largest and most diversified North American focused uranium companies.

We also established UEC as one of the largest resource and land holders in Canada's Athabasca Basin with the successful acquisitions of UEX Corp., the world-class Roughrider Uranium Project and a portfolio of exploration projects from Rio Tinto.

In South Texas and Wyoming, we completed programs to accelerate the production-readied timeline that will enable shorter lead-times to restart ISR production from our hub and spoke platforms. Additional drilling was completed in Wyoming and is expected to expand current resources as part of the restart program. In South Texas, we established the second production area at Burke Hollow and carried out delineation drilling at the past producing Palangana ISR Project in preparation for its restart.

#### How do you see the current situation on the market for uranium?

Across the globe, an increasing number of countries are adopting plans and programs to restart, extend the life of and or build new nuclear plants in the guest for clean, safe, highly reliable and cost-effective electricity that nuclear power provides. The current structural deficit between production and consumption will likely continue pushing prices higher with the markets' transition from being inventory driven to production driven. The lead times for new production can run 10 years or longer, and the gap between production and requirements is projected to average over 40 million pounds a year over the next 10 years. Restarts and significant new mining operations will be needed to meet future requirements. These factors underpin our belief that we are in the early innings of a protracted growth stage for nuclear energy, uranium production and UEC!



# **Uranium Energy Corp.** words allowed and a second life.

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

Fully diluted: 392.9 million

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## **Uranium Royalty**

# First pure-play uranium royalty company faces huge revaluation

Uranium Royalty Corp. is a Canadian company focused on strategic investments in uranium interests, including royalties, streams, debt and equity in uranium companies, as well as physical uranium businesses. This makes Uranium Royalty the first company to apply its successful royalty and streaming business model exclusively to the uranium sector. The portfolio includes interests in more than 20 development, advanced, permitted and producing uranium projects in multiple jurisdictions. The portfolio also includes a large inventory of physical uranium that could be monetized immediately.

# Athabasca Basin Royalties

In the Athabasca Basin, Uranium Royalty holds 6 prospective royalties.

#### **McArthur River**

The McArthur River Mine is considered the highest-grade uranium mine in the world and is currently owned by a joint venture between Cameco and Orano. McArthur River has nearly 400 million pounds of U<sub>3</sub>O<sub>8</sub> in reserves and is expected to resume producing 15 million pounds of U<sub>3</sub>O<sub>8</sub> per year beginning in 2024. Uranium Royalty holds a 1% Gross Overriding Royalty on a 9% interest. These payments are to be in the form of physical uranium.

#### Cigar Lake/Waterbury/Dawn Lake

Cigar Lake holds a license to produce 18 million pounds of  $\rm U_3O_8$  per year and reserves of approximately 160 million pounds of  $\rm U_3O_8$ . Uranium Royalty holds a 20% Net Present Interest on a 3.75% interest.

In addition, an option was secured to earn a 20% net profit interest on a 7.5% share of total uranium production from the Dawn Lake project area. The royalty rate will be adjusted to 10% in the future once production of 200 million pounds from the combined Dawn Lake and Waterbury/ Cigar project license areas is achieved.

#### Roughrider

Roughrider is a highly developed underground deposit owned by Uranium Energy. It has approximately 58 million pounds of U<sub>3</sub>O<sub>8</sub> in reserves. Uranium Royalty holds a 1.97% net smelter royalty in Roughrider.

#### Russell Lake

Russell Lake is an exploration project being developed by Skyharbour Resources. Russell Lake covers approximately 72,000 hectares of license area on highly prospective ground. Uranium Royalty holds a 1.97% net smelter royalty in Russell Lake.

#### Diabase

Diabase is an early-stage exploration project being developed by Uranium Energy. It covers approximately 22,000 hectares of license area on highly prospective ground. Uranium Royalty holds a 3% Gross Revenue Royalty on Diabase.

#### **Dawn Lake**

Dawn Lake is operated by Cameco in partnership with Orano. The project area is located approximately between the McClean Lake mill and the Cigar Lake mine. Cameco reported estimated indicated resources (excluding reserves) of 17.9 million pounds at an average grade of 4.42% U<sub>3</sub>O<sub>8</sub> and inferred resources of 1.0 million pounds at an average grade of 1.02% U<sub>3</sub>O<sub>8</sub> for the Tamarack deposit, located in the Dawn Lake project area. Uranium Royalty owns a 10% to 20% sliding royalty on a 7.5% share of total uranium production at the Dawn Lake project area.

### **US ISR Royalties**

In the USA, Uranium Royalty holds several royalties on ISR projects.

#### Reno Creek

Reno Creek is owned by Uranium Energy and located in Wyoming. The project is fully permitted, has resources of 26 million pounds of  $\rm U_3O_8$  and is ready for construction. Uranium Royalty holds a 0.5% net present interest in Reno Creek.

## Church Rock

Church Rock is located in New Mexico and is owned by Laramide Resources. It has inferred resources of approximately 50 million pounds of U<sub>3</sub>O<sub>8</sub>. Uranium Royalty holds a 4% net smelter royalty in Church Rock.

#### **Dewey-Burdock**

Dewey-Burdock is located in South Dakota and is being developed by enCore Energy. The most recent PEA estimates an after-tax NPV at an 8% discount of \$147.5 million at a constant price of \$55 per pound. Dewey-Burdock has approximately 17 million pounds of U<sub>3</sub>O<sub>8</sub>. Uranium Royalty holds a 30% Net Present Interest in Dewey-Burdock as well as a staged royalty of 2-4% on portions of the Dewey Burdock project.

#### Lance

Lance is located in Wyoming and operated by Peninsula Energy. The project hosts over 53 million pounds of U<sub>3</sub>O<sub>8</sub>. Uranium Royalty's 5% Gross Revenue Royalty covers a portion of the Kendrick and Barber concession areas. In August 2022, they were able to submit a positive feasibility study for Lance.

# US royalties – Conventional projects

In addition to royalties on ISR projects, Uranium Royalty owns other royalties on conventional projects in the USA.

#### Anderson

Anderson is located in Arizona and is owned by Uranium Energy. The project, in which Uranium Royalty holds a 1% net smelter royalty, hosts 29 million pounds of U<sub>3</sub>O<sub>8</sub> resources. A preliminary economic assessment indicated an after-tax net present value (discounted at 10%) of US\$101.1 million at a fixed uranium price of US\$65 per pound. Average operating costs over the life of the mine were estimated at US\$30.68 per contained pound.

#### Slick Rock

Slick-Rock is located in Colorado and will be developed in the future by Anfield Energy. The project, in which Uranium Royalty holds a 1% net smelter royalty, hosts approximately 11 million pounds of U<sub>3</sub>O<sub>8</sub> resources. A preliminary economic valuation resulted in an after-tax net present value (discounted at 10%) of US\$31.9 million using a model with a fixed uranium price of US\$60 per pound.

URANIUM

#### **Workman Creek**

Workman Creek is located in Arizona and is owned by Uranium Energy. The property has extensive historical data consisting of 400 exploration and development drill holes, geological mapping, regional and detailed geochemical, petrographic, mineralogical-paragenetic and metallurgical studies. To date, 5.5 million pounds of resources have been proven. Uranium Royalty holds a 1% net smelter royalty.

#### **Roca Honda**

Roca Honda is owned by Energy Fuels and is located in New Mexico. Uranium Royalty holds a 4% gross revenue royalty. The Section 17 area has a partially developed vertical mine shaft and haul road. Energy Fuels plans to include the Section 17 area covered by the royalty in the Company's permitting efforts.

#### Other US royalties

In addition, Uranium Royalty owns a 2% gross royalty on portions of the San Rafael Project, located in Utah and operated by Western Uranium & Vanadium. Further, a 2-4% sliding scale gross royalty on portions of the Whirlwind Project, located in Colorado and Utah and operated by Energy Fuels, and a 1% gross royalty (applicable to uranium and vanadium sales) on portions of the Energy Queen Project, located in Utah and also operated by Energy Fuels.

#### **Langer Heinrich**

Langer Heinrich is a former producing uranium mine in Namibia. Two offtake agreements that have since been signed and U\$200 million in financing helped bring Langer Heinrich back into production in the





foreseeable future. Langer Heinrich hosts approximately 120 million pounds of  $U_3O_8$  resources. Uranium Royalty receives AU\$0.12 as a production royalty for each kilogram of  $U_3O_8$  produced.

#### Michelin

Michelin is an advanced stage uranium project located in the Canadian province of Labrador. Operator Paladin Energy acquired Michelin in 2011 for CA\$260.9 million. Michelin is a low technical risk project in a world-class uranium district. The project hosts approximately 127 million pounds of  $\rm U_3O_8$  resources. Uranium Royalty holds a 2% gross revenue royalty in Michelin.

# Participation in Yellow Cake plc and physical uranium purchases

In addition to the aforementioned interests in uranium projects, Uranium Royalty also owns 7.5 million shares of Yellow Cake plc. Currently, Uranium Royalty has entered into contracts for the delivery of more than 1.748 million pounds of physical uranium at an average purchase price of US\$43.32 per pound. Further, Uranium Royalty will receive future royalty payments from McArthur River in the form of physical uranium.

#### Summary:

# Royalty payments strongly increasing + physical stocks experience higher valuation

Uranium Royalty is a company that has positioned itself early for the coming uranium boom and has secured several high-profile royalties, with initial payments expected shortly. In particular, corresponding payments from McArthur River in the form of physical uranium would have additional leverage in the event of a rising uranium price. With this second pillar "physical uranium", the company will accordingly be able to profit immediately from rising uranium prices, which has already happened in recent months. All in all, more and more rovalty projects are expected to come online in the coming years, providing positive cash flow for Uranium Royalty. In July 2023, Uranium Royalty made the jump to the TSX Mainboard, which brought the company increased attention from investors. Further, the Company has the opportunity to generate up to US\$40 million through the successive issuance of shares, which will allow for the possibility of further Royalty acquisi-

price appreciation in a market that has recently reached the \$70 per pound level. The company, is additionally, taking its first delivery this month under an offtake stream with China's CGN Global (500,000 lbs U<sub>2</sub>O<sub>2</sub> over 3 years at an average fixed price of US\$47.71 per pound). Secondly, with the positive developments in the uranium market, a number of our inaugural portfolio of royalty assets have resumed production or are in the advance stages of start-up of operations, giving us visibility to cash-flows under those formerly idled assets. And finally, we are encouraged by the pipeline of potential new business in a revitalized and growing global uranium industry. URC has been actively meeting with management teams of the companies that are best situated to respond to the nuclear industry's call for new uranium fuel supplies. Our vision here is global in nature, with the desire to be present in every major uranium district in the world today.

# What are the most important catalysts for the next 6 to 12 months?

Beyond the exciting host of positive catalysts in the broader uranium market, we are eager to see our royalty counterparties execute the successful restart of their operations. Our marquee interests in Cigar Lake and McArthur have recently announced challenges meeting their full 2023 production guidance, however, we expect these world class operations to not only overcome these near-term issues but look to expand and extend output as global utility demand craves supply from these quality assets. We are also following with great interest the restart of the new and improved Langer Heinrich Mine in Namibia in early 2024. Even some of our longer-dated interests are seeing positive catalysts. Uranium Energy's recent acquisitions of mines and deposits from Uranium One and Rio Tinto provide more clarity on the development timeline of our Reno Creek asset in Wyoming (only 40 miles from the Irigaray Processing Plant) and Roughrider (the subject of a 2023 economic study which will outline development options of this world class 50-million-pound deposit with 4% average ore grades). And finally, URC needs to execute on new business developments that will grow the asset portfolio. We are encouraged by the active files under discussion.

## How do you see the current situation on the market for uranium?

My in depth views on the uranium market are contained in my broader interview contained in this report, but I will say that in my 40 years in this uranium/nuclear power industry, I have never seen a better combination of supply and demand fundamentals, Geopolitical drivers, and growing acceptance and expansion of reliable and carbon-free nuclear energy.



Scott Melbye, CEO

# **Exclusive interview with Scott Melbye, President and CEO of Uranium Royalty**

# What have you and your company achieved in the past 12 months?

2023 has been an exciting year in the development of our relatively young company. We took Uranium Royalty Corp public in December 2019 (and subsequently listed on the Nasdaq in April 2021) with the objective of being the first to bring the royalty and streaming model to the uranium industry. This very successful model has become a primary source of mine development cap-

ital, and a very popular diversified investment vehicle, in the base and precious metals industries. The timing couldn't have been better given the historic global growth in nuclear power and ensuing need for new uranium mine development.

We are encouraged by three main developments at URC in 2023. First of all, URC's early investments in physical uranium, off the bottom of the commodity cycle, have created a valuable balance sheet asset exceeding US\$100 million with significant



**ISIN:** CA91702V1013

WKN: A2PV0Z FRA: 59U NASDAQ: UROY TSX-V: URC

Fully diluted: 118.8 million

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