Quakes Summary ..... the Uranium sector fireworks are about to begin!

Kazatomprom, the world's largest uranium producer, has notified nuclear fuel buyers that Kazakhstan will not be following through on its planned 13M lbs supply increase in 2023, delaying any ramp-up in production by Kazatomprom and its JV partners until at least 2024. A supply reduction of 13M lbs is akin to shutting down the world's largest 18M lbs/year Cigar Lake mine for 9 months, signalling to nuclear utilities that fuel to power 26 or more nuclear reactors will not be available in 2023 as previously expected.

Canadian uranium producer Cameco was forced to once again shut down its only operating uranium mine at Cigar Lake in northern Saskatchewan, this time from an intense and rapidly spreading wildfire that surrounded the mine site. Workers had only just returned to the mine in April to begin restarting production after a 5-month COVID-related shutdown that had cut production by an estimated 7.5M lbs with no updated guidance for 2021 being provided so far. Reports indicate the mine site was spared from serious damage due to the heroic efforts of the 80 essential workers that remained at the mine to assist the firefighting efforts. Workers are now being transported back to the mine to begin the process of restarting production for what will likely turn out to be a 1 week mining outage for a production loss of around 500K lbs U_3O_8.

These two events underscore how the concentration of uranium supply into such a small pool of producing assets continues to increase risks to security of supply, which is the number 1 concern for nuclear utilities that must ensure "the lights stay on". More dry kindling has been added to the massive pile ready to be ignited to produce a uranium sector firestorm after a decade long bear market.

False reports of a "radiation leak" at a nuclear power plant in China, and an uneventful "emergency shutdown" of Iran's only operating nuclear power plant to repair a fault in its electrical generator, have served to skim the froth that some suggest had formed on uranium stocks, but the "Yellow Metal" commodity continues to power higher, now up 8% Year-to-date to a new 2021 high of US$32.80 per lb U_3O_8. The 2 week "cooling off period" for uranium mining stocks has put them back into undervalued territory, ready to start another push higher.

Using my own modelling based on publicly available sources, taking into account COVID-19 related mine closures & supply chain disruptions, I forecast about 120M lbs U_3O_8 of primary mined supply for 2021. On the demand side, tabulating annual reactor consumption, including the additional 3 times annual demand initial start-up fuel load for 54 reactors under construction with 2-year procurement lead times, I calculate approximately 195M lbs of 2021 uranium demand. Overall, that places primary supply in a structural 75M lbs U_3O_8 deficit, ~38% of nuclear fuel demand, that with no idled mines restarting or new mines beginning production in the near term will continue for the next several years until the commodity price provides the incentive to bring back supply.

Kazatomprom and its JV partners in Kazakhstan will not be increasing their production until at least 2024. Other idled mines need at least $50/lb uranium price to trigger a restart, while new mines under development will need a sustained uranium price well above $60/lb to give Boards and Lenders the confidence to green light new mine construction. That's far higher than today's uranium price sitting near $33/lb. Even then there will be further delays as final permits and construction contracts are secured. If we see significant inflation kick in then cost estimates will be revised higher and the triggering commodity prices to restart and build new mines will also be raised accordingly.

A key point to remember is that uranium mining is the most highly regulated so the time delays for permitting and construction, along with a lack of trained uranium mine engineers and workers, always push actual production starts beyond projected start dates. No matter how far and fast uranium prices may move or how much money flows into the sector, the approval, licensing and construction process still remains the same. Very few mines under development ever reach production, and those that do are usually delayed for months or years and can take years longer to achieve nameplate capacity. This is why uranium prices tend to overshoot and the share prices of uranium juniors can yield life-changing returns.

As we head into the 3rd Quarter, there has been a growing stack of kindling already thrown on the pile of dry tinder that's been building up under the price of Uranium and the U mining sector. Many analysts and observers believe that

the arrival of Sprott Asset Management with its over $17 Billion AUM could finally set off the fireworks to light the fire that will launch this tiny investment sector into a raging bull market. Many expect Sprott's Physical Uranium Trust to initiate an up to $1B At-the-Market program concurrent with a new NYSE listing, allowing it to issue shares to raise cash to purchase physical Spot U3O8 on a nearly continuous basis, driving the commodity price significantly higher in the months and years ahead.

Q2 Significant Events on Uranium Supply Side

- With higher uranium prices virtually guaranteed in the absence of any catastrophic incident that changes the demand outlook, junior miners continued to raise cash and acquire strategic physical uranium assets: Boss Energy 1.25M lbs, Peninsula Energy 750,000 lbs, encore Energy 200,000 lbs, Uranium Energy Corp 705,000 lbs, Western Uranium & Vanadium Corp 125,000 lbs.
- Uranium Participation Corporation announced an Agreement with physical commodity giant Sprott Asset Management to modernize its business structure to become the 'Sprott Physical Uranium Trust' and pursue a NYSE listing, terminating its Management Contract with Denison Mines. A slam-dunk vote to secure UPC shareholder approval is set for July 7th. Sprott indicates that it intends to set up an At-the-Market program allowing it to regularly issue shares so as to be purchasing physical uranium continuously in the Spot market for delivery within 30 days, reporting its uranium holdings on a daily basis.
- After announcing the Sprott takeover deal, Uranium Participation Corp successfully raised $80.5M in cash to make additional physical U3O8 purchases after initially seeking $50M.
- Physical Uranium Fund Yellow Cake PLC successfully raised US$88.1M, giving them a total of US$110.8M in cash for making further U3O8 purchases that will increase their holdings from 13.3M lbs to over 15M lbs. Combined Asset Values of Uranium Participation Corp and Yellow Cake PLC now exceed US$1 Billion. With Uranium Royalty Corp, they together hold around US$190M in cash raised to purchase more Physical Uranium in the market ahead of the launch of Sprott Physical Uranium Trust.
- NYC Hedge Fund 'Anchorage Capital Group' behind the $8.5B Amazon-MGM takeover deal has taken a big bet on Uranium by purchasing "a few million pounds" to hoard "in a bet that price will recover after a decade in the doldrums."
- Uranium Trading Corp, a California-based uranium trading company that was unsuccessful in its proposed October 2018 NYSE IPO, announces that it has made an "initial" Uranium purchase of 100,000 lbs U3O8 "for a large multifamily office". Will UTC re-launch its intended NYSE IPO?
- Canada's Athabasca Basin Uranium mining space saw its first significant M&A activity in many years as Denison Mines & UEX Corp agreed to partner 50/50 in a $40.5M acquisition of JCU (Canada).
- North America's 3 Uranium ETF's: Global X URA, North Shore URNM and Horizons HURA, hit a combined total Assets Under Management of over US$1 Billion, an over 5-fold US$800M increase in just 15 months from the low of March 2020.
- Workers at Canada's Cigar Lake uranium mine returned to work in April after a 5-month shutdown that saw approximately 7.5M lbs of lost production that will not be recovered. Cameco was unable to estimate the rate that production would return so have withheld guidance for 2021.
- Canada's Cameco was forced to evacuate all but essential workers & suspend production at world's largest uranium mine at Cigar Lake as a wildfire surrounded the mine site in northern Saskatchewan. No serious damage was reported so the process of restarting the mine has begun. Lost production could amount to around 500,000 lbs U3O8.
- World's largest Uranium producer Kazatomprom has announced that Kazakhstan will not be ramping up production in 2023 by 5000tU (13M lbs U3O8) as planned. There will be no increases in Kazakh production until 2024 at the earliest.

Q2 Significant Nuclear Energy Events

- There were 3 new reactor start-ups: First of 2 new Chinese 1100MW 'Hualong One' nuclear reactors under construction in Pakistan; ACPR1000 reactor unit 6 at the Tianwan nuclear power plant in China's Jiangsu province; China's Hongyanhe Nuclear power plant's 1119MW unit 5 reactor.
- Japan has restarted its first nuclear reactor in 3 years, as Mihama Unit 3 becomes the 10th Japanese reactor to be restarted under post-Fukushima safety rules. A further 23 operable units must be restarted to meet Japan's 2030

Net-Zero emissions goal. The Ohi-3 nuclear reactor was also restarted after being offline for 12 months for upgrades. The restarts of 3 more reactors: Takahama-1 & 2 and Shimane-2 have also been approved.

- ★ New Jersey has approved 3 more years of $300M subsidies until May 2025 so as to prevent early retirement of its 3 nuclear power generating facilities.
- ★ The US Nuclear Regulatory Commission has approved 20-year operating license extensions for Dominion Energy Virginia's two Surrey Power Station reactors 1 and 2, now authorizing operation from 60 to 80 years.
- ★ Duke Energy announced that it plans to run its fleet of 11 nuclear reactors until they're 80 years old, one of a growing number of U.S. reactor owners planning to keep the nation's largest source of Carbon-Free electricity in service for 8 decades.
- ★ Bill Gates and Warren Buffett have invested $1 Billion in a revolutionary new nuclear megaproject to construct a drop-in Natrium small modular nuclear reactor replacement for a retired coal-fired power plant in Wyoming. If successful, the US has 252 coal-fired power plants that could be retrofitted with Carbon-Free nuclear reactors to leverage existing electricity grid infrastructure, and retain jobs, in the transition to Net-Zero that could help to fight climate change and save thousands of lives lost every year to Air Pollution.
- ★ Construction of 2 more 1000MW Russian reactors, units 5 & 6, has begun at India's largest nuclear power plant in Kudankulam.
- ★ Construction officially began on the third of 4 new 1200MW nuclear reactors being built by Russia at Turkey's Akkuyu Nuclear Power Plant.
- ★ China's National Nuclear Safety Administration issued a construction licence for 2 new 1200MW "Hualong One" reactor units 3 and 4 at the Changjiang nuclear power plant in Hainan province. Construction of reactor unit 3 is now officially underway. Unit 4 is to begin construction later this year.
- ★ China's President Xi & Russia's President Putin hail enhanced nuclear energy cooperation in a ceremony marking the first day of construction of 4 new 1.2GW Russian VVER-1200 reactors in China: Tianwan 7&8 and Xudapu 3&4.
- ★ China approved construction of a new ACP100 small modular nuclear reactor (SMR). The 'Linglong One' multi-purpose 125 MWe pressurised water reactor is designed for electricity production, heating, steam production or seawater desalination, one of 5 reactor construction approvals as China "has re-established its normal pace in advancing new projects."
- ★ Korea's Prime Minister has requested the speedy operation approval of the idled new nuclear reactor 'Shin Hanwool 1.' The massive 1400MW reactor is 99% built but was indefinitely suspended by President Moon's unpopular nuclear phase-out.
- ★ Denmark's Seaborg plans to rapidly mass-produce cheap, floating nuclear reactors by the "thousands" to be placed on floating barges to be deployed worldwide – "on timelines that will smash paradigms in the energy industry."
- ★ Korea's Atomic Energy Research Institute (KAERI) and shipbuilder Samsung Heavy Industries have announced plans to work together on the development of a molten salt reactor (MSR) for marine propulsion and floating nuclear power plants.
- ★ X-Press Feeders announces that it is among six shipping investors in Mikal Bøe's Core Power nuclear modular molten salt reactor (m-MSR) venture to propel cargo ships, with first trials set for 2025.
- ★ The first reactor to be built in the Middle East begins commercial operation at the UAE's Barakah Nuclear Power Plant which will generate 5,600MW of carbon-Free clean energy to meet 25% of the UAE's electricity needs for decades to come.
- ★ New York's Indian Point-3 & Taiwan's Guoshen-1 nuclear reactors have been shut down for decommissioning.
- ★ China will no longer grant subsidies for new solar power stations, distributed solar projects by commercial users or onshore wind projects from the central government budget in 2021. The new rule will take effective from Aug. 1 at which point carbon-free nuclear power plants will get the same clean energy consideration for being added to the power grid.
- ★ The EU's scientific "Joint Research Centre (JRC)" issued a report saying that nuclear energy causes no more harm than other energy sources and is therefore a safe, reliable source of 'Green' energy. The European Commission subsequently announced plans to include Nuclear Energy in the EU's Sustainable Taxonomy but that debate carries on with Germany leading the anti-nuclear pushback.
- ★ A new report from the International Energy Agency (IEA) says nuclear power must increase by 40% by 2030 and double by 2050 in order to achieve global Net-Zero carbon emission goals. New nuclear capacity additions are expected to reach 30 GW per year in the early 2030's.

- ★ President Biden's new $6T budget proposal includes $9.75 Billion in clean energy credits "for electricity generation from existing nuclear power facilities" from 2022 to 2031, following through on efforts to prevent premature reactor closures.
- ★ Proposed Department of Energy Fiscal Year 2022 budget secures a record $1.85B funding for Nuclear Energy and Advanced Nuclear to achieve climate goals, an over 23% increase from FY21 enacted.
- ★ US Energy Secretary Granholm made an unequivocal public statement supporting the preservation and expansion of US nuclear energy: "Let me say it loud and clear: Carbon-free nuclear power is an absolutely critical part of our decarbonization equation." She also confirmed that DOE will be going ahead soon with its "Uranium Reserve" purchasing program to support US domestic miners.
- ★ 5 U.S. Senate Democrats have launched a new Senate Bill that would allow existing nuclear power plants to receive a clean energy Tax Credit of $15/MWh to prevent early reactor retirements & protect the largest source of carbon-free clean energy in the US.
- ★ US nuclear start-up company Oklo has announced a plan to construct micro-reactors that run off nuclear 'waste'. This has potential to end the debate on what is nuclear waste by deploying thousands of new reactors that turn what was once considered to be 'hazardous waste' into 'reactor fuel' that produces carbon-free energy for generations to come.

When will the fireworks begin?

In the over 10 years I've been researching, following and investing in the Uranium mining stocks sector I have NEVER seen so many bullish catalysts ready to ignite a raging uranium bull market. Uranium supply is near 12 year lows with what I estimate to be a ~75M lbs primary mined uranium supply deficit this year that, unless the price of the commodity at least doubles or triples, will continue for many years to come. Secondary Supplies and inventory drawdown have been partially filling that supply gap but they too are falling and unable to rebalance supply to meet what is now significantly rising fuel demand, not to mention the growing trend towards uranium stacking as a strategic investment.

Every media outlet is now talking about the Climate Crisis, ESG investing, the need to reduce carbon emissions, the rise of Extreme Weather and the resulting power outages in Texas, California and New York City. The Biden Administration is signalling that it wants to go "all in" to protect existing nuclear reactors and build even more advanced reactors as a key foundation on its quest towards a National Clean Electricity Standard by 2035. More and more environmental organizations and governments are changing their view of nuclear energy as time is running out to get emissions down to Net-Zero. We are now in a new nuclear renaissance that will drive uranium demand far higher than was predicted even just a year ago.

More than ever, the case for a very strong and long lasting uranium bull market is not a question of 'if' but 'when'. Nuclear utilities have been under-buying fuel, drawing down inventories for many years now. A nuclear utility re-stocking cycle to both replenish inventories and contract for future reactor fuel requirements is set to begin in earnest, colliding head-on with a record supply deficit, unprecedented uranium stacking and hoarding by junior miners, hedge funds and physical uranium funds. In my view, the resulting fireworks are now likely to be dazzling and spectacular beyond anything seen before.

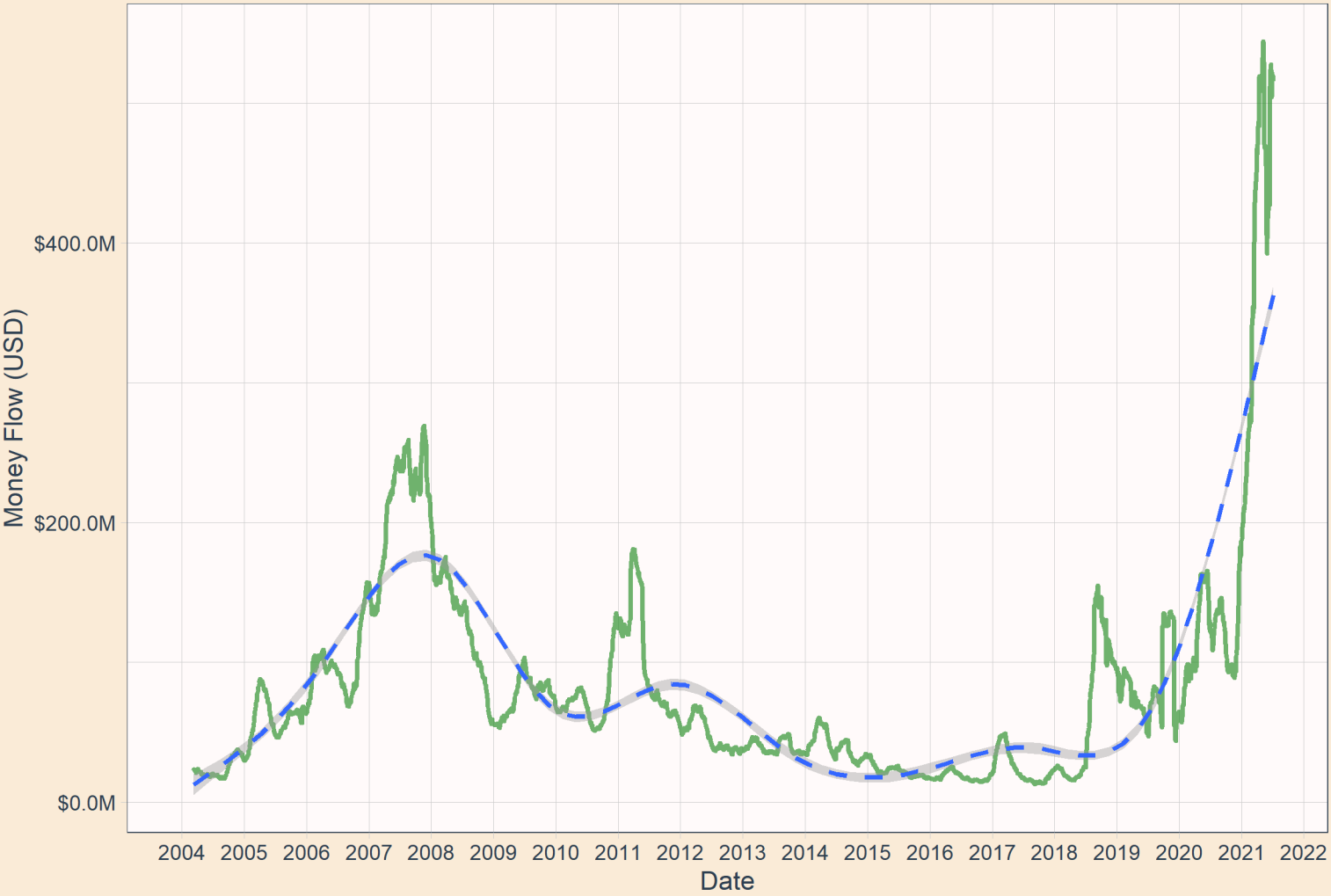
When will the fireworks begin? With Sprott Asset Management entering the uranium space this week with its Physical Uranium Trust takeover of Uranium Participation Corp, the answer would seem to be "any time now". Patience will be rewarded for those willing to wait for the life-changing returns that now seem more probable than ever. For the baseball fans out there, we are still in early innings of a long game yet to be played.

As always, wishing you good luck with your research and investments!

John Quakes

Total money flow - 50 day rolling average

Uranium Mining Related Stocks, excluding ETFs, OTC equities



Source: @GrantChalmers | Yahoo Finance | Alpha Vantage