

Fission Uranium Corp. (TSX:FCU)

A Shallow, High-Grade, Basement-Hosted Deposit Nearing Development

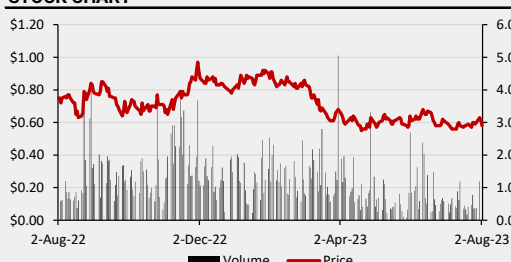
Initiating Coverage

August 3, 2023

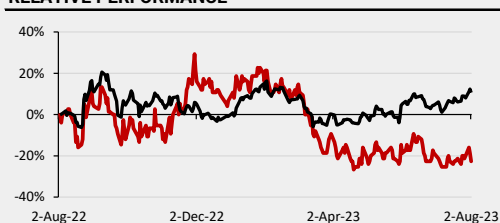
(Currency is CAD\$ unless noted otherwise)

Closing Price	\$0.58		
Rating	BUY		
Target (\$/sh)	\$1.50		
Return to Target	159%		
52 Week Low / High	\$0.54 / \$1.00		
CAPITALIZATION	Basic	Diluted	
Shares Outstanding (M)	723.3	803.2	
Market Capitalization (\$MM)		\$419.5	
Enterprise Value (\$MM)		\$374.8	
Cash and Equivalents (\$MM)		\$44.7	
Total Debt (\$MM)		\$0.0	
FYE DEC 31	2027E	2028E	2029E
Uranium production (M lb)	-	8.1	9.9
Revenue (\$M)	-	\$651	\$790
Net Earnings (\$M)	(\$38)	\$309	\$353
EBITDA (\$M)	(\$3)	\$539	\$650
Avg. cash cost (US\$/lb)	-	\$10.00	\$10.45
EPS (\$/sh)	(\$0.05)	\$0.38	\$0.43
CFPS (\$/sh)	(\$0.05)	\$0.48	\$0.60

STOCK CHART



RELATIVE PERFORMANCE



NET ASSET VALUE	\$M	\$/sh
Patterson Lake South (100%-owned)	\$1,599	\$1.74
Other corporate adj.	(\$121)	(\$0.13)
Corporate NAV	\$1,479	\$1.61

RELATIVE VALUATION	US\$ EV/lb U3O8	P/NAV
Fission Uranium Corp.	\$2.87	0.57x
Peers*	\$3.41	0.47x

*S&P Capital IQ & Company Reports

MAJOR SHAREHOLDERS

China General Nuclear Pow. (13.37%), ALPS Advisors, Inc. (5.46%), Mirae Asset Global Invest. (4.36%)

DISCLOSURE CODE: 1, 2

(Please refer to the disclosures listed on the back page)

Source: RCS, Company Information, Capital IQ

Company Description

Fission Uranium Corp. engages in the acquisition, exploration, and evaluation and development of uranium properties in Canada. It owns a 100% interest in the Patterson Lake South (PLS) project, which is host to the Triple R deposit, and comprises 17 contiguous mineral claims covering an area of 31,039 ha in the Athabasca Basin, Saskatchewan. It also exploring the West Cluff property, which covers an area of 11,148 ha located in the Western Athabasca Basin. The company is headquartered in British Columbia, Canada.

We are initiating coverage of Fission Uranium with a BUY rating and a C\$1.50/sh target price. Fission owns 100% of the Patterson Lake South (PLS) uranium project, located near the SW edge of the Athabasca Basin. This large package hosts the Triple R deposit, consisting of five high-grade basement-hosted zones over 3.2km of strike, but only three were included in the FS mine model. **In our view, Triple R is a world-class uranium project in a top-ranked mining jurisdiction. Discovered in 2012, it is now in the latter stages of design and permitting. We believe the FS and pending IBAs will lead to permitting and a construction decision by 2026. The decision to mine from underground will help maintain a small footprint and minimize environmental impact, while the high-grade basement-hosted deposit is not technically challenging and supports low costs and robust economics as outlined in the 2023 FS. We anticipate share price appreciation as the project is further de-risked.**

- **Tier one asset in a top mining jurisdiction.** The Triple R deposit has one of the largest and highest-grade U3O8 resources. It hosts ~3.3Mt at 1.78% for ~130M lb indicated + inferred, and probable reserves of ~3Mt at 1.41% for ~94M lb. It has only been tested to 300m. Saskatchewan was ranked the third best jurisdiction for mining investment attractiveness in 2022.
- **Robust economic profile.** The 2023 Feasibility Study used the large, high-grade resource to support a long-life, low-cost operation with bottom-of-the-quartile costs. It outlined an after-tax NPV_{8%} of ~C\$1.2B, IRR of 27.2% and quick payback of 2.6 years at US\$65/lb U3O8. Over a 10-year LOM, PLS is due to produce 9.4M lb pa with average annual after-tax cash flows of C\$264M. Production may begin as soon as 2028.
- **Basement characteristics lower risk, provide competitive advantage.** Triple R is near-surface, basement-hosted, and high-grade. In fact, it is the Basin's only project with such features, and nearby other uranium deposits such as Arrow. FCU can mitigate several risks associated with deposits that sit at the unconformity, including water and alteration issues that result in less competent rock. Economical underground longhole and mechanical cut and fill methods are to be used.
- **Minimal environmental footprint for low environmental impact.** The competent nature of Triple R supports underground mining and will result in much less environmental impact. It is also supported by locals and stakeholders. The project layout was strategically designed to avoid local areas of old-growth jack pine forest and heritage resource sites.
- **Significant exploration potential remains.** The FS incorporated only three of five zones, and all above just 300m. The two remaining are likely to make meaningful additions to resources once they are further drilled. Under 5% of PLS is explored and exploration is anticipated to ramp up.

Our target is derived using a DCF for the PLS project, adjusting for cash, debt, additional resource value, interest and corporate G&A. Our target is based on 0.90x our sum-of-parts derived NAVPS of C\$1.61. **Upcoming catalysts:** 1) Advanced engineering and design (H2/23), 2) Submittal of EIA (2024), 3) Final permits/license (2025-26), 4) Begin construction (2026), and 5) Initial production (2028-29). **Mining/exploration is inherently risky** and Fission is subject to geopolitical, technical, corporate, or financial risks.

Financial and Operating Summary: Fission Uranium Corp.

FINANCIAL AND MARKET DATA

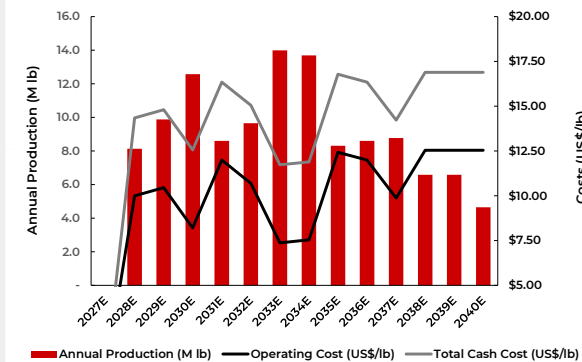
Ticker	TSX:FCU
Current Price (C\$/sh)	\$0.58
52 Week Low / High (C\$/sh)	\$0.54 / \$1.00
Rating	BUY
Target (C\$/sh)	\$1.50
Return to Target	159%
Shares Outstanding (M)	723.3
Market Capitalization (C\$M)	\$419.5
Cash (C\$M)	\$44.7
Debt (C\$M)	\$0.0
Enterprise Value (C\$M)	\$374.8

CAPITAL STRUCTURE & OWNERSHIP

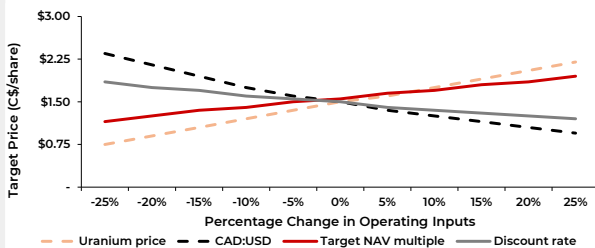
Capital Structure	Shares (M)
Shares Outstanding	723.3
Options	54.3
Warrants	25.6
Fully Diluted Shares	803.2
Shares used in Valuation	916.8

Ownership (as per IQ)	Shares O/S (M)	% O/S
China General Nuclear Power Corporation	96.7	13.4%
ALPS Advisors, Inc.	39.5	5.5%
Mirae Asset Global Investments Co., Ltd	31.5	4.4%
Management & Insiders	20.5	2.8%
Other	535.0	74.0%

PRODUCTION PROFILE



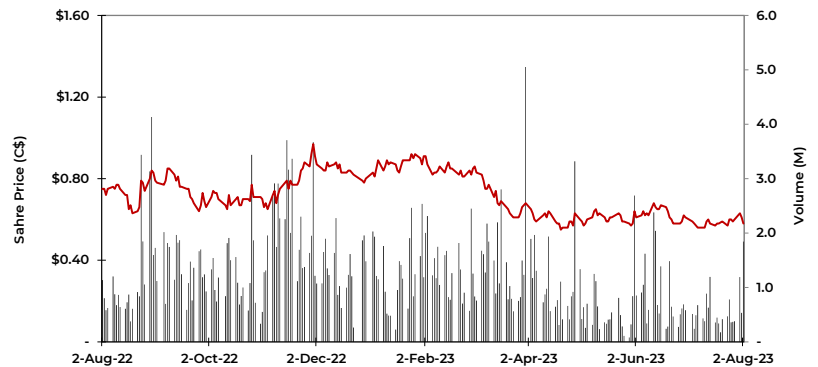
NAVPS SENSITIVITY



Priced as of market close on August 2, 2023

Source: RCS Estimates, Company Reports, Capital IQ, S&P Global Market Intelligence

STOCK CHART



TECHNICAL ASSUMPTIONS

	2023E	2024E	2025E	2026E	2027E	2028E
Uranium Price (US\$/lb)	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00
CAD:USD FX Rate	\$0.75	\$0.75	\$0.75	\$0.75	\$0.75	\$0.75

GLOBAL RESOURCE

Rook I Project			
Category	Tonnes (Mt)	U3O8 Grade (%)	Pounds (M lb)
Indicated	2,688.0	1.94%	114.9
Inferred	635.0	1.10%	15.4
Indicated + Inferred	3,323.0	1.78%	130.3

GLOBAL RESERVE

Rook I Project			
Category	Tonnes (Mt)	U3O8 Grade (%)	Pounds (M lb)
Probable	3,008.0	1.41%	93.7
Total	3,008.0	1.41%	93.7

NET ASSET VALUE

	Discount Rate	Net Asset Value	
		C\$M	C\$/sh
Patterson Lake South (100%-owned)	8%	\$1,599.4	\$1.74
Asset Value		\$1,599.4	\$1.74
Cash & cash equivalents		\$41.4	\$0.05
Debt		-	\$0.00
Additional resource value		\$99.9	\$0.11
Interest expense		(\$212.4)	(\$0.23)
Corporate G&A		(\$49.7)	(\$0.05)
Total NAV		\$1,478.5	\$1.61
Multiple			0.9x
Target Price			\$1.50

COMPARABLES

Company	Ticker	Price C\$/sh	Mkt Cap C\$M	EV/lb U3O8e US\$/lb	Consensus P/NAV
Denison Mines Corp.	TSX:DML	\$1.66	\$1,387	\$4.34	0.65x
GoviEx Uranium Inc.	TSXV:GXU	\$0.12	\$80	\$0.22	0.13x
Lotus Resources Limited	ASX:LOT	\$0.19	\$258	\$4.10	0.59x
Paladin Energy Ltd	ASX:PDN	\$0.68	\$2,030	\$3.85	0.82x
Forsys Metals Corp.	TSX:FSY	\$0.36	\$70	\$0.67	NA
Global Atomic Corporation	TSX:GLO	\$1.47	\$297	\$1.03	0.26x
enCore Energy Corp.	TSXV:EU	\$3.23	\$465	\$9.10	0.61x
Laramide Resources Ltd.	TSX:LAM	\$0.45	\$102	\$0.66	NA
NexGen Energy Ltd.	TSX:NXE	\$6.33	\$3,108	\$6.77	0.70x
Average				\$3.41	0.54x
Fission Uranium Corp.	TSX:FCU	\$0.58	\$416	\$2.87	0.36x

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Executive Summary

Fission Uranium is an exploration and development company focused on advancing its PLS uranium project located near the southwestern edge of the Athabasca Basin. PLS covers a total area of 31,039 ha and is located ~550km north-northwest of Prince Albert by air and 157km north of La Loche by road. PLS is accessible by vehicle via an all-weather gravel Highway 955 that begins in La Loche, heads northwards through the area of the Shea Creek deposits to the past producing Cluff Lake uranium mine.

The Triple R deposit is host to an indicated resource of 2,688kt at 1.94% U₃O₈ for 114.9M lb U₃O₈ contained and an inferred resource of 635kt at 1.10% U₃O₈ for 15.4M lb U₃O₈ contained. Collectively, this amounts to 3,323kt at a weighted average grade of 1.78% U₃O₈ in indicated and inferred (I+I) resources for ~130 M lbs. There is further expansion potential.

The 2023 Feasibility Study also outlined probable reserves totaling 3,008kt at 1.41% U₃O₈ for 93.7M lb U₃O₈. PLS is host to five zones – R1515W, R840W, R00E, R780E, and R1620E – the middle three form the mine model, while the others likely need further critical mass prior to their development.

Fission has indicated that the UG operation would utilize a ramp and two ventilation shafts to access three of the five Triple R uranium zones being prepared for production. The 1,000tpd surface processing facility is expected to utilize a surface Tailings Management Facility (TMF), with temporary above-ground waste rock storage, the material for which is to be used for backfill of mining voids.

Fission also has interest in West Cluff, which is a 11,148 ha property that covers both the margin and near margin along the western side of the Carswell structure in the western Athabasca Basin. It is located less than 3km west of the past producing Cluff Lake mine (>62M lb historical production), and 250km north of La Loche, SK. The project is accessible via an all-season access road and a government-maintained Highway 955. West Cluff is an early-stage exploration project with a databank of results from previous surveys, ground prospecting, and reconnaissance drilling.

In our view, Fission's Triple R is a shallow, high-grade, world-class uranium deposit that is located in the top tier mining jurisdiction of Saskatchewan. PLS is a conventional FS-stage development project that is currently working through the permitting process, with construction anticipated in 2026 and production by 2028-2029.

We are initiating coverage on Fission Uranium with a BUY rating and C\$1.50/sh target price. Our target is based on a DCF model (8% discount rate) to value the PLS project, as well as adding back value for cash, debt, additional resource value, interest and corporate G&A.

Upcoming catalysts for Fission Uranium include:

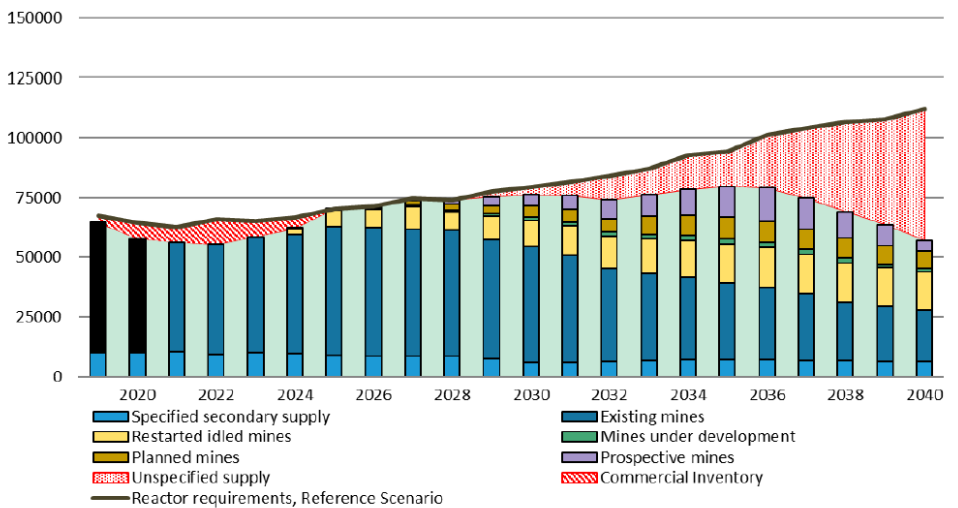
1. Environmental Impact Assessment submittal (EIA) (2024)
2. Advanced front-end engineering and design (ongoing)
3. Exploration at PLS (2023-2024)
4. Financing discussions
5. Offtake agreements
6. Final EIA approval/ CNSC license (2025-2026)
7. Commencement of construction (2026)
8. Commencement of production (2028-2029)

The large supply-demand gap in the uranium sector is expected to continue to increase in the years ahead

Investment Thesis

Uranium market deficit. After a dozen years in the doldrums, uranium prices are on the rise, supported by real growing demand and support for nuclear power, as well as geopolitical concerns. The support for nuclear power is based on environmental considerations and providing reliable and cheap baseload energy. Russia's invasion of Ukraine shifted the geopolitical landscape to provide more focus on energy security, while western government policies pivoted in response to gain momentum. Utilities are also returning to long-term contracting. Rising demand and diminishing secondary supplies have spurred an increase in production, increasing contract volumes, while uranium supplies remain tight.

Figure 1: Reference scenario for uranium supply and demand, tU



Source: WNA Nuclear Fuel Report 2021

Production still can not meet supply. Higher uranium demand and diminishing secondary supplies have spurred an increase in production. Rising long term prices and increased contract volumes are needed to provide the necessary price incentive for uranium producers to bring production back online or start up new projects. That said, uranium supplies remain tight and further price appreciation is anticipated. Mine supply is forecast by UxC at 146M lbs U₃O₈ versus 181M lbs of demand for 2023, leaving a notable gap in mine supply that must be filled by declining secondary supplies. The gap is forecasted to remain despite planned restarts of several projects – Lance, Lost Creek, Rosita (U.S.), and Honeymoon (Australia), in addition to the continued ramp up of Cameco's (TSX:CCO, Not Rated) McArthur River in Saskatchewan and a 6% increase in production from Kazakhstan. African projects are also being given a new look with Langer Heinrich anticipated return to production next year, in addition to Dasa which is under construction, as well as the Kayelekera, Madaouela, and Tiris projects.

Despite the potential for higher prices, several production challenges remain for miners including supply chain issues, permitting and funding requirements, and overly optimistic production estimates and development timelines. Secondary supplies that have plugged the 55M lb U₃O₈ gap between mine production and demand in 2023 are also anticipated to tighten. Further commercial inventory drawdowns are expected to take place as spot market supplies are less and less available.

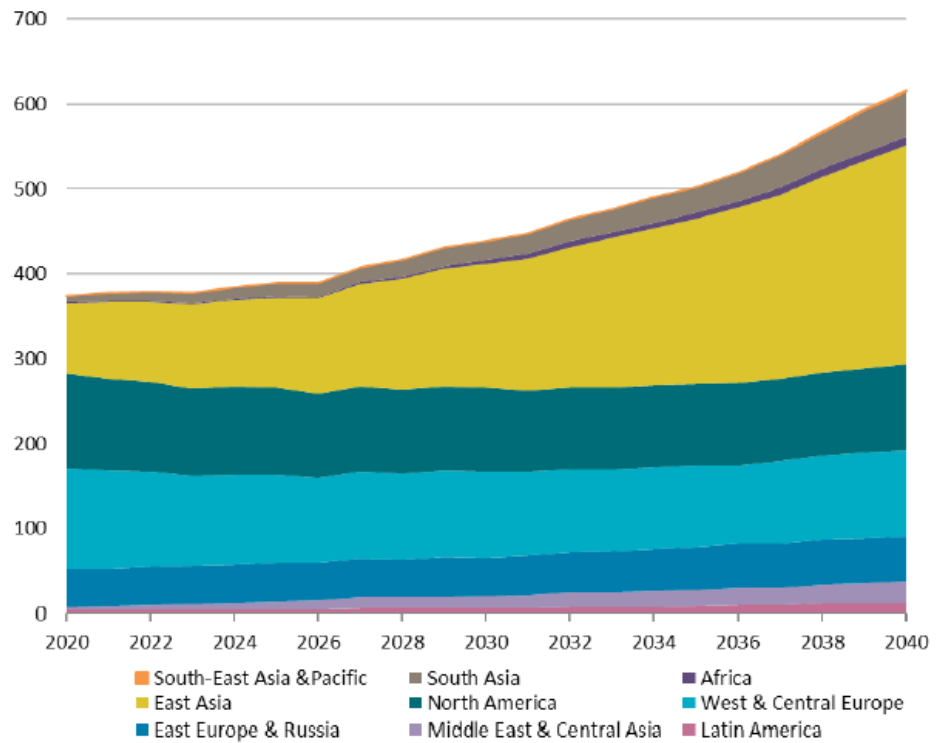
The geopolitical tensions between Russia and Ukraine has incentivized other countries to accelerate power plant builds

David A. Talbot | MD, Mining Analyst

Geopolitics have impacted the nuclear power and uranium markets.

Given Russia's influence over nuclear fuel (uranium, conversion, enrichment and gas supply chains), the war has contributed to Europe's soaring power and fuel prices, causing countries to accelerate new nuclear power plant builds (Poland, France) and reverse or stall closure plans in others (Germany, Belgium). As the war drags on, we expect existing nuclear utilities to scramble to cover uranium requirements. Thus far, the invasion has been a major factor in higher contract volumes by both the U.S. and non-U.S. utilities. Although existing shipments from Russia have had no trade restrictions, there have been threats by the US, EU, Canada and Russia to cut off supply. Concerns over the security of supply are likely to be an ongoing conversation in the upcoming years, such that we might see additional funding of domestic nuclear programs, R&D, and uranium industry support. Policy decisions by various governments in recent years have translated into new nuclear reactor announcements, builds, life extensions, and cancellations of closures from other projects.

Figure 2: Scenario of nuclear generating capacity by region, GWe



Source: Nuclear Fuel Report 2021

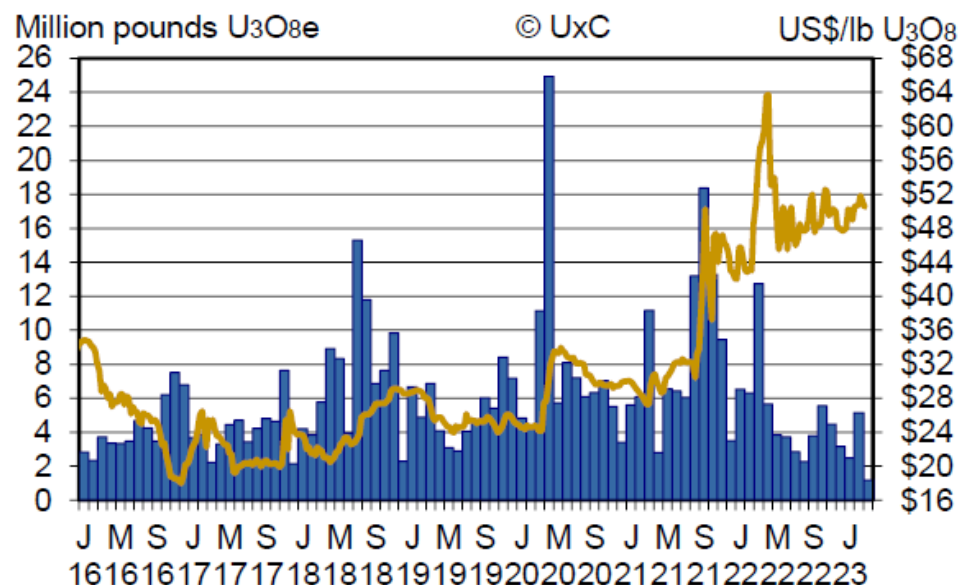
In North America, the US has spent an additional ~\$1 trillion on energy since the war began, while Canada has committed \$1 billion towards small modular reactors (SMR) – extending the lives of four reactors, thus far. Globally, China dominates the narrative as reactor builds are expected to accelerate to 8-10 per year. The mid term goal is for a world leading fleet of 150 operating reactors (50% more than the US). Also in Asia, South Korea has reversed policy; it plans to achieve 33% nuclear with its energy mix by 2030. Japan is striving for faster nuclear restarts and long-life extensions in response to the Russian invasion, with plans to increase its operating count from 10 to 17 by mid-2023, and ultimately to 35, with two new builds. India is also looking to expand its fleet of 22 reactors with eight under construction and 12 planned. Other developing nations seeking nuclear

Uranium spot prices have risen dramatically over the past two years, up to ~US\$55/lb today, compared to US\$42/lb in 2021 and US\$30/lb in 2020.

include Bangladesh, Egypt, Turkey, Philippines, and Indonesia.

Real demand driving prices. Although we do believe that a war premium is building into pricing, we are more relieved that real uranium demand is driving up long term prices. Spot price drivers include renewed interest in uranium and ongoing purchases by SPUT, added discretionary buying by utilities, and a weaker US dollar that could make uranium more attractive in terms of foreign exchange. Contracting by the U.S. utilities rose 58% to 113M lb versus an average of 73M lb per year over most of the decade, hitting the highest levels since 2005-06. Additionally, ~430M lb has been contracted over the past five years, with Cameco alone accounting for 147M lb over the last 14 months. The trend is likely to continue as Cameco already announced 80M lb worth of contracts in 2023. However, even with term contracting, uncovered reactor requirements total 1.3M lb U₃O₈ through 2030. The lack of investment in uranium mining and exploration since Fukushima has had many investors concerned about sources of supply. Uranium spot prices peaked at US\$63/lb in April 2022, and are up from US\$48/lb as at YE 2022, US\$42/lb as at YE 2021, and US\$30/lb as at YE 2020.

Figure 3: Monthly uranium spot volume vs. price (2016 – 2023)



Source: UxC Market Outlook, Q1 2023

The Athabasca Basin is the world's most prolific uranium jurisdiction. It is home to the world's largest and highest-grade uranium mines, including McArthur River and Cigar Lake, as well as the Key Lake, McClean Lake and Rabbit Lake mills. The Basin was responsible for 13% of global uranium production in 2019 from just a single mine (Cigar Lake). Saskatchewan ranks 3rd in the world in investment attractiveness according to the Fraser Institute (2022) (Figure 4). It has strong mining and civil infrastructure, a straightforward licensing and approval process, and support from several levels of government. Uranium grades average 10-20x higher in the Basin at ~2% U₃O₈ as compared to 0.15% U₃O₈ from the rest of the world.

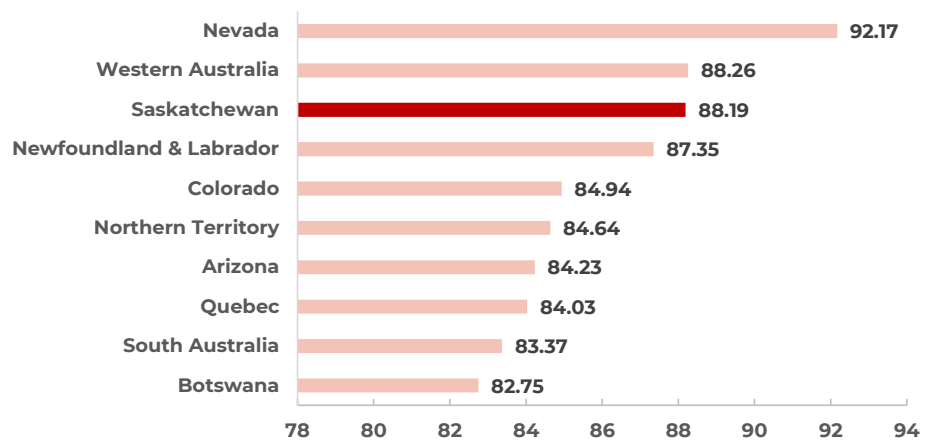
Developing a uranium producer at the right time. The PLS project is one of the few high-grade uranium projects that is currently being advanced and expected to reach production during this uranium cycle. As previously mentioned, uranium/nuclear is increasingly being included in the 'green energy' conversation and continuously being spurred on from the

The PLS project is located in the Athabasca Basin, SK, which is the 3rd best mining district in terms of investment attractiveness, according to Fraser Institute (2022)

David A. Talbot | MD, Mining Analyst

recognition of climate change. During the past few years, Fission has continued to build out its management team, board of directors, and technical team. All are in place to help take the project to the next level.

Figure 4: Investment Attractiveness Index – top 10 jurisdictions



Source: Fraser Institute Annual Survey of Mining Companies 2022

Agreements in place with six First Nations groups. Fission has signed agreements with several indigenous groups, including the Clearwater River Dene Nation, Buffalo River Dene Nation, Athabasca Nations & Communities of the Nuhenene, Athabasca Chipewyan First Nation, Birch Narrows Dene Nation, and Metis Nation of SK. Importantly, each of these groups serve a key role in the Environmental Impact Assessment phase. Fission will strive to sign Impact Benefit Agreements, likely with four of these groups. It is currently in early-stage discussions, already having had communication and funding agreements in place.

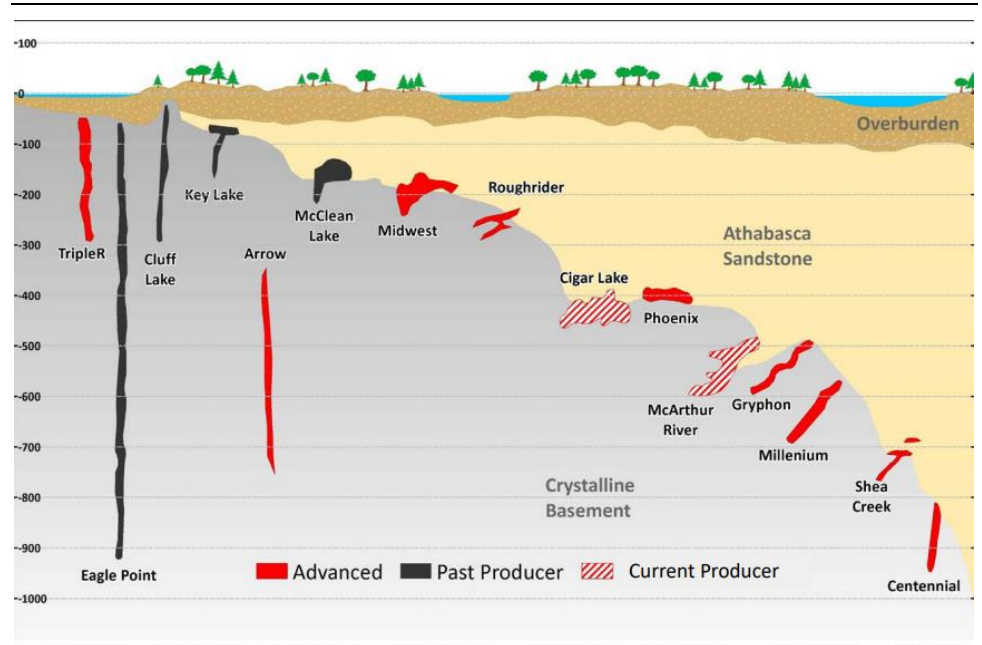
Working with stakeholders on project design. Community engagement has been ongoing since 2011 with ramped up engagement in 2020 to prepare for the EIA. Fission previously collaborated with communities to see how they want to be engaged. It became apparent early on that stakeholders did not want an open pit mine, which would have also required an expensive and environmentally impactful berm to hold back the waters of Patterson Lake. Furthermore, there wasn't interest in re-routing the highway around the project. Thus, the mine site was redesigned to keep the fairly low volume highway in its current position.

Getting local communities involved. There is strong interest in employment, increasing skill capacity of workers and economic development while mitigating environmental impacts. Various local community businesses will be supported during development, construction, and production, including camp management, catering, logistics, security, equipment rental, and other services. Trust and transparency are paramount. Fission anticipates focusing on permitting through 2026. Its community investment strategy may include funding of various education, community development or cultural events, such as sponsoring of sports teams or field trips.

An underground, near-surface, basement-hosted, high-grade deposit with comparable deposits nearby, helps lower technical risk. Triple R is one of the few that is hosted in the basement rocks. Its location is just outside the SW Athabasca Basin, and as such it actually does not sit below the

Athabasca sandstone. Sitting within crystalline basement rock has the advantage of being able to avoid water issues normally present in the unconformity deposits such as “squishy” clay alteration, poor rock quality and high porosity and permeability. This means the deposit occurs within much more competent rock. This also bodes well for project development, both within and outside the actual mineralization. It occurs within close proximity to other high-grade, well-known deposits such as NexGen’s (TSX:NXE, BUY, C\$10.00 target, David A. Talbot) Arrow. It is also like several other past-producing mines in the basement including Cameco’s Eagle Point deposit, Orano’s McClean Lake deposits and Millenium, one of Cameco’s development projects.

Figure 5: Triple R, among other deposits, in the basement rocks

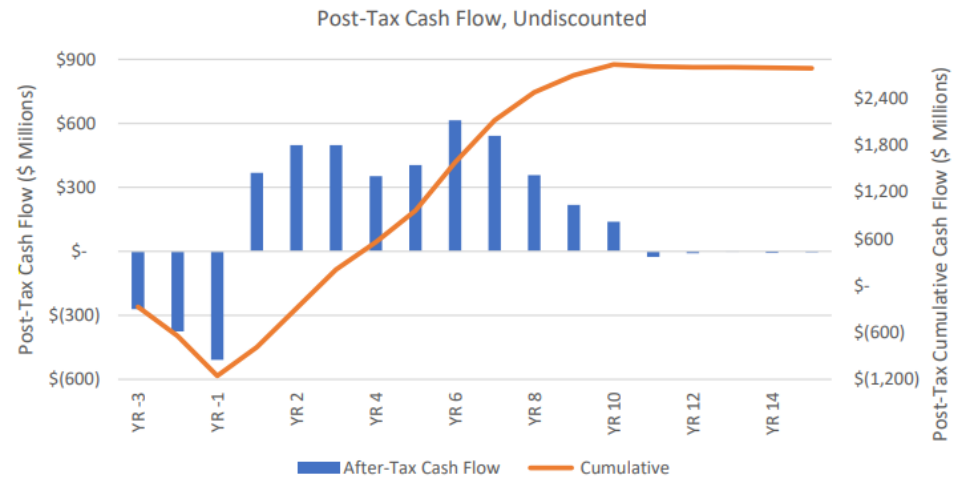


Source: Company Reports

Triple R is an underground, near-surface, and basement-hosted deposit

Ample infrastructure available. The project is readily accessible year-round as Highway 955 runs across the property. It was originally used to access the historic Cluff Lake mine, 80km to the north. The highway may require some future upgrades to support increased traffic from mines being developed at Triple R and the nearby Arrow deposit. Given that the project area is relatively new, a mill will have to be built as well, given that all the existing mills are located on the eastern side of the basin (PLS/Triple R resides on the western side of the basin). The provincial power grid does not extend to the project area. Although there may be merit for the province to extend electricity to the project area, in the case that it is not provided, Fission Uranium envisions generating its own electricity.

2023 FS illustrated robust economics. At US\$65/lb U₃O₈, PLS has an after-tax NPV_{8%} of ~C\$1.2B, IRR of 27.2%, and payback of 2.6 years. Initial capital costs are estimated at ~C\$1.2B, with sustaining capital cost of C\$384M, and closure costs of C\$74M. The average annual production rate is expected at 9.4M lb U₃O₈, while average annual after-tax net cash flows are forecasted at C\$264M, throughout the LOM. The project is expected to be built over three years starting in 2026, and begin initial production as early as 2028, or early 2029 and producing throughout a 10-year mine life.

Figure 6: After-tax, undiscounted annual and cumulative cash flows


Source: Company Reports

FS initial Capex lower than PFS despite inflationary environment.

Fission released its Pre-Feasibility Study in November 2019, followed by a Feasibility Study in March 2023. One of the notable differences in costs among these two studies was the initial capital cost. The initial capex in the FS was reported lower than in the PFS. Despite generally higher global materials prices in 2023, it was largely predicated on two project development changes. First, there was redesign of the infrastructure – the PFS envisioned re-routing Highway 955 around the mine and tailings management facility. It was found that it may be more efficient to instead use stop signs and lights for traffic control, particularly as this is a low traffic volume area. Secondly, there is no longer a desire to buy all mine equipment up front as detailed within the PFS. Fission is now considering leasing of the equipment instead, and therefore move costs further into the production timeline, capturing it in the mine AISC (all-in sustaining capital).

Figure 7: Comparison of capital costs among the 2019 PFS and 2023 FS

Description	Units	PFS Costs (C\$M)	FS Costs (C\$M)	Delta
Underground Mining	C\$M	201	176	
Processing	C\$M	350	141	
Infrastructure	C\$M	120	159	
TMF	C\$M	-	235	
Subtotal Pre-Production Direct Costs	C\$M	670	711	
Pre-Production Indirect Costs	C\$M	315	198	
Subtotal Direct and Indirect	C\$M	985	909	
Owner's Costs	C\$M	-	109	
Contingency	C\$M	192	137	
Initial Capital Cost	C\$M	1,177	1,155	(2%)
Sustaining Capital	C\$M	209	384	
Closure and Reclamation	C\$M	74	74	
Total	C\$M	1,459	1,613	11%

Source: Company Reports

Bottom quartile Opex and AISC. Our LOM average operating cost forecasts are C\$14.18/lb (US\$10.63/lb U3O8), a 10% difference from the FS of C\$12.84/lb U3O8 (US\$9.63/lb U3O8). This still ranks Fission among the late-stage development companies with the lowest operating costs.

PLS' initial capex was trimmed slightly from the PFS

Figure 8: Comparison of capital costs among the 2019 PFS and 2023 FS

Mine/Project	Location	Stage	Op. Cash Costs (US\$/lb U3O8)*	Op. Cash Costs (C\$/lb U3O8)	Op. Cash Costs (US\$/lb U3O8)
Arrow - NexGen	Western Basin	FS (2021)	\$5.53	\$7.38	\$5.61
Triple R - Fission	Western Basin	FS (2023)	\$9.50	\$12.67	\$9.63
Wheeler River - Denison/JCU	Eastern Basin	FS (2023)	\$9.67	\$12.89	\$9.80
McArthur River - Cameco/Orano	Eastern Basin	Mine (1999)	\$10.93	\$14.58	\$11.08
Cigar Lake - Cameco	Eastern Basin	Mine (2014)	\$13.69	\$18.26	\$13.88

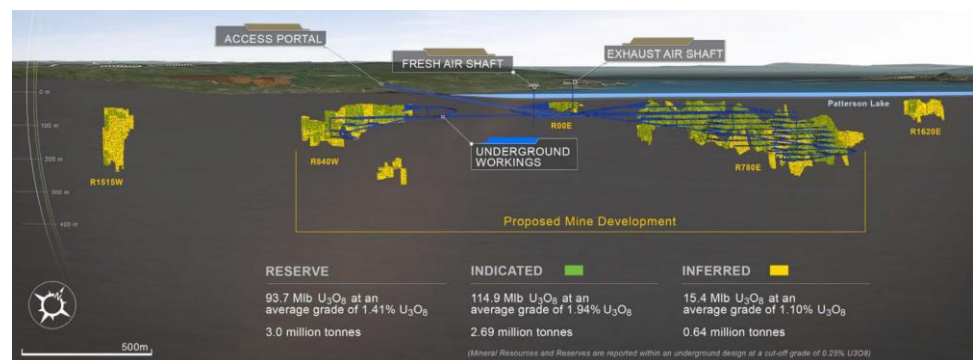
* Operating cash costs (USD) were calculated by using a CAD:USD FX rate of 0.75:1

Source: Company Reports

Conventional mining anticipated. This is a basement-hosted deposit and mining and processing methods will be conventional. A minimum of three working faces will be mined at any given time to fill the 1,000 tpd mill. Most of the mining will be via longhole open stoping (at 20m spaced levels) within the R780E zone (~70%), with the same method used for the R840E zone. The R00E zone will be mined using cut and fill methods. The mine was originally designed as an open pit, but underground made more sense from various standpoints including land use minimization, risk aversion, water impact, airborne contaminants and stakeholder desire.

Potential to expand LOM once in production. With five years to go before starting the mine with a 10-year Life of Mine (LOM), there is no need to fast-track exploration until underground development is in place. This would help save cost, time and provide better drill access points. There are existing plans to start underground resource drilling by year two or three, with costs from underground drilling (12,000m) already accounted for within the FS. There is also 840W expansion possibilities as that zone remains open.

Two zones not included within the FS - R1515W and R1620E. Only have 3 of 5 zones in the current mine plan, R780E, R00E and R840W, thus there are resources that leave potential for future expansion. Both zones will require additional drilling for upgrading to indicated and their eventual inclusion in the mine plan. Plus, there is an unnamed block of inferred resources below 840W zone. As the project's total resources increase, the life of mine should increase as well.

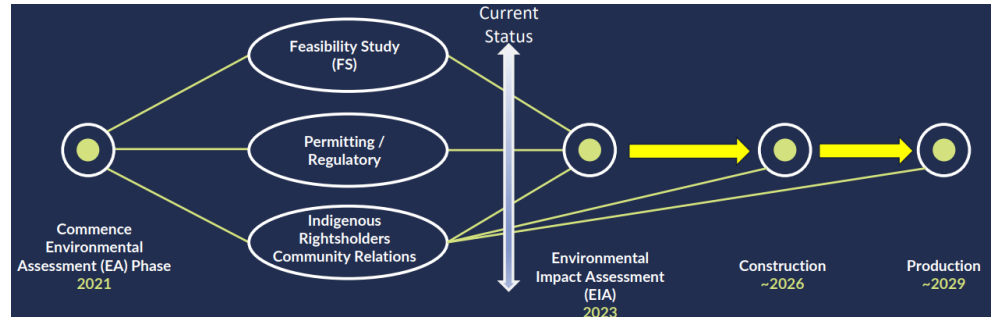
Figure 9: Triple R deposit – longitudinal section looking NW


Source: Company Reports

Two of the five zones that were not included in the PLS FS and mine model are expected to incur further exploration work

In the final phases of the Environmental Impact Assessment (EIA). There are three separate parts to the EIA process that require completion before the assessment is finalized. The first was the completion of a FS, which the company released in March 2023. The second process consists of permitting/regulatory approval. The company is currently working on the EIS, with submittal anticipated in mid 2024 and potential approval in 2025. The last process includes the signing of Indigenous Rightsholders Funding & Communication Support agreements, followed by Impact Benefit Agreements. Fission has project support at the local level and has finalized rightsholders agreements with all six key aboriginal groups. It anticipates Impact Benefit Agreements to be signed with four of these groups.

Figure 10: Pathway to EIA, construction and production for PLS



Source: Company Reports

Tailings Management Facility entirely within overburden. Due to the deposit's shallow placement below Paterson Lake, there is sufficient water within basement rocks in this location, so placing tailings underground isn't necessarily viable at Triple R. Rather, tailings will be placed entirely within a specially built pit within the overburden sand. Sand removed to make the TMF will be used within mechanical cut and fill stopes (which management says is easier to use than hydraulic fill). Furthermore, 1.2M cubic meters of aggregate has been locally sourced to use around the tailings and within underground backfill. Tailings are to be smoothed over and revegetated during closure.

Taking the decline off the critical path. Key to a timely restart is to fast-track mining of the portal to get underground and start development in order to receive the two shafts that will be started from surface. The portal is about 500m long before it hits its target length. The initial 300m will occur within sandstone, followed by mudstones and then into basement rocks. It is likely the decline will begin by dewatering local sands and then followed by the box cut and cover method. The decline will need to be prepped ahead of time to complete the air shafts.

Starting two air shafts from surface, equipping for production. The sinking of the shafts will require conventional ground freezing to get them sunk through the loose overburden, and then all freezing will cease. Management is still looking at a couple different methods to sink the shafts which will be collared in extensive sandy overburden. Shaft construction will utilize a mechanized cutter to make room for cement/bentonite panels in situ and then the material will be mucked out within the confines of the shaft walls. Fission plans to equip the 6.5m diameter shafts for hoisting and production. They will be central to the R00E and R780E zones.

Freeze wall over crown pillar. Triple R's shallow attributes are both a blessing and a curse. High grade mineralization comes right up to the

PLS is in the midst of completing its EIA

overburden surface in many places. Much of the R780E zone occurs under the lake, thus water seepage is an issue...much like Cameco's Eagle Point mine that occurs under Wollaston Lake. To help both limit water seepage and to help extract the crown pillar (uppermost ore to be removed) at the end of mine life, a portion of the crown pillar and surrounding basement rocks and overlying sands will need to be frozen. A -35-degree Celsius brine will be pumped into the area to freeze the rocks. Freezing will begin during year four and take about two years to establish. There is enough water in the sands to freeze the material, but not really enough to cause underground water flow. The R840W zone will not be frozen. Plans are to take just the lower part of crown pillar. While some material will be left in place, it didn't make sense to spend \$70M to freeze the area, losing only \$10M in revenue according to management.

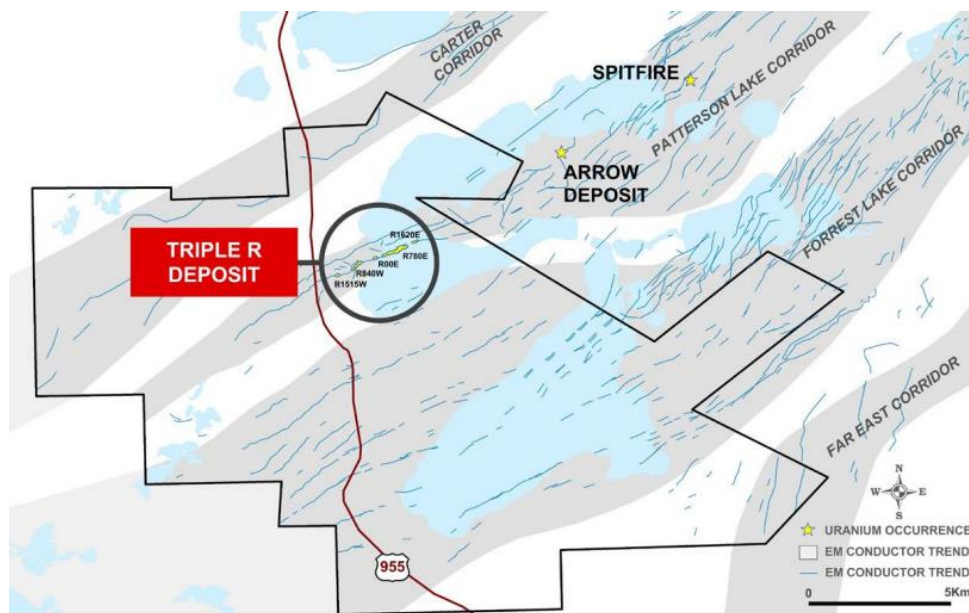
Few modifications are anticipated post-Feasibility Study. Construction and mining are largely conventional and low risk. There is not expected to be any changes post-FS, and this should help during permitting. The mill changes little from the FS. Some layout might change and procedures surrounding effluent discharge, but otherwise the processing facility is as described in the FS. A few items may see modifications such as methods of sand and/or ramp decline construction. Development of a decline through loose sand has not been done before in the Athabasca Basin, but it has been done at a diamond mine in South Africa, according to management. Fission has met with the design engineer and the contractor Red Path who did the decline for that project.

Timeline concerns being well managed. The main project development requirements remaining are Provincial and Federal permitting and FEED design. The Provincial process is well known. Fission anticipates EIA submittal mid-2024 and approval by mid-2025. The Federal licensing process with the CNSC is a little more uncertain. Fission is a new client for the CNSC and the onus is on the company to submit the required documents for approval. Once the documents are submitted and they are deemed complete, it should be a two-year approval exercise. Approval is anticipated in early 2026 which should allow construction to begin.

Considerable PLS grassroots exploration potential. The Patterson Lake South (PLS) project holds substantial exploration potential across its 31,000 hectares of land. Given that only five zones at the PLS project have been continuously advanced to date (the Triple R deposit), management suggested that Fission has systematically tested just 5% of the property. The primary objective is to identify new resources to augment the mine plan. To achieve this, Fission Uranium's key strategy involves comprehensive testing along the trend, not just expanding existing deposits, but exploring new areas. The company has over 100 EM conductors and multiple exploration hotspots throughout the property. As the uranium market remains hot, exploration work is likely to be supported. This proactive approach is likely to result in increased exploration activities in 2023 and 2024. The property is expected to remain one of the best greenfields properties in the basin, showcasing its exceptional potential. The exploration process has employed various techniques, including electromagnetic (EM), magnetic, and radiometric surveys. These surveys were initially successful at locating high-grade boulders that were traced back to the deposit. Radon gas surveys should help provide valuable insights into the structural nature of these faults, helping in further exploration planning.

The next near-term development catalysts are Provincial and Federal permitting and FEED design

Figure 11: Exploration potential at PLS (the circle marks only exploration completed on the property to date)



Source: Company Reports

We have not included West Cluff in our valuation and therefore represents free upside for investors

Potential upside at West Cluff. Of secondary focus is the West Cluff property. It covers 11,148 ha and both the margin/near margin of the western side of the Carswell structure in the Western Athabasca Basin. The property is located <3km west of the past producing Cluff Lake mine (>62M lb U₃O₈ produced) and 250km north of the town of La Loche. Fission is targeting similar mineralization to that found at Cluff Lake. The project is available via an all-season access road via Highway 955. We do not include Cluff Lake as part of our valuation and therefore represents free upside.

The receipt of final permits and completion of the EIA are important steps in the development of PLS

Catalysts

Key near-term catalysts include EIA submission, receipt of permits, Impact Benefit Agreements, exploration drilling and further development work. Further development should help further de-risk the PLS property and push it closer to production. Although the Triple R deposit is of primary focus, other parts of the PLS property are expected to incur further drilling as well. Looking ahead, we anticipate Fission to initiate and advance financing discussions for PLS' start-up capex upon completion of the EIA.

Upcoming Catalysts include:

1. Environmental Impact Assessment submittal (EIA) (2024)
2. Advanced engineering and design (ongoing)
3. Exploration at PLS (2023-2024)
4. Financing discussions (ongoing)
5. Offtake agreements (likely pending)
6. Provincial permits – EIS Approval (2025)
7. Federal license from CNSC (2026)
8. Commencement of construction (2026)
9. Commencement of production (2028-2029)

Capital Structure and Ownership

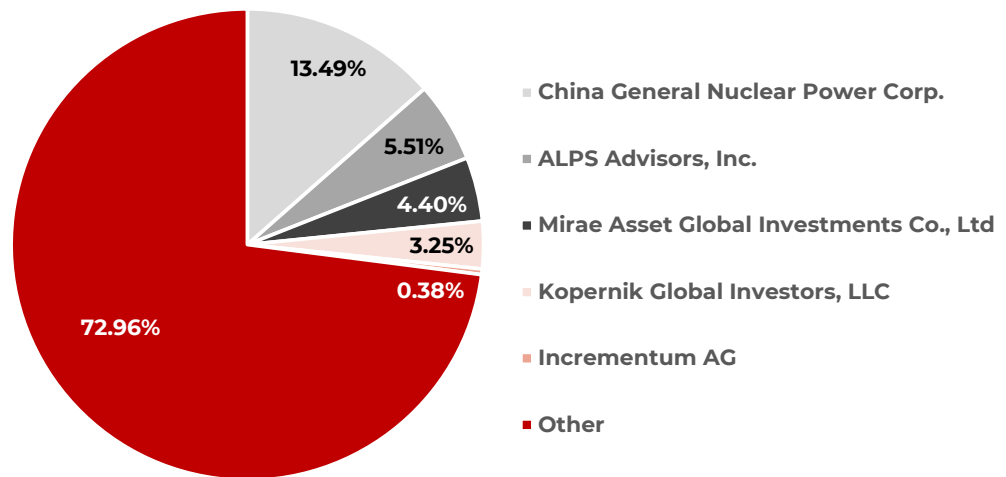
Shares, options, and warrants. Fission had 723M common shares outstanding with 803M fully diluted as of its most recent corporate presentation. The company had ~54M stock options with exercise prices ranging between C\$0.31 and C\$0.87 and ~26M warrants outstanding at an exercise price of C\$0.85.

Last financing closed in May/21. Fission closed a bought deal in May 2021 for ~C\$34.5M through the issuance of 57.5M units at C\$0.60/sh. Each unit consisted of one common share and one-half of a warrant. Each warrant was priced at C\$0.85 and available for purchase until May 11, 2024. The net proceeds from the offering were put toward the development of Triple R, as well as for working capital and general corporate purposes.

Ownership. The company's shareholder base primarily consists of three segments – strategic (13.5%), institutional (~40%) and retail (~45%). The company's largest shareholder is China General Nuclear which owns ~13.5%. Fission has had a long-standing partnership with the Chinese state-owned utility that involves future uranium sales. Other top holders include ALPS Advisors (~5.5%), Mirae Asset Global Investments (~4.4%), Kopernik Global Investors (~3.3%), and Incrementum AG (~0.4%) (Figure 12).

Fission's largest shareholder is China General Nuclear Power (~13.5%)

Figure 12: Top five shareholders



Source: S&P Capital IQ

Valuation and Financial Analysis

We are initiating coverage of Fission Uranium with a BUY rating and C\$1.50/sh target price. Our target price was derived through three main parts: 1) a DCF analysis to value the PLS project using an 8% discount rate, 2) adding back value for cash, debt, additional resources, and deducting value from the interest expense from financing and corporate G&A, and 3) application of a 0.90x target multiple.

DCF Model Assumptions

Five key decisions drive our valuation. We assume Fission will be successful in the following: 1) securing debt and equity financing for mine construction, 2) starting mine construction in 2026, 3) ramping up uranium production in early 2028, 4) producing for a 13-year mine life, and 5) producing uranium at a long-term price of US\$60/lb.

Our model assumptions deviate slightly from the 2023 FS. We have modelled the PLS property to produce uranium over a 13-year mine life, mining at the reserve grade of 1.41% U₃O₈ for the first ten years, before switching over to the inferred grade of 1.10% U₃O₈ for the final three years. We note that most of our operational inputs are in line with the FS for the initial 10-year period. However, given the increased production and extended mine life, our LOM assumptions deviate from the study. Thus, our project economics forecasts differ from those provided in the FS.

Our estimates indicate that the project's after-tax NPV_{8%} should be higher than that in the Feasibility Study (FS). We estimate ~C\$1.6B, while the FS has reported ~C\$1.2B

1. Our after-tax NPV_{8%} is estimated at ~C\$1.6B and +33% higher in comparison to the FS at ~C\$1.2B, despite using a lower uranium price forecast. We note that this difference was primarily due to deviations in production rates, using a longer mine life, and the uranium price. We believe that a uranium price of US\$60/lb is reasonable to assume as we enter the next phase of a potential uranium bull market. This is slightly more conservative than the US\$65/lb used in the FS.
2. Our initial and closure capital costs are in line with the FS at C\$1,155M and C\$74M. Our construction period lasts for three years starting in 2026, while production begins in 2028 and concludes in 2040. This demonstrates a mine life of 13 years and the difference in our sustaining capital costs (~C\$461M), when compared to the FS (~C\$384M).
3. Our average annual and total production and after-tax net cash flow forecasts differ from those estimated in the 2023 FS. Our model forecasts average annual production of ~9.2M lb U₃O₈ (vs FS at ~9.4M lb U₃O₈) and total production of ~120M lb U₃O₈ (vs FS at ~94M lb U₃O₈). When compared to the study, the percentage change in average annual and total production is -1% and +28%. Additionally, average annual and total after-tax cash flows differ by +14% and +48%.
4. Our mine life forecast is ~13 years, which is higher than FS plans of 10 years. As a result, we have used more material to put through the mine. We don't anticipate production will vary much from the current mine schedule but do believe that Fission's existing resource upgrade potential and likelihood of expansion will ultimately be capable of being added into the mine plan, thus extending LOM. We assume an additional ~30M lb U₃O₈ in mineral inventory upside in our estimates.

5. We assume nominal throughput capacity of 1,000 tpd, in line with the FS. However, we note that our average throughput rate used

throughout the mine life was 904 tpd. The difference was primarily due to lower throughput rates used during the final years of the extended mine life. The average feed grade used during the extended LOM was 1.35% U3O8, and slightly lower than the FS (reserve) grade used of 1.41% U3O8, since our model uses 1.10% U3O8 (in line with current inferred grades) during the final three years of the new LOM.

6. Our average operating cost estimates are slightly above those used in the Feasibility Study at C\$14.18/lb (+9%). We note that the variation between our costs and the FS is primarily due to differences in throughput rates, grades, production schedule, and mine life. To fit with the definition of Total Cash Costs, we also include royalties in our cash cost estimates, not accounting for them by adjusting revenue.

Figure 13: Comparison of project parameters by study (RCS Estimates vs FS)

Project Parameters	RCSI Assumptions	Feb-21 Feasibility Study	Delta
Project Economics			
After-Tax NPV @ 8%	C\$1.60B	C\$1.20B	33%
Long-term uranium price	US\$60.00/lb	US\$65.00/lb	(8%)
Capital Costs			
Total Initial Capital Costs	C\$1,155M	C\$1,155M	-
Total Sustaining Capital Costs	C\$461M	C\$384M	20%
Total Closure Costs	C\$74M	C\$74M	-
Production and Cash Flow Summary			
Average Annual Production	9.24M lb U3O8	9.37M lb U3O8	(1%)
Total Production	120.1M lb U3O8	93.7M lb U3O8	28%
Average Annual After-Tax Net Cash Flow	C\$317M	C\$279M	14%
Total After-Tax Net Cash Flow	C\$4,126M	C\$2,787M	48%
Operating Parameters			
Nominal Mill Capacity	1,000 tpd	1,000 tpd	-
Average Annual Mill Feed Grade	1.35% U3O8	1.41% U3O8	(4%)
Mine Life	13.0 years	10.0 years	30%
Average Annual Operating Cost ("OPEX", Life of Mine)	C\$14.18/lb U3O8	C\$13.02/lb U3O8	9%

Source: Company Reports, RCS Estimates

We anticipate that the initial capex for the project will be funded through an approximate 80-20 split between debt & equity

We anticipate debt-heavy project funding. Our project NAV incorporates the debt and equity funding expected to be raised for the purposes of mine construction, in the combined amount of ~C\$866M. Our assumptions assume that Fission may raise ~C\$693M in debt (~80% of total funding) and ~C\$173M in equity financing (~20% of total funding). We do not include any pre-paid off-takes or other strategic forms of funding at this time.

Additional Resource Value. We have incorporated additional resources into our total NAV estimate through a "pounds in the ground" valuation method. We assume that Fission will continue to explore PLS, and particularly the R1515W and R1620E zones – two of the five zones that have yet to be developed enough to be included in the mine model. As exploration work continues and additional holes are drilled into these zones, we expect 30M lb U3O8 to be added to the mine model in the future. We also applied an in-situ value of C\$3.33/lb (US\$2.50/lb) to these resources, which provided us with a total value of ~C\$100M, or C\$0.11 per fully diluted share (incl. shares used for financing purposes).

Figure 14: NAV Summary Table

Net Asset Value		C\$M	C\$/sh FD
Projects			
Patterson Lake South (100%-owned)	8%	\$1,599.4	\$1.73
Asset NAV		\$1,599.4	1.73
Cash & cash equivalents		\$44.7	0.05
Debt		-	-
Additional resource value		\$99.9	0.11
Interest expense		(\$212.4)	(0.23)
Corporate G&A		(\$49.7)	(0.05)
Total NAV		\$1,481.9	\$1.61
Multiple			0.90x
Target			\$1.50

Source: RCS Estimates

Our target price is most sensitive to changes in the long-term uranium price and CAD:USD FX rate

Sensitivity Analysis

We have identified several key financial and operational factors that significantly influence our target price for Fission. These factors are subject to potential changes over the project's mine life, making them crucial considerations in our valuation. The four factors we have chosen are as follows: 1) Long-term uranium price, 2) CAD:USD FX rate, 3) Target NAV multiple, and 4) Discount rate. Among the tables presented in Figure 16, the first table (long-term uranium price vs. CAD:USD FX rate) exhibits the highest sensitivity to incremental adjustments in both inputs. For instance, even a US\$5/lb deviation from our long-term uranium price assumption of US\$60/lb could result in a substantial alteration to our target price, ranging from C\$0.15/sh to C\$3.80/sh. It's essential to closely monitor these factors and their potential fluctuations as they can significantly impact our valuation of Fission. We will continually reassess and update our analysis based on the evolving market conditions.

Figure 15: Sensitivity of target price to U price, FX rate, discount rate, and NAV multiple

		Long-term Uranium Price (US\$/lb)								
		\$40	\$45	\$50	\$55	\$60	\$65	\$70	\$75	\$80
CAD:USD FX Rate	0.55	1.10	1.45	1.80	2.10	2.45	2.80	3.10	3.45	3.80
	0.60	0.90	1.25	1.55	1.85	2.15	2.45	2.75	3.05	3.35
	0.65	0.75	1.05	1.30	1.60	1.90	2.15	2.45	2.75	3.00
	0.70	0.60	0.90	1.15	1.40	1.65	1.95	2.20	2.45	2.70
	0.75	0.50	0.75	1.00	1.25	1.50	1.70	1.95	2.20	2.45
	0.80	0.40	0.60	0.85	1.10	1.30	1.55	1.75	2.00	2.20
	0.85	0.30	0.50	0.75	0.95	1.15	1.40	1.60	1.80	2.00
	0.90	0.20	0.40	0.60	0.85	1.05	1.25	1.45	1.65	1.85
	0.95	0.15	0.35	0.55	0.70	0.90	1.10	1.30	1.50	1.70

		Long-term Uranium Price (US\$/lb)								
		\$40	\$45	\$50	\$55	\$60	\$65	\$70	\$75	\$80
Discount Rate (%)	6.0%	0.70	0.95	1.25	1.55	1.85	2.15	2.45	2.75	3.00
	6.5%	0.65	0.90	1.20	1.45	1.75	2.05	2.30	2.60	2.85
	7.0%	0.60	0.85	1.10	1.40	1.65	1.90	2.20	2.45	2.70
	7.5%	0.55	0.80	1.05	1.30	1.55	1.80	2.05	2.35	2.60
	8.0%	0.50	0.75	1.00	1.25	1.50	1.70	1.95	2.20	2.45
	8.5%	0.45	0.70	0.95	1.15	1.40	1.65	1.85	2.10	2.35
	9.0%	0.45	0.65	0.85	1.10	1.30	1.55	1.75	2.00	2.20
	9.5%	0.40	0.60	0.80	1.05	1.25	1.45	1.70	1.90	2.10
	10.0%	0.35	0.55	0.75	1.00	1.20	1.40	1.60	1.80	2.00

		Long-term Uranium Price (US\$/lb)								
		\$40	\$45	\$50	\$55	\$60	\$65	\$70	\$75	\$80
Target NAV Multiple	0.70x	0.40	0.60	0.75	0.95	1.15	1.35	1.55	1.70	1.90
	0.75x	0.40	0.60	0.85	1.05	1.25	1.45	1.65	1.85	2.05
	0.80x	0.45	0.65	0.90	1.10	1.30	1.55	1.75	1.95	2.20
	0.85x	0.45	0.70	0.95	1.15	1.40	1.65	1.85	2.10	2.30
	0.90x	0.50	0.75	1.00	1.25	1.50	1.70	1.95	2.20	2.45
	0.95x	0.55	0.80	1.05	1.30	1.55	1.80	2.05	2.35	2.60
	1.00x	0.55	0.80	1.10	1.35	1.65	1.90	2.20	2.45	2.70
	1.05x	0.60	0.85	1.15	1.45	1.70	2.00	2.30	2.55	2.85
	1.10x	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00

Source: RCS Estimates

Fission currently trades at a premium to its peer group, and we believe a large gap could develop in the near to mid-term

David A. Talbot | MD, Mining Analyst

Trading at a premium to peers. Fission Uranium separates itself from exploration and development-stage peers with its advanced, shallow, high grade PLS project (Triple R deposit). This is the basin's only project that has all of the following criteria: 1) near-surface, 2) basement-hosted, 3) high-grade and 4) advanced-stage. We note that the project's resource and reserve base could expand as further potential is unlocked at two of the five underexplored and underdeveloped zones. **We believe a trading premium is warranted given the sizeable production profile, low operating cost profile, and exploration potential. We also believe that a larger trading premium could develop as the company continues to de-risk the asset with further exploration and development work and receipt of permits.** Fission trades at an EV/lb U3O8 of US\$2.88, in comparison to its peer average of US\$3.41. On a P/NAV basis, Fission trades at a slight discount at 0.36x, versus the peer group average of 0.53x. We expect that a wider premium may be warranted as its Environmental Impact Assessment (EIA) is submitted, project financing is established, off-takes are arranged, and construction begins.

Figure 16: Comparable companies' analysis

Uranium Explorers/Developers	Ticker	Price (C\$/sh)	MC (C\$M)	Cash (C\$M)	Debt (C\$M)	EV (C\$M)	US\$ EV/lb U3O8	P/NAV	NAVPS	Resource (Mlb)
Denison Mines Corp.	TSX:DML	\$1.66	\$1,387	\$67	\$1	\$1,321	\$4.34	0.65x	\$2.56	228.1
GoviEx Uranium Inc.	TSXV:GXU	\$0.12	\$80	\$2	-	\$78	\$0.22	0.13x	\$0.91	271.1
Lotus Resources Limited	ASX:LOT	\$0.19	\$258	\$22	-	\$236	\$4.10	0.57x	\$0.33	43.3
Paladin Energy Ltd	ASX:PDN	\$0.66	\$2,030	\$221	\$115	\$1,924	\$3.85	0.80x	\$0.83	375.4
Forsys Metals Corp.	TSX:FSY	\$0.36	\$70	\$16	-	\$54	\$0.67	NA	-	61.1
Global Atomic Corporation	TSX:GLO	\$1.47	\$297	\$52	\$1	\$246	\$1.03	0.26x	\$5.59	179.3
enCore Energy Corp.	TSXV:EU	\$3.23	\$465	\$8	\$77	\$534	\$9.10	0.61x	\$5.28	44.0
Laramide Resources Ltd.	TSX:LAM	\$0.45	\$102	\$5	\$4	\$101	\$0.66	NA	-	114.3
NexGen Energy Ltd.	TSX:NXE	\$6.33	\$3,108	\$141	\$79	\$3,045	\$6.77	0.70x	\$9.04	337.4
Average							\$3.41	0.53x	\$2.73	183.8
Fission Uranium Corp.	TSX:FCU	\$0.58	\$420	\$45	-	\$375	\$2.88	0.36x	\$1.61	130.3

Source: S&P Capital IQ, RCS Estimates

Asset Overview

Patterson Lake South (PLS) Project

Fission's flagship PLS project is host to the high-grade, near-surface Triple R deposit

The Patterson Lake South (PLS) property is in northern Saskatchewan, approximately 550km north-northwest of Prince Albert by air and 157km north of La Loche by road. This property is home to the Triple R deposit, a development-stage project currently progressing through environmental assessment and licensing. The deposit consists of five zones arranged from east to west: R1515W, R840W, R00E, R780E, and R1620E. Fission possesses all the necessary permits to conduct work on the PLS property.

Figure 17: Regional map of the Rook I property



Source: Company Reports

Ownership

Fission has a 100%-interest in the PLS project. It consists of 17 claims covering an area of 31,039 ha on the SW margin of the Athabasca Basin. There are no other royalties, back-in rights, or other encumbrances due to the project, in exception to a current SK provincial royalty of ~7.5%.

Access and Infrastructure

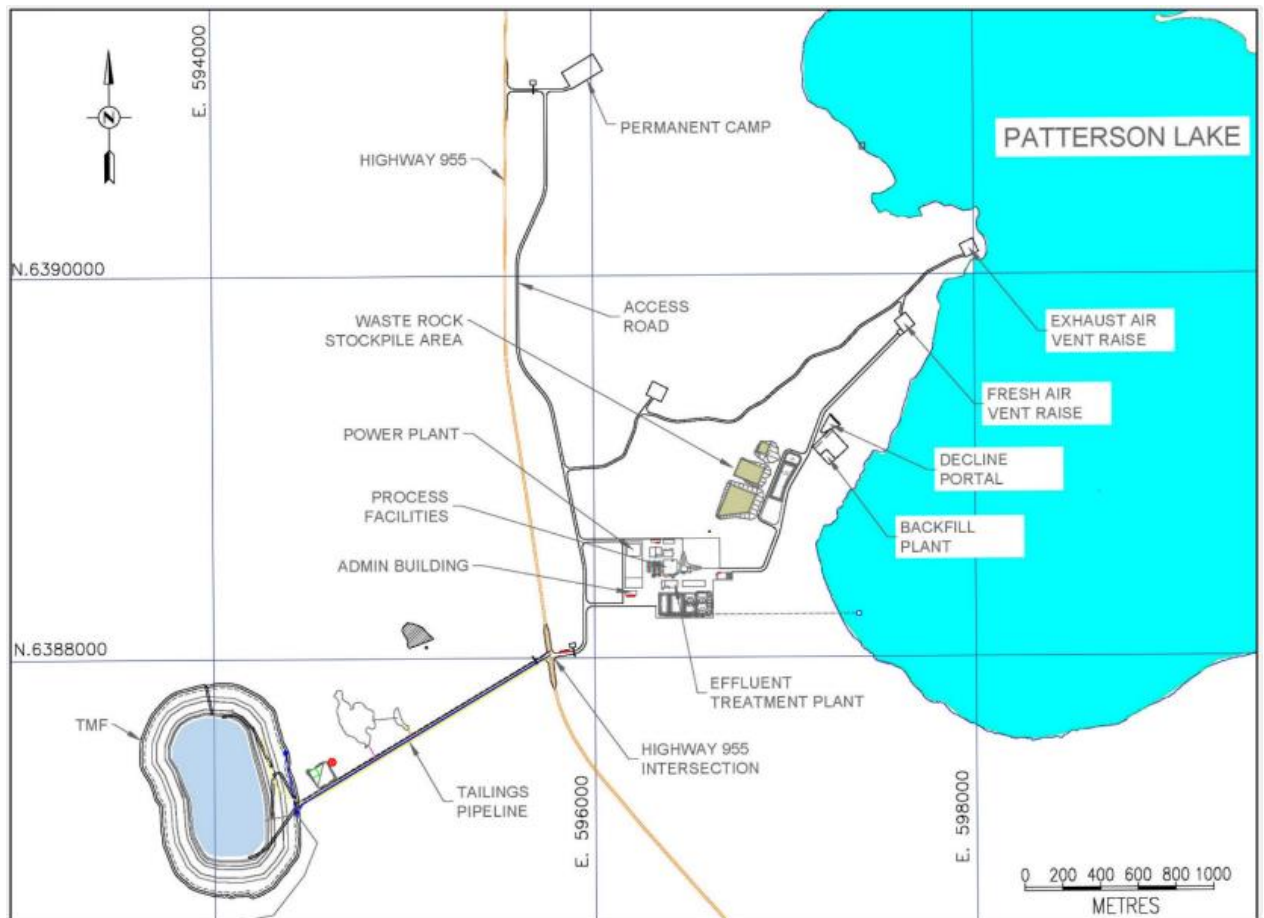
The property is reachable by vehicle through an all-weather gravel Highway 955 originating in La Loche, heading northwards through the Shea Creek deposit area to the past producing Cluff Lake uranium mine property. The highway bisects the PLS property from north to south. Access roads branching off from Highway 955 provide entry to the east and west halves of the property. For air travel, fixed-wing aircraft charters are available at Fort McMurray in Alberta, Buffalo Narrows, or La Loche, SK.

The potential design of PLS' project infrastructure was included in the March 2023 FS

The PLS property currently lacks permanent infrastructure, necessitating the construction of several key components. According to PLS' Feasibility Study, these components would include:

- 1) Fresh and exhaust air ventilation shafts, a decline for ore transport from underground to the surface, a freeze plant, dewatering wells, a backfill plant, and an intermediate settling/polishing pond.
- 2) Process facilities, such as ore stockpile, process plant, SX plant, acid plant, effluent treatment facility, surface run-off and monitoring ponds, and an assay laboratory.
- 3) Tailings Management Facility (TMF) to handle tailings and water associated with mill feed processing, along with tailings transport and disposition systems and a reclaim water system.
- 4) On-site connective access roads linking site infrastructure and Highway 955, incorporating site access controls, and
- 5) Ancillary facilities like a truck shop, machine shop, warehouse, power plant, and distribution system, liquified natural gas (LNG) storage and laydown area, as well as a waste rock management facility, among other items.

Figure 18: Overall site layout



Source: Company Reports

Geology and Mineralization

The east-west elongate of the Athabasca Basin lies within two subdivisions of the Western Churchill province – the Rae Subprovince to the west and the Hearne Subprovince to the east. PLS is located within the Clearwater and Taltson domain of the Rae Subprovince: 1) western portion of PLS overlies the Clearwater domain and 2) eastern portion of PLS overlies the Taltson domain.

Basement rocks at PLS consist of the Clearwater and Taltson domains. The Clearwater domain consists of gneissic granitoids, anorthosite, monzodioritic, and granites. The Paleoproterozoic Taltson domain rocks comprise granulite facies orthogneisses derived from diorite, quartz diorite and quartz monzodiorite, with subordinate tonalite, granodiorite and granite. Mafic and ultramafic rocks include [orthogneisses](#).

The Triple R deposit is a basement-hosted vein-type deposit or fracture-filled uranium deposit. Relatively minor amounts of uranium were identified in the overlying Devonian sediments and mineralization was discovered in the basement at depths ranging from immediately at or just below the unconformity to 400m below it. Uranium is present as uraninite/pitchblende which occurs as veins and semi-massive to massive replacement bodies. Mineralization within the Meadow Lake formation sedimentary rocks occurs as fine-grained disseminations, sooty blebs, and rarely semi-massive uranium mineralization. When mineralized, Meadow Lake is often strong clay and chlorite altered.

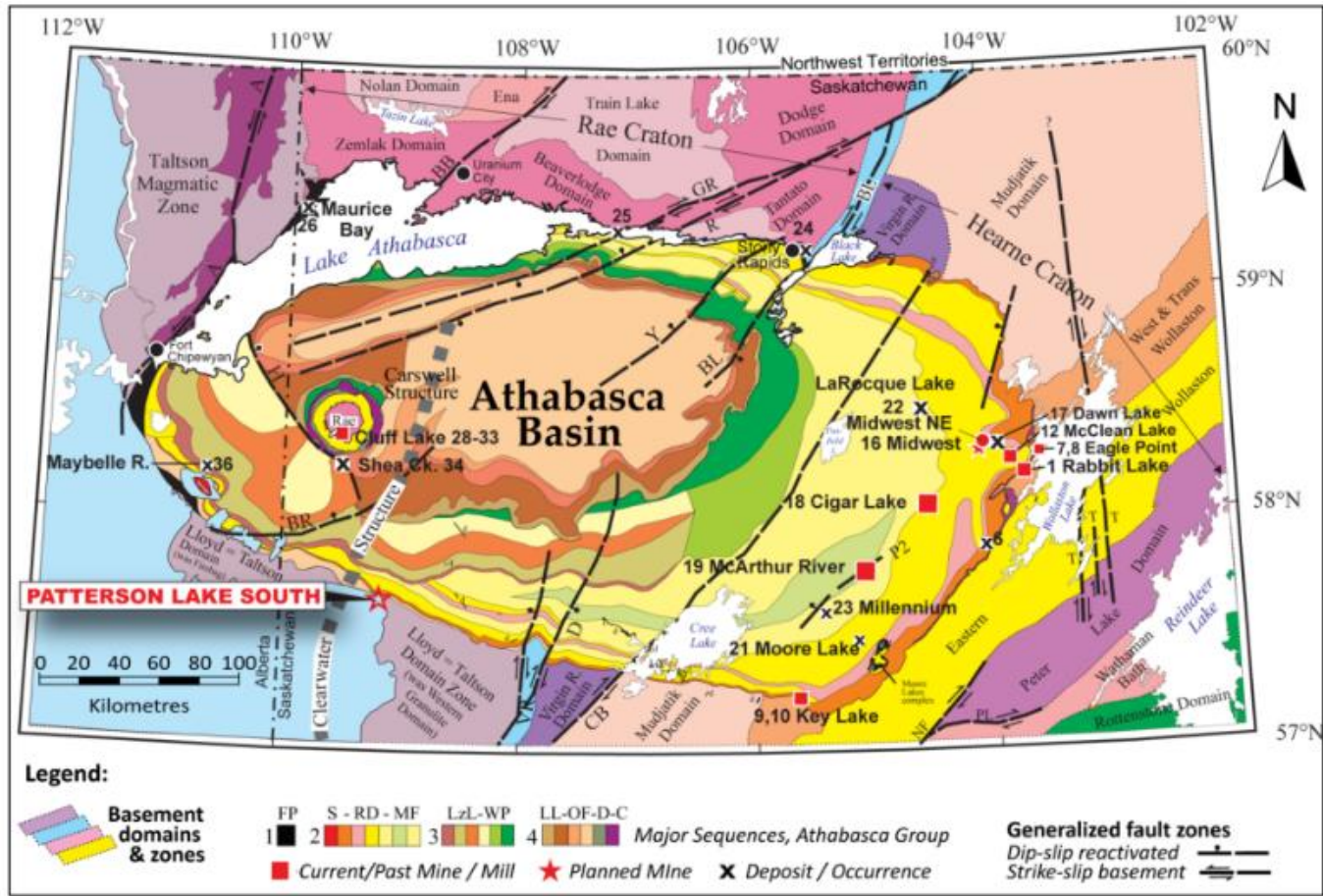
Basement-hosted mineralization at PLS occurs in a wide variety of styles and primarily of fine-grained disseminated and fracture filling uranium minerals associated with hydrocarbon/carbonaceous matter within the Mineralized Shear Zone (MSZ) contact. Often, mineralization within the MSZ is associated with pervasive, strong, grey-green chlorite and clay alteration. Less common styles of uranium mineralization within the MSZ, are often associated with high-grade grade uranium including semi-massive and hydrocarbon rich, intensely clay altered (kaolinite) with uranium-hydrocarbon buttons, and massive metallic mineralization. These zones of very high-grade mineralization occur along the contact of the MSZ and comprise a high-grade mineralized spine.

Uranium mineralization within the north and south quartz-feldspar-biotite-garnet gneiss (QFBG-GN) that bounds the MSZ generally occurs as fine-grained disseminations and is often associated with pervasive whitish-green clay and chlorite alteration with local pervasive hematite.

Mineralogical work at PLS has indicated that the dominant uranium mineral present is uraninite, with lesser amounts of coffinite, possible brannerite and U-Pb oxide/oxyhydroxide. Uranium minerals occur mainly as anhedral grains and polycrystalline aggregates with irregular terminations, developed veinlets, locally showing extreme complex intergrowth with silicates, micrometric inclusions and dendritic intergrowths with silicates, and very fine-grained disseminations intercalated with clays. Uranium minerals also occur as hydrocarbons.

Basement-hosted mineralization at PLS occurs in a variety of unique styles

Figure 19: Regional geology in the Athabasca Basin



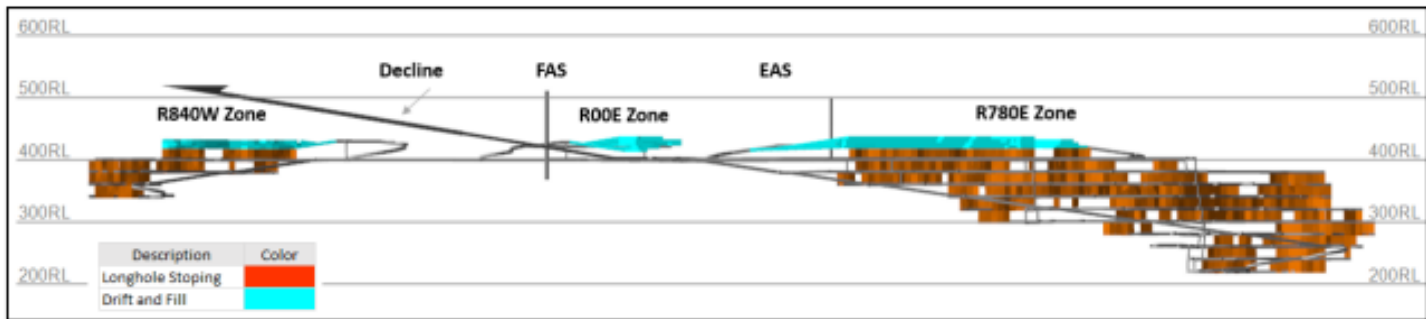
Source: Company Reports

Longhole stoping is the primary method of mining at PLS

Mining Methods, Mineral Processing, and Metallurgical Testing

The primary method of mining at Triple R is longhole open stoping using longitudinal retreat. In the longitudinal areas of mining, the lenses are expected to be mined from southwest to the northeast in a bottom-up sequence, except for one area in the latter part of the mine life that is to be mined underneath a sill pillar. The mine design incorporates three primary zones – R780E, R00E, R840W. Additional cut and fill mining will access areas without much vertical extent.

Figure 20: Longitudinal view of mine design with mining methods (looking NW)



Source: Company Reports

The processing plant is designed to process ore at a nominal throughput rate of 1,000 tpd. The average LOM mill feed grade is expected to be 1.41% U3O8 and the expected overall recovery is to be 97%. We note that a recovery rate of 95% was applied to all stopes and cost estimates within the Feasibility Study. A conventional grinding and leaching circuit is also expected to be used for the uranium extraction process.

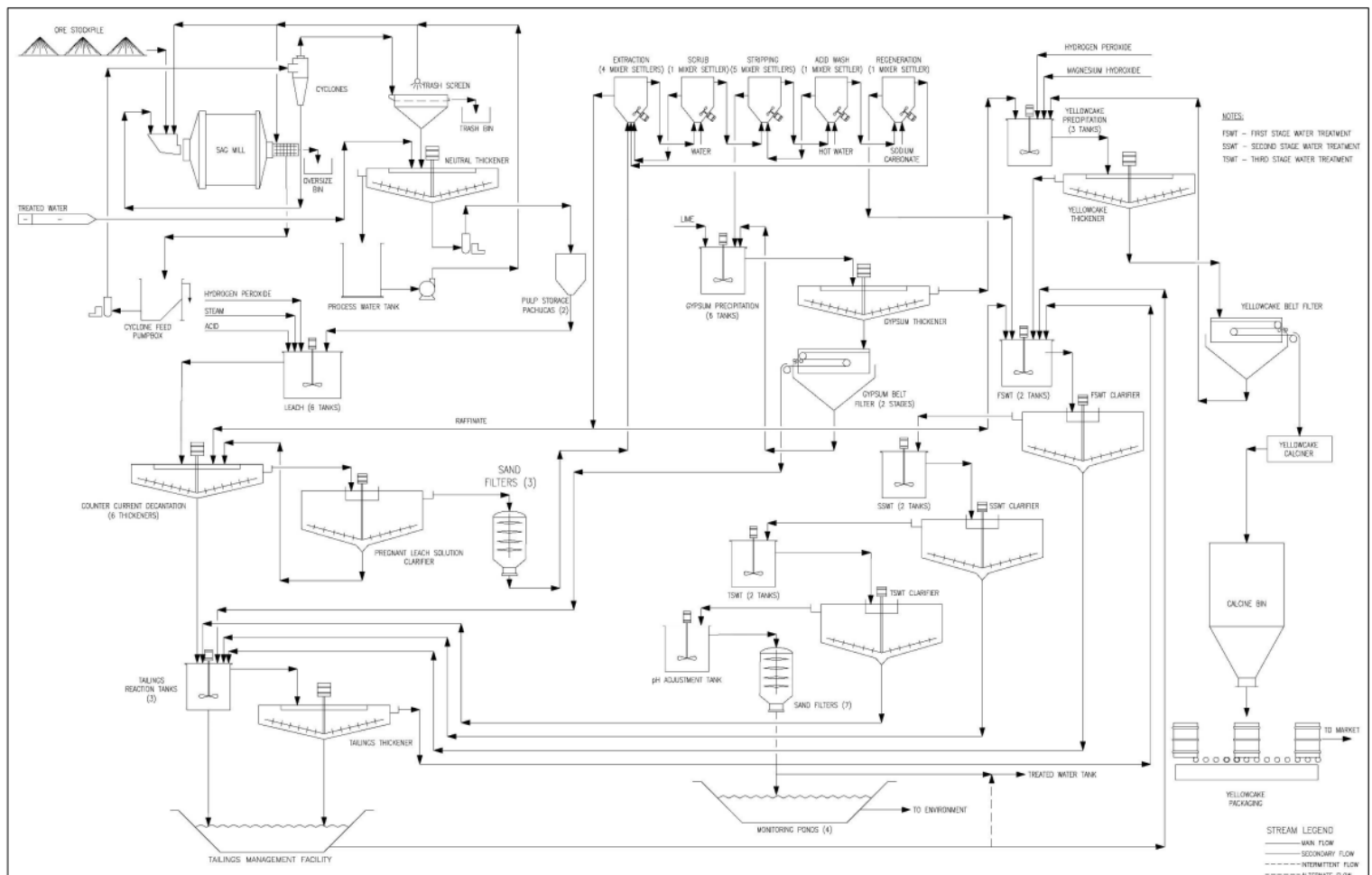
The proposed mine plan is based on a mill feed ratio of 75% for material from the R780E zone and 25% from the R840W zone.

The processing plant can process ore at a nominal throughput rate of 1,000 tpd

SGS Lakefield was appointed to conduct the metallurgical test work. The test work program encompassed the following: preparation of analysis of test composites, including mineralogy, comminution testing, leaching and liquid-solid separation, solvent extraction (SX) of uranium, gypsum removal and precipitation of uranium yellowcake, testing of gold and silver recovery, and tailings and effluent treatment, tailings physical and chemical characterization and environmental testing on prepared tailings.

A process flowsheet for the project is illustrated in Figure 21.

Figure 21: Simplified process flowsheet



Source: Company Reports

Project History

1961 – The PLS property was geologically mapped as part of a larger area by W.F. Fahrig for the Geological Survey of Canada (GSC). During the year, another geological mapping project was completed by L.P. Tremblay covering PLS and the Firebag River area.

1969 – Photogeologic mapping and airborne radiometric and magnetic surveys were completed on PLS for Wainoco Oil and Chemicals Ltd. The survey did not detect any notable structures or anomalies.

1977 to 1981 – CanOxy completed exploration on and around the property. Exploration comprised of an airborne Questor INPUT electromagnetic (EM) survey, horizontal loop EM (HLEM) and magnetic geophysical surveys; geological, geochemical, alphameter, radiometric surveys; and diamond drilling.

2007 – Claims comprising the PLS property were ground staked from February 2007 to December 2011.

2008 – In January, Fission Energy and ESO Uranium Corp. (ESO) entered into a 50/50 JV and contributed the claims existing at that time.

2013 – In March, Fission Energy entered into an agreement with Denison (TSX:DML, Not Rated), whereby Denison agreed to acquire all issued and outstanding shares of Fission Energy. Fission Energy then spun-out specific assets, including its 50% interest in PLS, into a newly formed, publicly traded company, known as Fission Uranium Corp. FCU subsequently acquired the other half of the project.

2015 – In November, Fission reported results from the final seventeen resource expansion angled holes of the 2015 summer exploration program; thirteen drilled the R600W zone and four drilled the R780E zone.

2016 – In July, Fission commenced summer 2016 drilling at PLS, focused on new zones and regional exploration. From July through to October, it continued to report results from the program. In December, Fission announced preparations for a 34-hole (10,105m) winter program at PLS.

2017 – Drilling results were reported at PLS throughout the year.

2018 – Drilling results were reported at PLS throughout the year.

2019 – Drilling results were reported at PLS throughout the year. In April, Fission released the results for a Prefeasibility Study (PFS) (underground-only) and first time estimate of mineral reserves at PLS.

2020 – No exploration or development updates were reported at PLS throughout the year.

2021 – Drilling results were reported at PLS throughout the year. In June, it commenced work for a Feasibility Study at PLS. In December, it commenced an environmental assessment for PLS.

2022 – In June, it entered into an engagement and capacity agreement with the Ya'thi Nene Lands and Resources Office. In July, Fission signed an engagement and communication agreement with the Buffalo River Dene

Nation (BRDN). In September, it provided an updated resource estimate for Triple R. In November, Fission entered into an engagement and capacity agreement with the Birch Narrows Dene Nation (BNDN). Also in November, it reported assays from the summer 2021 metallurgical and geotechnical testwork drill program.

Note: The gaps in timing in between 1981 and 2007 are present due to the lack of information provided.

Mineral Resource

Fission released an updated resource estimate for the PLS project in September 2022. Of the total 844 drill holes completed, 696 drill holes (213,969m) were used in the mineral resource estimate.

Provided was a simplified table outlining the total indicated and inferred resources (Figure 22) and a more detailed table outlining the different zones and their corresponding contributions to the resource (Figure 23).

Figure 22: Simplified table of the mineral resources at PLS

Category	Tonnage (kt)	Metal Grade		Contained Metal	
		% U3O8	(g/t Au)	M lb U3O8	k oz Au
May 17, 2022 Estimate					
Indicated	2,688	1.94%	0.61	114.9	52.7
Inferred	635	1.10%	0.44	15.4	9.0
Indicated + Inferred	3,323	1.78%	0.58	130.3	61.7

Source: Company Reports

Figure 23: Detailed table of the mineral resources at PLS (by zone)

Zone	Tonnage (000 t)	Metal Grade		Contained Metal	
		% U3O8	g/t Au	M lb U3O8	k oz Au
Indicated					
R780E_HG	162	16.91	2.73	60.4	14.2
R780E_MZ	1,578	0.79	0.48	27.5	24.1
R780E_OTHER	429	0.95	0.62	9.0	8.6
R00E	98	1.50	0.15	3.2	0.5
R1620E	42	1.98	0.19	1.9	0.3
R840W	303	1.35	0.36	9.0	3.6
R840W_HG	9	11.32	2.38	2.2	0.7
R1515W	67	1.15	0.38	1.7	0.8
Total Indicated	2,688	1.94	0.61	114.9	52.7
Inferred					
R780E_HG	-	11.80	5.73	0.1	0.1
R780E_MZ	16	0.33	0.29	0.1	0.2
R780E_OTHER	254	0.60	0.46	3.4	3.8
R00E	9	3.83	0.79	0.7	0.2
R1620E	59	3.55	0.48	4.6	0.9
R840W	63	1.10	0.37	1.5	0.7
R1515W	234	0.96	0.42	5.0	3.1
Total Inferred	635	1.10	0.44	15.4	9.0
Total Indicated + Inferred	3,323	1.78	0.58	130.3	61.7

Source: Company Reports

Notably, the 2022 resource estimate was as an updated version from the 2019 resource estimate, which featured a lower grade and size profile.

PLS is host to an indicated and inferred resource base of 3.3Mt at 1.78% for 130M lb U3O8

Figure 24: Comparison between 2022 and 2019 MRE

Category	Tonnage (kt)	Metal Grade		Contained Metal	
		% U3O8	(g/t Au)	M lb U3O8	k oz Au
May 17, 2022 Estimate					
Indicated	2,688	1.94%	0.61	114.9	52.7
Inferred	635	1.10%	0.44	15.4	9.0
Indicated + Inferred	3,323	1.78%	0.58	130.3	61.7
September 19, 2019 Estimate					
Indicated	2,216	2.10%	0.61	102.4	43.1
Inferred	1,221	1.22%	0.50	32.8	19.6
Indicated + Inferred	3,437	1.79%	0.57	135.2	62.7
Difference					
Indicated	472	(0.00)	-	12.6	9.6
Inferred	(586)	(0.00)	(0.06)	(17.5)	(10.6)
Indicated + Inferred	(114)	(0.00)	0.01	(4.9)	(1.0)
% Difference					
Indicated	21.3%	(7.5%)	0.8%	12.2%	22.3%
Inferred	(48.0%)	(9.9%)	(11.8%)	(53.2%)	(54.1%)
Indicated + Inferred	(3.3%)	(0.4%)	1.2%	(3.6%)	(1.6%)

Source: Company Reports

Mineral Reserve

The company also issued a record of the project's mineral reserves, including probable reserves that contained 93.7M lb U3O8. This mineral reserve estimate at PLS was based on three out of five possible zones, with the R780E zone being the primary contributor to the estimate. The two other zones on the PLS property, R1515W and R1620E, were not included in the mineral reserves.

Figure 25: Table of mineral reserves at PLS

Category	Tonnes (kt)	Grade (% U3O8)	Contained Metal (M lb U3O8)
Probable			
R780E Zone	2,630.0	1.46%	84.8
R00E Zone	56.0	1.24%	1.5
R840W Zone	322.0	1.04%	7.4
Total Probable Reserves	3,008.0	1.41%	93.7

Source: Company Reports

Economics

PLS' Feasibility Study illustrated a strong economic profile at a uranium market price of US\$65/lb. By applying an 8% discount rate and an exchange rate (C\$:US\$) of 0.75, the project is expected to generate total post-tax NCF of C\$2.8B, an NPV_{8%} of C\$1.2B, IRR of 27.2%, and payback period of 2.6 years.

Figure 26: Project economics

Parameter	Unit	Pre-Tax	Post-Tax
Undiscounted Net Cash Flow (NCF)	\$ billion	4.5	2.8
NPV @ 8% discount	\$ billion	2.1	1.2
IRR	%	35.5%	27.2%
Payback period	year	2.3	2.6

Source: Company Reports

The study also prepared a detailed estimate of the capital costs to be incurred in building the project, as well as life-of-mine operating costs. The initial capital cost is expected at C\$1,155M, sustaining capital at C\$384M, and closure capital cost at C\$74M. Total capital costs are estimated at

PLS is host to a probable reserve base of 3Mt at 1.41% for ~94M lb U3O8

C\$1,613M, including sustaining and closure costs. Additionally, the total average operating cost is estimated at C\$393.45/t of ore processed, or \$13.02/lb U3O8 produced.

Figure 27: Overview of cost profile and comparison to other projects

Description	Units	PFS Costs (C\$M)	FS Costs (C\$M)	Delta
Underground Mining	C\$M	201	176	
Processing	C\$M	350	141	
Infrastructure	C\$M	120	159	
TMF	C\$M	-	235	
Subtotal Pre-Production Direct Costs	C\$M	670	711	
Pre-Production Indirect Costs	C\$M	315	198	
Subtotal Direct and Indirect	C\$M	985	909	
Owner's Costs	C\$M	-	109	
Contingency	C\$M	192	137	
Initial Capital Cost	C\$M	1,177	1,155	(2%)
Sustaining Capital	C\$M	209	384	
Closure and Reclamation	C\$M	74	74	
Total	C\$M	1,459	1,613	11%

Mine/Project	Location	Stage	Op. Cash Costs (US\$/lb U3O8)
Arrow - NexGen	Western Basin	FS (2021)	\$5.61
Wheeler River - Denison/JCU	Eastern Basin	PFS (2018)	\$6.86
Triple R - Fission	Western Basin	FS (2023)	\$9.63
McArthur River - Cameco/Orano	Eastern Basin	Mine (1999)	\$11.08
Cigar Lake - Cameco	Eastern Basin	Mine (2014)	\$13.88

Source: Company Reports

Near-Term Exploration and Development Work

Fission recently commenced a summer drill program at PLS. The two-stage drill program is part of the Front-End Engineering Design (FEED). Twelve holes will be drilled. The drill hole distribution is expected as follows: 1) two holes (440m) to collect geotechnical data for UG infrastructure, and 2) ten holes (7 test holes and 3 monitoring holes for 500m) to collect hydrogeological data for further optimization of the tailings management facility design. Following the drill program, lab testwork will be conducted by the corresponding mine engineers.

Fission is also focused on the continued advancement of the PLS project and has several development-related activities on the horizon, including the submission of an Environmental Impact Statement (EIS), the subsequent licensing and permitting of the project, as well as the signing of long-term impact benefit agreements with the local First Nations and Metis communities.

The company expects to begin constructing the project in or around 2026, while initial production is currently estimated to begin as early as 2028.

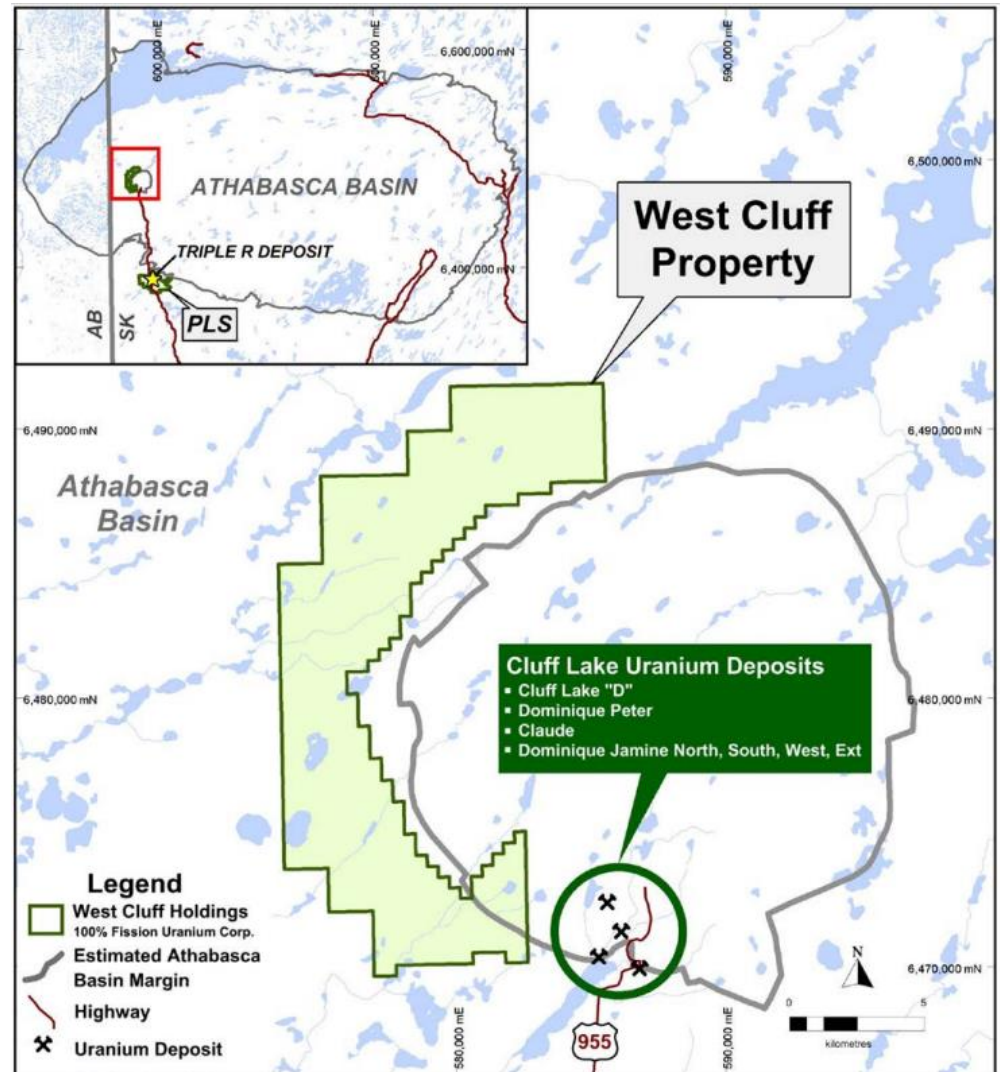
Further exploration work at PLS is likely to encompass additional work at

West Cluff Project

West Cluff is a 11,148 ha property that covers both the margin and near margin of the western side of the Carswell structure in the Western Athabasca Basin district. It is also located less than 3km west of the past producing Cluff Lake mine (>62M lb produced) and 250km north of the town of La Loche. The project is available via an all-season access road and a government-maintained Highway 955.

A databank of results from previous surveys, ground prospecting and reconnaissance drilling is available. Uranium mineralization has been encountered during prior exploration.

Figure 28: Property map of West Cluff project



Source: Company Reports

Management & Directors

Executive Team

Ross McElroy, P.Geo. – CEO, President, and Director. Mr. McElroy is a professional geologist with over 35 years of experience in the mining industry. He has held senior positions at major and junior mining companies, including BHP Billiton, Cogema Canada, and Cameco. Mr. McElroy played a key role in the early-stage discovery of the MacArthur River uranium deposit and received the 2014 PDAC Bill Dennis award for exploration success. He is a registered professional geologist in Saskatchewan, British Columbia, and Nunavut/Northwest Territories.

Chris Sammartino – CFO. A Chartered Professional Accountant with 20 years of experience in the mining and junior mining industries. Before joining Fission in 2018, he held various accounting and management roles in private and exchange-listed companies. Mr. Sammartino holds a Bachelor of Management degree from the University of Lethbridge.

Bob Hemmerling – Senior Manager, Investor Relations. Mr. Hemmerling is an investor relations and corporate operations professional with nearly 26 years of experience in the mining industry. He served as the IR and administrative manager for several public companies, including Strathmore Minerals and Fission Energy.

Board of Directors

Darian Yip – Chairman of the Board. Mr. Yip has over 18 years of experience in the financial services industry, focusing on the metals and mining sector for the past 13 years. He co-founded and served as a Partner and Managing Director for a Canadian investment bank's operations in Asia, handling cross-border transactions between Chinese and Canadian companies in the natural resources sector.

William V. Marsh – Director. Mr. Marsh previously worked on domestic and international drill programs for Chevron for 15 years, both in Canada and internationally. He provided consulting services to several resource exploration and production companies operating in Canada and internationally.

Frank Estergaard, CA – Director. A Chartered Professional Accountant, Mr. Estergaard was formerly a partner with KPMG, participating in a wide range of audit, taxation, and structural/reorganization transactions. He now serves as a Director and Chair of the Audit Committee for several companies, including Fission Energy.

Beatriz Orrantia, BCL, LLB - Director. With over 17 years of mining industry experience in legal and operational capacities, Ms. Orrantia is an ESG/Sustainability expert. She holds law degrees from universities in Colombia and Canada, and she is pursuing a Master's degree in Sustainability at Harvard University. Ms. Orrantia is a corporate director certified by the National Association of Corporate Directors.

Rob Chang – Director. With over 25 years of experience in the financial services industry, Mr. Chang currently sits on the board of three mineral

resource companies and is the Co-Founder and CEO of Gryphon Digital Mining.

Felix Wang – Director. Mr. Wang has extensive experience in fundraising and investor relations. He served in various roles in the mining industry, including a subsidiary of China's largest conglomerate CITIC Group.

Technical Team

Gary Haywood, P. Eng. – VP Project Development. Mr. Haywood is a professional Mining Engineer with over 35 years of experience in underground and surface mining, including underground uranium mining operations at Cameco's Eagle Point and McArthur River operations.

Kanan Sarioglu, P.Geo. – VP Exploration. Mr. Sarioglu is a professional geoscientist with over 17 years of experience in the uranium industry. He played a key role in Fission's technical team from 2009 to 2021 and oversaw operations at the J-Zone deposit and all zones comprising the Triple R deposit. Before returning to Fission, Mr. Sarioglu was VP Exploration with 92 Energy and directed exploration activities at the Gemini uranium discovery.

Jeff Pryznyk, Engineering Licensee, A.Sc.T – Environmental Manager. Mr. Pryznyk is an environment, health, and safety professional with two decades of experience working in Saskatchewan, primarily in uranium mining in northern Saskatchewan.

Mark Wittrup, MSc., P.Eng., P.Geo., CMC – Regulatory and Environmental Permitting. Mr. Wittrup has over 40 years of experience in the uranium sector, specializing in environmental and regulatory work. He currently serves as VP Environmental and Regulatory Affairs with the Clifton Engineering Group.

Richard Elkington – Operations Manager. With over 30 years of experience in security, logistics, and supply chain management, Mr. Elkington has been involved in building logistical platforms and operational solutions for mineral exploration. He is responsible for logistical planning, coordination, management, and integration of all contract groups supporting the Patterson Lake program.

Consultants

Caroline Harke, M.Sc. (Geology). With 25 years of mineral exploration experience, Ms. Harke has worked on various exploration programs across Canada, including uranium, diamond, gold, and base metals exploration.

Victor Mitchell. With 25 years in the mineral exploration industry, Mr. Mitchell served BHP-Billiton and has been an independent consulting geoscientist since 2001. He was a member of the team responsible for the high-grade uranium J zone discovery at Waterbury Lake.

Risks

Exploration, development, and mining projects are inherently risky investments given the large initial expenses that are required in advance of any potential revenue. Our view is based on publicly available information but note that our estimates and views are not without political, technical, geological or financing risk typical for exploration and development companies.

1. **Geopolitical/jurisdictional risks** – Some of these risks may be out of the control of the company, including royalty and taxation levels, land agreement liabilities, regulatory, environmental and permit requirements and timing, global trade wars and political instability.
2. **Technical risks** – This covers a wide variety of issues that we see associated with the deposit including exploration, development and exploitation strategies and methods. It would cover such issues as accuracy of geological interpretation, resource/reserve estimates and economic studies, and inputs such as commodity prices, cost and grade fluctuations, assay reconciliation, metallurgical issues, and exploration success. Our positive view relies on using existing technical data, recent exploration results and to a limited extent, expected positive results from future drilling. Future results may differ and negatively impact our assumptions.
3. **Corporate risks** – These may include project execution by management, investor relations effectiveness, or market sentiment. Management pedigree and performance are paramount. Market sentiment is also an issue. Uranium is a particularly risky commodity given both the strong support and distain for the commodity and nuclear power as an answer to greenhouse gas emissions.
4. **Financial risks** – These may occur at the project or corporate level, including variation in valuation parameters/metrics, commodity price or foreign exchange fluctuations, access to credit including debt, equity financing or potential for shareholder dilution.

As new information becomes available, we plan to refine our estimates and forecasts.

David A. Talbot | MD, Mining Analyst
Daniel Kozielowicz | Research Associate
Shikhar Sarpal | Research Associate
Surya Sankarasubramanian | Research Associate

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Disclosure Statement
 Updated August 2, 2023

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2023-03-06	NA	NA	BUY (S)	25%
2023-06-02	NA	NA	HOLD	1%
			TENDER	0%
			NA	2%
			UNDER REVIEW	1%

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Company Name	Ticker Symbol	Disclosures
Fission Uranium Corp.	TSX:FCU	1,2

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- Under Review – our rating and target are under review pending, prior estimates and rating should be disregarded.

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