

# Fission Uranium

FCU-TSX

Rating  
**Outperform(S)**Price: Nov-20  
**\$0.28** Target  
**NA**

## Underground Only Option Lowers NPV, but Also Risks

**Bottom Line:** Incorporating the U/G only option presents a lower-risk project, in our view, from both a financing and permitting perspective albeit some increased technical challenges. Thus, whilst including the latest design has had a negative impact to our NPV, we believe it is the more attractive option. Nevertheless, with the stock having sold off significantly over the last 12 months, we think Fission now looks very attractive, with a P/NPV of 0.4x vs. peers at 0.6x.

### Key Points

We have updated our estimates to incorporate development of Patterson Lake South (PLS) as an underground only project, following the full release of the pre-feasibility study. **We believe its development as an underground operation presents lower permitting and social risk than the alternative combined open pit and underground option, as well as reduced funding risk through lower capex.** However, with higher up front cash costs than our previous estimates and lower total uranium production, **our NPV has reduced to C\$0.69/sh (-14%).**

The PFS envisages a 350ktpa throughput operation (~1ktpd), supporting an average life of mine (LOM) production rate of 11.2Mlbpa U<sub>3</sub>O<sub>8</sub> over seven years, with peak production of 15.0Mlb. **Our model assumes 350ktpa throughput (unchanged) but a longer mine life of nine years with an average LOM production rate of 9.8Mlbpa.** This assumes a smoother production profile and slightly lower peak rate of 12.7Mlb, which would likely be more conducive to utility contracting requirements and make financing the project easier. We also incorporate total LOM production of 88Mlb, +8% on the reserve estimate of 81.4Mlb at 1.61%, but 7% below our previous estimate.

We assume first production in 2028, with ~C\$1.2B in capex, ~5% higher than the PFS estimate. LOM cash costs would likely be first quartile at US\$8.41/lb, versus US\$13.37/lb previously, with LOM all-in-sustaining costs likely second quartile, at US\$21.05/lb.

**Upcoming catalysts include continued exploration success; progressing to feasibility study stage and securing short-term funding given a low Q3/19 cash balance of C\$7M, which may act as a near-term headwind.**

**Fission Trades on an Attractive P/NPV of 0.4x:** Fission offers investors exposure to a sizable, high-grade deposit in the Athabasca Basin with further potential for expansion, trading at very attractive levels (0.4x P/NPV v.s. peers of 0.6x). We continue to rate Fission Outperform (Speculative).

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Company Data			in C\$
Dividend	\$0.00	Shares O/S (mm)	486.3
Yield	0.0%	Market Cap (mm)	\$136
NAV	\$0.69	P/NAV	0.6x

BMO Estimates				in C\$
(FY- Dec .)	2018A	2019E	2020E	
EPS	\$(0.01)	\$(0.01)	\$(0.01)	
CFPS	\$(0.01)	\$(0.01)	\$(0.01)	
CAD:USD	0.772	0.754↓	0.764	
Net Debt	\$(10.9)	\$(3.7)↑	\$(14.8)↑	
U308 Sales	0.0	0.0		

Consensus Estimates			
	2018A	2019E	2020E
EPS		\$(0.01)	\$(0.01)

Valuation			
	2018A	2019E	2020E
P/E	NM	NM	NM
P/CFPS	NM	NM	NM

### Our Thesis

We rate Fission Uranium Outperform (Speculative). Fission has a world class, high grade 141Mlb uranium resource with good potential for expansion, and trades on attractive multiples relative to peers. Its near-term catalysts include continued exploration success, progressing to feasibility stage and securing short term funding.

### Key Changes

Estimates	2019E
CAD:USD	0.754
Previous	0.755

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For disclosure statements, including the Analyst Certification, please refer to page(s) 8 to 11.

## Fission Uranium - Block Summary Model

Income Statement	2018A	2019E	2020E
Sales Revenue			
Operating Costs	0	0	0
Depreciation	0	0	0
G&A & Other	5	5	5
EBIT	(5)	(5)	(5)
Net Interest	(1)	(0)	(1)
Tax	(1)	(0)	(0)
Equity Income/Minorities	0	0	0
Adjusted Net Earnings	(4)	(5)	(4)
EPS	\$(0.01)	\$(0.01)	\$(0.01)
Reported Earnings	(5)	(5)	(4)
Headline EPS	\$(0.01)	\$(0.01)	\$(0.01)
Cash Flow Statement	2018A	2019E	2020E
CFO	(4)	(4)	(4)
CFI	(16)	(3)	(10)
CFF	0	(0)	25
Net Change in Borrowings	0	(0)	0
Cash From Share Issue/Buy Back	0	0	25
Dividends paid	0	0	0
Net Increase in Cash	(20)	(7)	11
Free Cash Flow (CFO-CFI)	(20)	(7)	(14)
FCF/Share	\$(0.04)	\$(0.03)	\$(0.03)
Balance Sheet	2018A	2019E	2020E
Cash & Equivalents	11	4	15
Current Debt	0	0	0
Long-Term Debt	0	0	0
Net Debt	(11)	(4)	(15)
Net Debt/Equity	(0.0)x	(0.0)x	(0.0)x
Key Metrics	2018A	2019E	2020E
U308 Sales (Mlb)	0	0	

Source: BMO Capital Markets, Company Reports

New  
Scenarios

### Valuation

We estimate Fission to have an NPV of C\$0.69 per share. Due to the higher risk associated with exploration plays, we ascribe no target price.

### Key Catalysts

Releasing its Feasibility Study on an underground-only option, incorporating its expanded and increased confidence resource base.

### Company Description

Fission Uranium Corp. is a uranium exploration and development company listed on the Toronto Stock Exchange. Its primary asset is the Patterson Lake South uranium project, located in Saskatchewan, Canada.



FCU-TSX  
Research



Glossary



Company  
Models

## Patterson Lake South Underground PFS Analysis

We have updated our estimates following the recent release of the full PFS on Fission’s Patterson Lake South project, assessing an underground-only design. The following points show the key changes to our forecasts:

We have incorporated the underground only option, which presents lower risk, in our view

- Reflecting our latest uranium market outlook and the current stage of the project, we have moved first production back, to 2028 with a three-year construction period. Our assumptions retain a 350ktpa nameplate capacity, with one-to-two years of ramp up. We note that this is largely dependent on permitting and financing.
- We have reduced mine life to nine years, from ~14 previously, which incorporated an underground followed by open pit set up. This is relative to seven years outlined in the PFS owing to our smoother ramp up, lower peak production and some assumed resource upside.
- Following a year of ramp up, we assume peak production of ~12.5Mlbpa as Fission targets high grade material initially. This is relatively unchanged versus our previous estimates using open pit mining, but 10% below the PFS estimate of ~14.0Mlbpa. We have increased our life of mine average to 9.8Mlbpa, from 6.6Mlbpa (+48%), this remains below the PFS estimate of 11.2Mlbpa. However, our estimates regarding the previous OP/UG hybrid mine assumed ~7 years of lower grade production, following exhaustion of the open pit resource.
- Life of mine cash costs have been reduced to ~US\$8.41/lb U<sub>3</sub>O<sub>8</sub>, from our previous assumption of ~US\$13.37/lb albeit higher than the PFS LOM average of US\$7.18/lb. The lower PFS estimates are partly the result of different USD/CAD exchange rate assumptions, whereas our reduction in cost estimates reflect a higher rate of production and shorter mine life. It is however worth noting that our cash costs over the early production years have increased. We have also reduced costs on an all in sustaining basis to US\$21.05/lb from US\$24.91/lb.
- We have increased our capex estimate to C\$1.2B, 5% higher than the PFS and 13% above our previous estimate of C\$1.1B reflecting the change from an OP/UG hybrid set up to an underground only design.

Incorporating the changes has had a negative impact to our NPV<sub>10%</sub> which is now C\$0.69/share (-14%) based on our long-term uranium price of US\$55/lb U<sub>3</sub>O<sub>8</sub>. Nevertheless the stock offers investors exposure to a highly prospective asset in the Athabasca Basin, and trades on a sector leading P/NPV of 0.4x vs peers of 0.6x. Thus, in a rising uranium price environment with a quality project, we continue to view Fission as an attractive proposition.

However, our NPV has reduced by 14%...

Nevertheless FCU looks attractive versus peers at 0.4x P/NPV

Looking ahead, catalysts include continued exploration success at PLS, progressing to feasibility study stage and securing successful short-term funding, however, the latter might act as a near-term headwind.

### Exhibit 1: PFS & BMO Production Summary

		PFS	BMO
Mine Life	years	7	9
Throughput Nameplate	ktpa	350	350
	tpd	1000	1000
Throughput Average	ktpa	328	305
Head Grade	% U3O8	1.61%	1.54%
Average Annual Productio	kU3O8	11,248	9,803
Total Production	Mlb U3O8	78.7	88.2
Cash Cost	US\$/lb	7.18	8.41
AISC	US\$/lb	~17	21.05

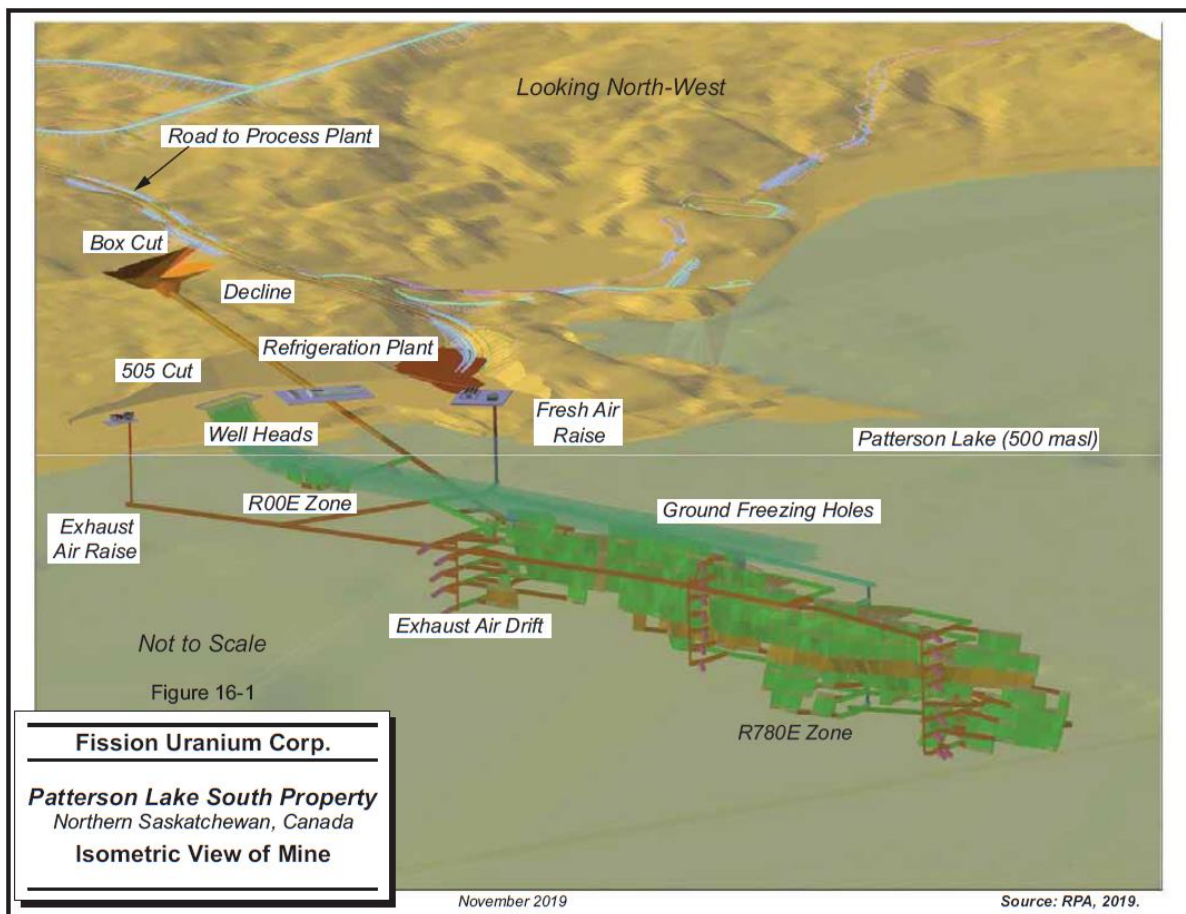
Source: Company Data, BMO Capital Markets

### Mine Plan and Processing Highlights

In the new PFS, the orebody is to be accessed using a decline to the west of the deposit, including two shafts for ventilation, with mining occurring via the long hole retreat method as well as some localised drift and fill. Voids are to be filled with cemented back fill utilising non-uranium bearing waste material from development. Mining is to progress from lower levels upwards and from southwest to northeast, using artificial ground freezing to partially recover the upper portion of the orebody, leaving ~15m of the uppermost deposit sterilised as a crown pillar.

Note that although ground freezing is not new in the Athabasca, partial recovery of the crown pillar does present some increased risks and requires ~24 months preparation ahead of mining. We note that the use of the method should be investigated further in the feasibility study. From an orebody recovery standpoint, the underground design reduces reserves by ~10% versus the open pit/underground hybrid option.

**Exhibit 2: Isometric View of Patterson Lake South**



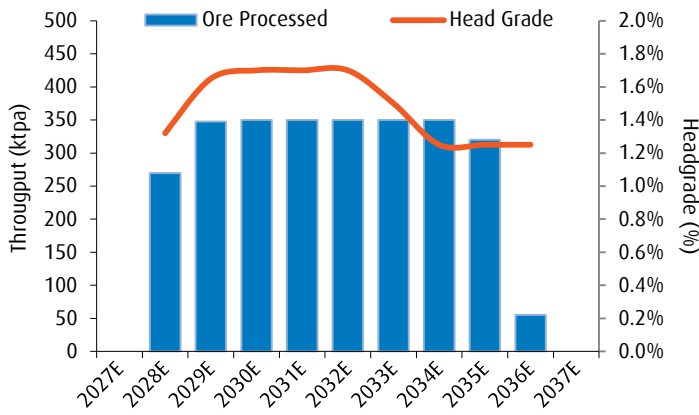
Source: Fission Uranium, BMO Capital Markets

Processing remains essentially the same as outlined in previous technical reports, using a fairly standard process. Ore will be first crushed and ground via SAG and ball mill, and following cycloning, will report to the leaching circuit. From there, the feed flows through acid leach tanks in series, both dissolving and oxidising uranium from the ore. A series of CCD thickeners separate the dissolved uranium from solids, with the pregnant solution subsequently flowing through clarification, solvent extraction, gypsum precipitation, yellowcake precipitation, calcining and packing processes.

Tailings are expected to be stored on surface at this stage. However, we note that Fission could look at the potential for partial underground storage, which should reduce the mine’s environmental footprint.

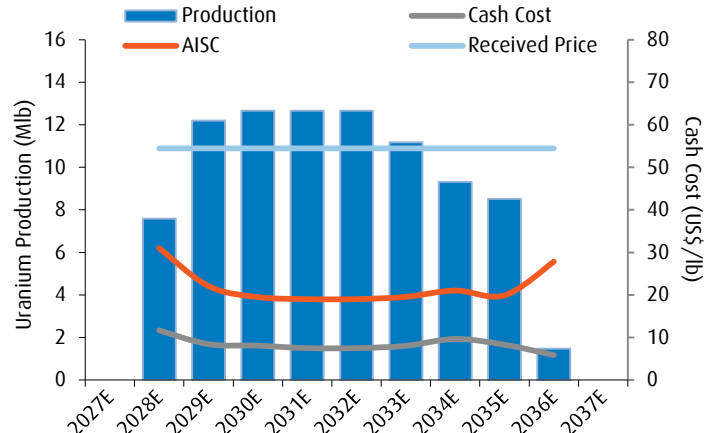
The PFS models a production profile of seven years with production of 10Mlb U<sub>3</sub>O<sub>8</sub> in year one, increasing to 15Mlb in year three as it targets higher grade material and tails off through the sixth and seventh years of production. We model a slightly smoother production profile with an average production rate of 9.8Mlb, vs 12.5Mlb, and a mine life of nine years, reflecting potential resource expansion.

**Exhibit 3: We Model 350ktpa Throughput (kt, % U<sub>3</sub>O<sub>8</sub>)**



Source: BMO Capital Markets

**Exhibit 4: Producing up to 12.5Mlbpa (Mlb, US\$/lb)**



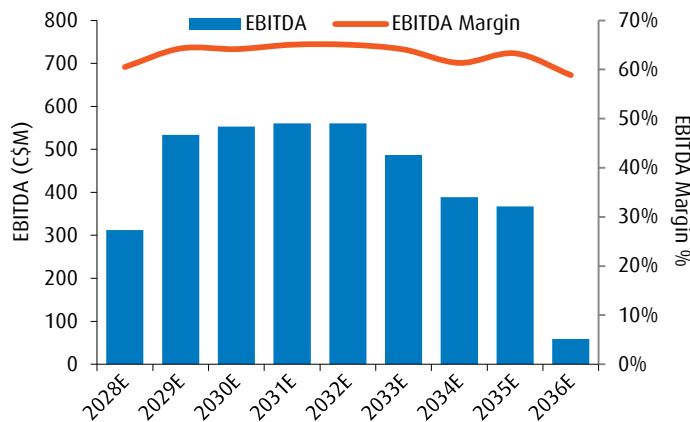
Source: BMO Capital Markets

Patterson Lake South remains competitive on our slightly more conservative LOM cash cost estimate of US\$8.41/lb (PFS: US\$7.18/lb), placing it in the first quartile of the cost curve. The project still screens reasonably well on an all in sustaining cost basis, which we estimate at US\$21.05/lb (PFS: US\$16.94/lb), placing it second quartile.

The PFS estimates pre-production capital costs of C\$1.18B, inclusive of C\$192M contingency funds. The Total consists of C\$201M in mining, C\$350M in processing, and C\$120M in infrastructure, with the balance reflecting contingency and pre-production indirect costs. Sustaining costs over the life of mine are estimated at C\$209M. We assume 5% higher capital costs, totaling C\$1.24B.

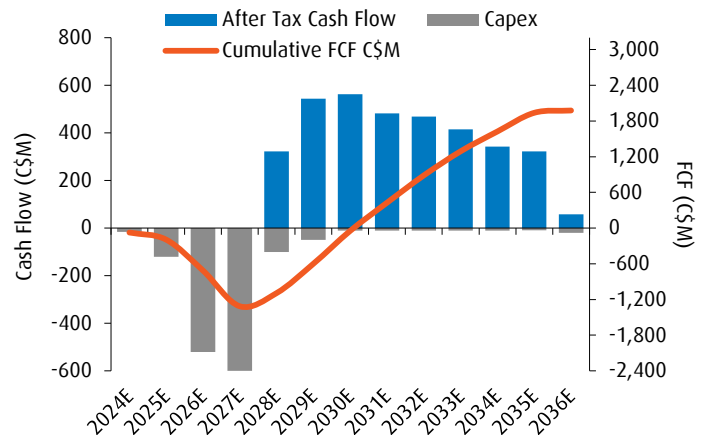
Based on our long-term uranium forecast of US\$55/lb U<sub>3</sub>O<sub>8</sub> we forecast EBITDA of ~C\$550M per year, resulting in a healthy EBITDA margin of ~65%. We expect construction to commence in 2025, first production in 2028 and an undiscounted payback period of 6 years. Operating cash flow is expected to peak at ~C\$560M before declining with on weaker grades.

**Exhibit 5: We Estimate >C\$500Mpa EBITDA (C\$M, %)**



Source: BMO Capital Markets

**Exhibit 6: FCF (C\$M)**

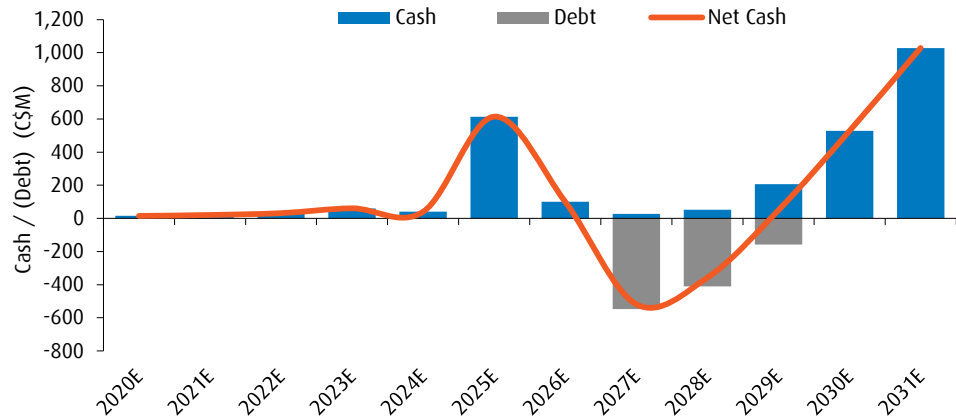


Source: BMO Capital Markets

### Funding

Given a Q3/19 cash balance of C\$6.8M, we would expect Fission to raise equity in the near-term to prevent a cash shortfall (we model ~C\$25M in Q1/20) and to continue funding exploration activities. We continue to model a 40:60 debt to equity split in order to finance the project, assuming the company would raise ~C\$820M in equity and ~C\$550M in debt.

**Exhibit 7: Net Cash Forecast (C\$M)**

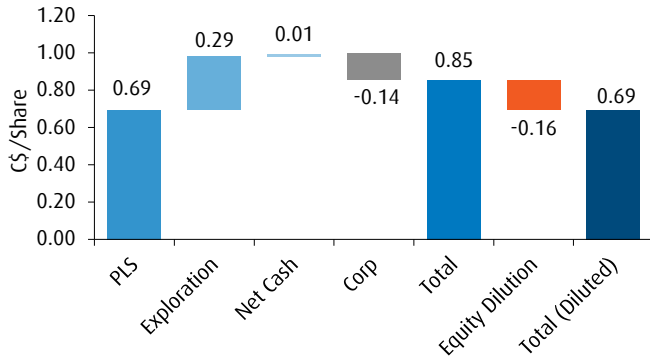


Source: BMO Capital Markets

### Valuation

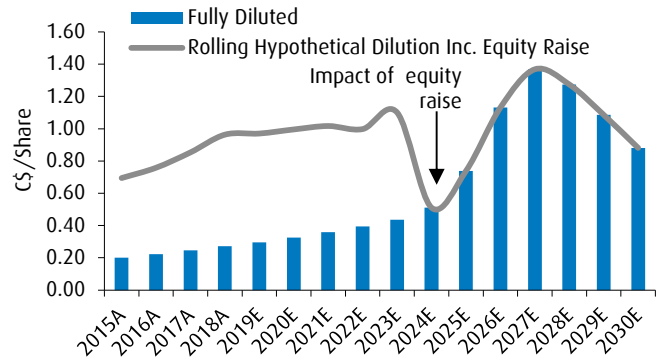
We value Fission Uranium at an NPV<sub>10%</sub> of C\$437M, which includes C\$354M for Patterson Lake South and C\$148M in potential upside from its exploration portfolio. On per-share basis, we calculate a valuation of C\$0.69/share assuming future equity dilution, or C\$0.85/share undiluted, representing a 14% reduction versus our previous estimate.

**Exhibit 8: FCU NPV<sub>10%</sub> Waterfall (C\$/share)**



Source: BMO Capital Markets

**Exhibit 9: NPV<sub>10%</sub> PLS Project Roll Forward (C\$/share)**



Source: BMO Capital Markets

## Exhibit 10: Fission Uranium Summary Model

Fission Uranium		FCU TSX	
As at	20/Nov/19		
Recommendation:	<u>Outperform (S)</u>	Alexander Pearce	
		BMO Capital Markets	
Share Price (C\$)	\$0.28	Share Price (US\$)	\$0.21
Target Value (C\$)	n/a	Target Value (US\$)	n/a
NPV (C\$)	\$0.69	NPV (US\$)	\$0.53
Ordinary Shares (M)	486.1		
Dilution (M)	25.5		
Market Cap (C\$M)	\$136	Market Cap (US\$M)	\$103

PRICE ASSUMPTIONS (Dec Year End)	2017A	2018A	2019E	2020E	2021E
C\$/US\$ Exchange Rate	0.77	0.77	0.75	0.76	0.77
Spot Price (U3O8) US\$/lb	22.20	24.61	26.35	30.88	38.75
Realised Price (U3C US\$/lb)	22.20	24.61	26.35	30.88	38.75

FINANCIAL SUMMARY (Dec Year End)	2017A	2018A	2019E	2020E	2021E
NPAT (Adj) (C\$M)	-6.0	-4.1	-4.6	-4.0	-3.4
EPS (US\$/sh)	-0.01	-0.01	-0.01	-0.01	-0.01
PER (x)	n/a	n/a	50.0	n/a	n/a
EPS Growth (%)	49.4	30.5	-10.9	22.5	19.6
EBITDA (C\$M)	-7.9	-5.5	-4.9	-5.0	-5.0
EBITDA per Share (US\$/sh)	-0.01	-0.01	-0.01	-0.01	-0.01
EV/EBITDA (x)	n/a	n/a	n/a	n/a	n/a
Dividend (US\$/sh)	0.00	0.00	0.00	0.00	0.00
Yield (%)	0.0	0.0	0.0	0.0	0.0

PROFIT AND LOSS STATEMENT - C\$M (Dec Year End)	2017A	2018A	2019E	2020E	2021E
Sales Revenue	0.0	0.0	0.0	0.0	0.0
Other Revenue	0.0	0.0	0.0	0.0	0.0
Cash Operating Costs	0.0	0.0	0.0	0.0	0.0
<b>Gross Operating Profit</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Depreciation	0.1	0.1	0.2	0.1	0.1
Exploration and Royalties	0.0	0.0	0.0	0.0	0.0
Corporate and Other	7.8	5.4	4.8	5.0	5.0
Share of Associate Profit	-0.1	-0.2	-0.2	0.0	0.0
<b>EBIT</b>	<b>-7.9</b>	<b>-5.5</b>	<b>-4.9</b>	<b>-5.1</b>	<b>-5.1</b>
Less Net Interest Expense	-0.7	-0.6	-0.3	-0.7	-1.1
<b>Pre-Tax Profits</b>	<b>-7.2</b>	<b>-4.9</b>	<b>-4.6</b>	<b>-4.4</b>	<b>-4.0</b>
Less Tax	-1.2	-0.8	-0.1	-0.4	-0.6
Less Minorities	0.0	0.0	0.0	0.0	0.0
<b>NPAT (pre-Abs)</b>	<b>-6.0</b>	<b>-4.1</b>	<b>-4.6</b>	<b>-4.0</b>	<b>-3.4</b>
Net Abnormals	0.9	0.9	0.8	0.0	0.0
<b>Reported Profit</b>	<b>-6.9</b>	<b>-5.0</b>	<b>-5.3</b>	<b>-4.0</b>	<b>-3.4</b>

DIVISIONAL VALUATION	NPV		RESERVES AND RESOURCES		
	C\$M	US\$M	Ore Tonnage (Mt)	Grade U3O8 (%)	Contained U3O8 (Mlb)
Patterson Lake Sour	354	285			
Exploration	148	119			
Net Cash	7	5	Total Reserves	2.3	0.00%
Corporate/Other	-72	-57	Total Resources	3.4	1.79%
<b>Total NPV</b>	<b>437</b>	<b>352</b>			
NPV/Share	0.85	0.69			
Diluted NPV/Share	0.69	0.54			

CASH FLOW ANALYSIS - C\$M (Dec Year End)	2017A	2018A	2019E	2020E	2021E
<b>Cash Flows From Operating Activities</b>					
Net Profit	(7.0)	(5.2)	(5.5)	(4.0)	(3.4)
D&A	0.1	0.1	0.2	0.1	0.1
Changes in Working Capital	0.2	(0.5)	(0.0)	0.0	0.0
Other	2.1	1.2	1.2	0.0	0.0
<b>Cash Flows From Investing Activities</b>					
Acq. of Property, Plant and Equip.	(0.1)	(0.0)	5.0	0.0	(16.0)
Exploration Expenditure	(14.9)	(15.1)	(13.0)	(10.0)	0.0
Other	(0.4)	(0.4)	5.0	0.0	0.0
<b>Cash Flows From Financing Activities</b>					
Net Change in Borrowings	0.0	0.0	(0.0)	0.0	0.0
Dividends Paid	0.0	0.0	0.0	0.0	0.0
Other	0.3	0.0	(0.0)	25.0	25.0
<b>Net Increase in Cash Held</b>	<b>(19.7)</b>	<b>(20.0)</b>	<b>(7.2)</b>	<b>11.1</b>	<b>5.7</b>
Cash At End of Year	30.6	10.7	3.5	14.7	20.3

BALANCE SHEET ANALYSIS - C\$M (Dec Year End)	2017A	2018A	2019E	2020E	2021E
<b>Current Assets</b>					
Cash and Liquids	30.7	10.9	3.7	14.8	20.5
Other	10.5	10.6	0.4	0.4	0.4
<b>Non-Current Assets</b>					
Investments	2.0	1.1	0.6	0.6	0.6
Fixed Assets	289.7	305.6	318.0	327.9	343.9
Other	0.0	0.0	0.3	0.3	0.3
<b>Current Liabilities</b>					
Borrowings	0.0	0.0	0.0	0.0	0.0
Creditors	0.5	1.1	0.7	0.7	0.7
Other	0.0	0.0	0.1	0.1	0.1
<b>Non-Current Liabilities</b>					
Borrowings	0.0	0.0	0.0	0.0	0.0
Other	0.8	0.0	0.4	0.4	0.4
Minority Interest	0.0	0.0	0.0	0.0	0.0
<b>SHAREHOLDERS FUNDS</b>	<b>331.7</b>	<b>327.1</b>	<b>321.8</b>	<b>342.8</b>	<b>364.4</b>
Net Debt/Equity %	-9%	-3%	-1%	-4%	-6%

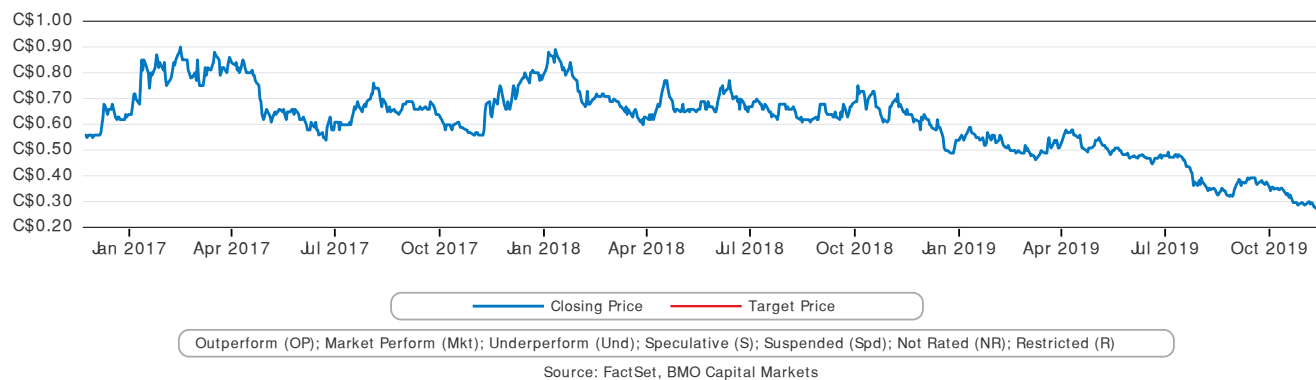
DIVISIONAL EARNINGS (EBIT) - C\$M (Dec Year End)	2017A	2018A	2019E	2020E	2021E
Patterson Lake South	0.0	0.0	0.0	0.0	0.0

URANIUM PRODUCTION AND SALES	2017A	2018A	2019E	2020E	2021E
U3O8 Production Mlb	0.0	0.0	0.0	0.0	0.0
Cash Cost US\$/lb	0.00	0.00	0.00	0.00	0.00
Total Cost US\$/lb	0.00	0.00	0.00	0.00	0.00
U3O8 Sales Mlb	0.0	0.0	0.0	0.0	0.0

Source: BMO Capital Markets



Fission Uranium Rating History as of 11/20/2019



**IMPORTANT DISCLOSURES**

**Analyst's Certification**

I, Alexander Pearce, hereby certify that the views expressed in this report accurately reflect my personal views about the subject securities or issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

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Disclosure 6C: Fission Uranium is a client (or was a client) of BMO Nesbitt Burns Inc., BMO Capital Markets Corp., BMO Capital Markets Limited or an affiliate within the past 12 months: C) Non-Securities Related Services.

**Methodology and Risks to Target Price/Valuation for Fission Uranium (FCU-TSX)**

**Methodology:** We do not assign target prices to early stage exploration and development companies that have not completed a feasibility study, are unfinanced or unpermitted.

**Risks:** Fission is exposed to global demand for its key commodity uranium and is exposed to foreign exchange rate movements and country risk within Canada. Additionally, the development of PLS depends on receiving financing and permitting.

**Distribution of Ratings (November 20, 2019)**

Rating category	BMO rating	BMOCM US Universe*	BMOCM US IB Clients**	BMOCM US IB Clients***	BMOCM Universe****	BMOCM IB Clients*****	StarMine Universe~
Buy	Outperform	46.3 %	23.1 %	55.3 %	48.3 %	58.4 %	57.7%
Hold	Market Perform	49.5 %	16.7 %	42.7 %	48.3 %	40.9 %	37.5%
Sell	Underperform	4.1 %	9.1 %	1.9 %	3.2 %	0.8 %	4.8%

\* Reflects rating distribution of all companies covered by BMO Capital Markets Corp. equity research analysts.

\*\* Reflects rating distribution of all companies from which BMO Capital Markets Corp. has received compensation for Investment Banking services as percentage within ratings category.

\*\*\* Reflects rating distribution of all companies from which BMO Capital Markets Corp. has received compensation for Investment Banking services as percentage of Investment Banking clients.

\*\*\*\* Reflects rating distribution of all companies covered by BMO Capital Markets equity research analysts.

\*\*\*\*\* Reflects rating distribution of all companies from which BMO Capital Markets has received compensation for Investment Banking services as percentage of Investment Banking clients.



~ As of April 1, 2019.

## **Ratings Key (as of October 2016)**

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### **(April 2013 - October 2016)**

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