Fission Uranium Corp. Underground-Only PFS Results: Reduced CAPEX, Strong OPEX, Minimized Surface Footprint

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Results highlight the enhanced economics and environmental aspects for the Shallow Depth, High-Grade Triple R deposit

KELOWNA, Sept. 23, 2019 - Fission Uranium Corp. ("Fission" or "the company") is pleased to announce the results of a prefeasibility study for an underground-only mining scenario, conducted by Roscoe Postle Associates Inc. "RPA", and entitled "Pre-Feasibility Study on the Patterson Lake South Property Using Underground Mining Methods" (the "U/G PFS") for its' PLS property in Canada's Athabasca Basin region. The U/G PFS follows the results of an earlier PFS report outlining a hybrid mine approach using both open pit and underground techniques (the "Hybrid PFS"). The U/G PFS highlights a substantial reduction in CAPEX and time requirements for construction of the Triple R mine due to simplified water control measures for underground mining. With the U/G PFS, access to the deposit is envisaged via a decline from land. The revised mining method eliminates the need for a system of dykes and slurry walls, dewatering and overburden removal and results in a reduction of 90% of total mine-related earth movement from the Hybrid PFS to the U/G PFS. The reduced earth movement results in reduced surface piles and overall minimized surface footprint. With a projected OPEX of just US$7.18/lb, an IRR (pre-tax) of 34% and an NPV (pre-tax) at 8% of $1.33B, the U/G PFS outlines the potential for highly economic production at PLS.

While the U/G PFS only considers Indicated Resources from the R780E and R00E zones, the mine plan has been deliberately designed to easily accommodate additional material from the R1515W, R845W and R1620E zones based on potential future conversion of Inferred Resources to Indicated Resources. The majority of mineralization at these three, on-strike, high-grade zones is currently defined as Inferred Mineral Resource classification and thus not considered for inclusion in the U/G PFS mine plan. As proven by the Company's drilling at the Triple R deposit's R00E and R780E zones, Fission has an excellent track record of converting Inferred-category resources to Indicated-category. As a result, there is a clear path for growing the deposit, potentially leading to an increased resource as well as a longer mine life.

The PFS has an effective date of September 19, 2019. All currency figures are expressed in Canadian dollars unless denoted otherwise.

U/G PFS Highlights

Reduced Capital Costs, Low Operating Costs, and Robust Economics

- Substantially reduced earthworks as a result of eliminating the dyke, slurry wall, dewatering, and overburden removal that was envisaged in the Hybrid PFS
- Construction timeline reduction of 1 year from 4 years (Hybrid PFS) to 3 years (U/G PFS)
- 21% reduction in capital costs from $1.50B (Hybrid PFS) to $1.18B (U/G PFS)
- Seven-year production life
- Average unit operating costs of US$7.18/lb U_3O_8
- Pre -Tax economics:
    - IRR of 34%
    - NPV at 8% of $1.33B
    - Payback in 2.2 years

Demonstrated Scope for Substantial Growth

- Additional Zones: The PFS mine plan has been designed specifically to accommodate all five currently defined mineral zones based on potential future conversion of Inferred Resources to Indicated Resources. These include the three high-grade, on strike zones - R1515W, R845W and R1620E – that are not yet part of Mineral Reserves.

- Zone Expansion: The R780E is open at depth and along plunge to the east and further opportunity exists to continue to grow the resource in those directions, potentially extending the underground mine life.
- Mineralization Upgrade: The PFS mine plan does not include areas of Inferred Mineral Resource in the R00E and R780E zones.

Reduced Environmental Impact

- The U/G PFS mine plan completely eliminates the need for a ring dyke, slurry wall, dewatering, and overburden removal that was included in the Hybrid PFS.
- Recovery of reserves near the overburden and bedrock contact (the crown pillar) will utilize artificial ground freezing technology drilled remotely from shore, which eliminates any disturbances into Patterson Lake. Artificial ground freezing has been used extensively at uranium deposits in the Athabasca Basin.
- Other than a freshwater intake pump, and treated effluent discharge point, all other infrastructure related to mining at PLS is set back a minimum of 100 m from the shoreline of Patterson Lake.
- The revised mining method results in a reduction of approximately 90% of total mine-related earth movement from the Hybrid PFS to the U/G PFS (51.2Mt in the Hybrid PFS compared to 5.4 Mt in the U/G PFS), and a 58% reduction to the total disturbed area.

Ross McElroy, President, COO, and Chief Geologist for Fission, commented, "This prefeasibility report presents an underground-only method for production at PLS as an alternative to the hybrid base case, which combined underground with open pit mining. The report highlights important potential advantages to the underground approach, including large reductions in capital expenditure, construction time and surface footprint, while still enjoying low operating costs and a very strong return on investment. We are delighted by the results and have demonstrated the flexibility of the Triple R to be mined by multiple methods. Fission is now able to transition confidently into the feasibility study phase."

Technical Summary

Overview

The U/G PFS was prepared by independent consultants led by RPA, who carried out resource estimation, mining design, and overall compilation, assisted by BGC Engineering Inc. (geotechnical aspects), Newmans Geotechnique Inc. (artificial ground freezing), Wood Canada Ltd. (process and infrastructure), Melis Engineering Ltd. (metallurgical testing), Clifton Associates Ltd. (environment and tailings), Artisan Consulting Services Ltd. (directional drilling assistance), and Thyssen Mining Construction of Canada Ltd. (mine design, scheduling, and cost estimation support).

In addition to managing radiological issues common to uranium mining, key technical challenges to developing the operation will be 1) accessing the deposit through the saturated sandy overburden, and 2) recovery of the crown pillar reserves. To access the deposit, a decline is planned through the overburden using the New Austrian Tunnelling Method (NATM) and other ground support measures, a common technique used for developing through soft ground. The design of the decline is undergoing further optimization and refinement. In addition to the decline, two vertical shafts will be developed to provide a dedicated ventilation system for the mine and secondary egress. The crown pillar will be partially recovered with the installation of an artificial ground freezing system, using holes drilled from the shore of Patterson Lake using directional drilling technology. Once the holes are drilled, a refrigerated brine solution is pumped through the holes in order to freeze the ground, providing ground improvement and reducing permeability of the rock.

Mineral Resources
The Mineral Resource block model is unchanged from the previous PFS that was completed in April 2019, other than re-reporting the block model based on the changes to the proposed mining method and associated cut-off grade. The Mineral Resource statement does not include the drilling that was done over the Winter or Summer of 2019. Estimated block model grades are based on chemical assays only.

The Triple R deposit as defined in the Mineral Resource estimate is comprised of several nearly vertical stacked lenses across five mineralized zones that are generally oriented with an azimuth 66.2°. A set of

cross-sections and level plans were interpreted to construct a total of 82 three-dimensional wireframe models (domains) for the mineralized zones at a minimum grade of 0.05% U_3O_8. Of the 82 wireframes, 16 are High Grade domains created at a minimum grade of approximately 5% U_3O_8, which are enveloped within the Low Grade domains.

Block model grades were interpolated by inverse distance cubed (ID^3). Classification into the Indicated and Inferred categories was guided by the drill hole spacing and the continuity of the mineralized zones. The updated Mineral Resources are shown in Table 1.

Table 1: Mineral Resource Statement – October 23, 2018

		Tonnes	Metal Grade		Contained Metal	
Classification	Zone	(kt)	% U_3O_8	g/t Au	(M lbs U_3O_8)	(koz Au)
Indicated	R780E	1,922	2.18	0.66	92.4	40.6
	R000E	97	1.5	0.16	3.2	0.5
	R1620E	42	2	0.22	1.8	0.3
	R840W	88	1.68	0.32	3.3	0.9
	R1515W	66	1.13	0.38	1.6	0.8
Indicated Total		2,215	2.1	0.61	102.4	43.1
Inferred	R780E	549	0.83	0.57	10.1	10
	R000E	8	4.09	0.78	0.7	0.2
	R1620E	59	3.52	0.47	4.6	0.9
	R840W	280	1.86	0.49	11.5	4.4
	R1515W	227	0.94	0.41	4.7	3
	HALO	98	0.58	0.38	1.2	1.2
Inferred Total		1,221	1.22	0.5	32.8	19.7

Notes:

1. CIM definitions (2014) were followed for Mineral Resources.
2. Mineral Resources are reported inclusive of Mineral Reserves.
3. Mineral Resources are reported at a cut-off grade of 0.25% U_3O_8.
4. The cut-off grades are based on price of US$50 per lb U_3O_8 and an exchange rate of US$0.75/C$1.00.
5. A minimum mining width of 1.0 m was used.
6. Numbers may not add due to rounding.

Mineral Reserves
An updated estimate of Mineral Reserves for the Project was carried out by RPA based on the underground mine plan that captures the majority of the High Grade Indicated Resources in the R780E and R00E zones. The U/G PFS supersedes all previous mine plans and Mineral Reserve statements. The Mineral Reserves are summarized in Table 2.

Table 2: Mineral Reserve Statement – September 19, 2019

Classification	Tonnes (kt)	Grade (% U_3O_8)	Contained Metal (M lbs U_3O_8)
Probable Reserves	2,299	1.61	81.4

Notes:

1. CIM definitions (2014) were followed for Mineral Reserves.
2. Underground Mineral Reserves are reported using stope shapes generated with a 0.25% U_3O_8 minimum grade.
3. This cut-off grade is based on a price of US$50 per lb U_3O_8 and an exchange rate of US$0.75/C$1.00.
4. For underground mining, a minimum mining width of 3.0 m was used, which includes 0.5 m dilution on both the hangingwall and footwall.
5. An extraction factor of 95% was applied.
6. Numbers may not add due to rounding.

A comparison to the previous Mineral Reserves is shown in Table 3.

Table 3: Comparison of Mineral Reserve Statements

	Hybrid PFS (April 15 2019)			U/G PFS (September 19 2019)			Difference		
Classification Probable	Tonnes (kt)	Grade (% U_3O_8)	Contained Metal (M lbs U_3O_8)	Tonnes (kt)	Grade (% U_3O_8)	Contained Metal (M lbs U_3O_8)	Tonnes (kt)	Grade (% U_3O_8)	Contained Metal (M lbs U_3O_8)
Open Pit	2,296	1.62	82.3	-	-	-	(2,296)	(1.62)	(82.3)
Underground	592	0.63	8.2	2,299	1.61	81.4	1,707	0.98	73.1
Total Probable	2,888	1.42	90.5	2,299	1.61	81.4	(589.00)	0.19	(9.1)

The reduction in Mineral Reserves is mainly related to the Hybrid PFS capturing all the Mineral Resources at the contact of the overburden in the open pit, whereas the U/G PFS leaves some of it behind as a result of ground control considerations (discussed further below).

Mining
The U/G PFS is based on accessing the deposit using a decline developed from a position west of the deposits. The area of the decline is temporarily dewatered while the development progresses through the overburden. The excavation method is known as the New Austrian Tunneling Method (NATM) with other localized ground support planned. NATM is a common development method for soft ground. In addition to the decline, two vertical shafts are excavated sequentially to provide a dedicated ventilation system for the mine (one fresh air intake shaft, and one exhaust air shaft). After the decline extends through the overburden and transition bedrock zone, more typical hardrock development can commence. Mining uses the longhole stoping method (in both transverse and longitudinal orientation) and isolated pockets of cut and fill development.

A partial recovery of the mineralized material approaching the contact between the overburden and bedrock is achieved by utilizing artificial ground freezing. The ground is frozen by way of drilling holes into the overburden and shallow bedrock using horizontal directional drilling collared from an area on the shore of Patterson Lake. Upon completion of the ground freezing holes, a refrigeration plant pumps a brine solution

through the holes in order to create a frozen cap with increased ground stability and reduced ground water inflow. Even with this system in place, some Mineral Resources approaching the overburden contact will be sterilized. This sterilized material could be further evaluated for eventual extraction in future studies. An overview of the mine plan is shown in Figure 1.

Processing

The process plant envisaged for the U/G PFS is generally similar to the process plant that was considered for the Hybrid PFS. The plant design is based on conventional processing technology that has been used in uranium plants in northern Saskatchewan and globally. The main components of the processing plant are:

- Grinding
- Leaching
- Liquid-Solid Separation via Counter Current Decantation
- Solvent Extraction
- Yellowcake Precipitation
- Yellowcake Packaging
- Tailings Neutralization and Thickening

Process recovery is estimated to be 96.8%, based on detailed metallurgical testing. The processing plant includes a number of ancillary facilities, including an on-site acid generating facility.

Infrastructure

The infrastructure requirements are similar to what was required for the Hybrid PFS. The major components of infrastructure include:

- Camp and catering facilities
- Airstrip
- Liquified natural gas (LNG) power plant
- Tailings management facility (TMF)
- Administration building and warehouse
- Maintenance facility
- Effluent treatment system

The TMF utilizes the pervious surround design method of tailings sequestration, a common method used in uranium mines in northern Saskatchewan. The infrastructure also includes an area referred to as the "505 Cut", which is a cleared and leveled ground required for the installation of the ventilation shafts and ground freezing systems.

An overview of the site infrastructure is provided in Figure 2.

U/G PFS Life of Mine (LOM) Summary

A summary of the salient points regarding the U/G PFS is shown under the following headings.

Physicals

- Three-year construction period, consisting of box cut and portal, decline, ventilation shafts, underground capital development, and plant and infrastructure construction.
- Approximately seven years of operations at 1,000 tonnes per day (tpd) ore.
- 2.3 Mt processed over the LOM, grading 1.61% U_3O_8, containing 81.4 M lbs U_3O_8
- Process recovery of 96.8%, based on PFS-level metallurgical testwork.
- Production of 78.7 M lbs of U_3O_8, averaging 13.1 M lbs per year for the first five years.

Revenue

- Uranium price of US$50/lb U_3O_8, based on long-term consensus forecasts.
- Exchange rate of 0.75 US$/C$1.00
- Gross revenue of C$5,250 million
- Less Saskatchewan Government Gross Revenue Royalties of C$381 million

- Net revenue of C$4,869 million

Operating Costs
A summary of operating costs is shown in Table 4.

Table 4: Summary of Operating Costs

	LOM Cost	Average Annual	Unit Cost	Unit Cost
Description	(C$ millions)	(C$ millions)	(C$/t proc)	(C$/lb U_3O_8)
Mining	314.6	52.4	137	3.99
Processing	266.4	40.2	116	3.38
General and Administration	172.5	26.2	75	2.19
Total	753.4	118.8	328	9.57

Capital Costs
A summary of capital costs is shown in Table 5.

Table 5: Summary of Capital Costs

Capital Cost Area	Value
	(C$ millions)
Mining	201
Processing	350
Infrastructure	120
Total Direct Cost	670
Indirect Costs	315
Contingency	192
Initial Capital Cost	1,177
Sustaining Capital	209
Reclamation and Closure	74
Total Capital Cost	1,459

Taxes and Royalties Paid to Government
A summary of taxes and royalties paid to provincial and federal governments is shown in Table 6.

Table 6: Summary of Taxes and Royalties

Parameter	Value
	(C$ millions)
Provincial revenue royalties	381
Provincial profit royalties	436
Provincial corporate income tax	290
Federal corporate income tax	363
Total taxes and royalties paid	1,469

Economic Results
Pre-tax and after-tax economic results are summarized in Table 7.

Table 7: Summary of Economic Results

Parameter	Units	Pre-Tax	After-Tax
Cash Flow	C$ millions	2,656	1,568
Payback Period	yrs.	2.2	2.5
IRR	%	34%	25%
NPV @ 8% discount	C$ millions	1,334	702

Comparison to Hybrid PFS
Table 8 provides a comparison between the Hybrid PFS and the U/G PFS in a number of key parameters.

Table 8: Comparison between Hybrid PFS and U/G PFS

	Units	2019 Hybrid PFS	2019 U/G PFS
PROJECT TIMELINE			
Construction Period	yrs	4.0	3.0
Operations Period	yrs	8.2	7.0
MINING and PROCESSING			
Ore Tonnes mined	kt	2,888	2,299
U_3O_8 Grade	%	1.42%	1.61%
Contained Pounds	'000 lbs U_3O_8	90,498	81,355
Overburden and 505 Cut	kt	28,598	1,853
Waste Rock	kt	20,260	1,219
Total Moved	kt	51,155	5,372
Recovery	%	96.7%	96.8%
Recovered U_3O_8	'000 lbs U_3O_8	87,548	78,747
CAPITAL AND OPERATING COSTS			
LOM Operating Costs	C$ millions	790	753
Unit Operating Cost	C$ / t proc	274	328
Unit Operating Cost	C$ / lb U_3O_8	9.03	9.57
Initial Capital Cost	C$ millions	1,499	1,177
Total Capital Cost	C$ millions	1,713	1,459
PROJECT ECONOMICS			
Pre-Tax Payback Period	yrs	2	2.2
Pre-Tax IRR	%	29%	34%
Pre-Tax NPV @ 8%	C$ millions	1,319	1,334
Post-Tax Payback Period	yrs	2.3	2.5
Post-Tax IRR	%	21%	25%
Post-Tax NPV @ 8%	C$ millions	693	702

PLS Mineralized Trend & Triple R Deposit Summary

Uranium mineralization of the Triple R deposit at PLS occurs within the Patterson Lake Conductive Corridor and has been traced by core drilling over ~3.18 km of east-west strike length in five separated mineralized "zones" which collectively make up the Triple R deposit. From west to east, these zones are: R1515W, R840W, R00E, R780E and R1620E. Through successful exploration programs completed to date, Triple R has evolved into a large, near surface, basement hosted, structurally controlled high-grade uranium deposit.

The discovery hole was announced on November 05, 2012 with drill hole PLS12-022, from what is now referred to as the R00E zone.

The R1515W, R840W and R00E zones make up the western region of the Triple R deposit and are located on land, where overburden thickness is generally between 55 m to 100 m. R1515W is the western-most of the zones and is drill defined to ~90 m in strike-length, ~68 m across strike and ~220 m vertical and where mineralization remains open in several directions. R840W is located ~515 m to the east along strike of R1515W and has a drill defined strike length of ~430 m. R00E is located ~485 m to the east along strike of R840W and is drill defined to ~115 m in strike length. The R780E zone and R1620E zones make up the eastern region of the Triple R deposit. Both zones are located beneath Patterson Lake where water depth is generally less than six metres and overburden thickness is generally about 50 m. R780E is located ~225 m to the east of R00E and has a drill defined strike length of ~945 m. R1620E is located ~210 m along strike to the east of R780E, and is drill defined to ~185 m in strike length.

Mineralization along the Patterson Lake Corridor trend remains prospective along strike in both the western and eastern directions. Basement rocks within the mineralized trend are identified primarily as mafic volcanic rocks with varying degrees of alteration. Mineralization is both located within and associated with mafic volcanic intrusives with varying degrees of silicification, metasomatic mineral assemblages and hydrothermal graphite. The graphitic sequences are associated with the PL-3B basement Electro-Magnetic (EM) conductor.

Patterson Lake South Property

The 31,039 hectare PLS project is 100% owned and operated by Fission Uranium Corp. PLS is accessible by road with primary access from all-weather Highway 955, which runs north to the former Cluff Lake mine and passes through the nearby UEX-Areva Shea Creek discoveries located 50km to the north.

Qualified Persons
This News Release describes an adjusted Mineral Resource estimate, an updated Mineral Reserve estimate, and a PFS Life of Mine Plan and cash flow based upon geological, engineering, technical and cost inputs developed by RPA and other study participants. A National Instrument 43-101 Technical Report will be filed on SEDAR and made available on the Company's website within 45 days. The technical information in this news release has been prepared in accordance with the Canadian regulatory requirements set out in National Instrument 43-101 and reviewed and approved by Charles Edwards, P.Eng., of Wood, Mark Wittrup, P.Eng., of Clifton, David M. Robson, P.Eng., M.B.A., Mark Mathisen, C.P.G., and Jason Cox, P.Eng. of RPA, each of whom is a "qualified person" under National Instrument 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101").

The technical information in this news release has been prepared in accordance with the Canadian regulatory requirements set out in National Instrument 43-101 and reviewed on behalf of the company by Ross McElroy, P.Geol., President and COO for Fission Uranium Corp., a qualified person.

About Fission Uranium Corp.

Fission Uranium Corp. is a Canadian based resource company specializing in the strategic exploration and development of the Patterson Lake South uranium property - host to the class-leading Triple R uranium deposit - and is headquartered in Kelowna, British Columbia. Fission's common shares are listed on the TSX Exchange under the symbol "FCU" and trade on the OTCQX marketplace in the U.S. under the symbol "FCUUF."

ON BEHALF OF THE BOARD

"Ross McElroy"
Ross McElroy, President and COO

Cautionary Statement: Certain information contained in this press release constitutes "forward-looking

information", within the meaning of Canadian legislation. Generally, these forward-looking statements can be identified by the use of forward-looking terminology such as "plans", "expects" or "does not expect", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate", or "believes", or variations of such words and phrases or state that certain actions, events or results "may", "could", "would", "might" or "will be taken", "occur", "be achieved" or "has the potential to". Forward looking statements contained in this press release may include statements regarding the future operating or financial performance of Fission and Fission Uranium which involve known and unknown risks and uncertainties which may not prove to be accurate. Actual results and outcomes may differ materially from what is expressed or forecasted in these forward-looking statements. Such statements are qualified in their entirety by the inherent risks and uncertainties surrounding future expectations. Among those factors which could cause actual results to differ materially are the following: market conditions and other risk factors listed from time to time in our reports filed with Canadian securities regulators on SEDAR at www.sedar.com. The forward-looking statements included in this press release are made as of the date of this press release and the Company and Fission Uranium disclaim any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as expressly required by applicable securities legislation.

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