

Announces High Extraction Rates for All Metals in Recent Metallurgical Testwork Supporting Low Carbon Metal Production

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- CEO, Keith Morrison

Toronto, February 22, 2024 - Premium Nickel Resources Ltd. (TSXV: PNRL) (OTCQX: PNRLF) ("PNRL" or the "Company") is pleased to announce the phase two results of metallurgical testing of the Company's nickel, copper, cobalt, platinum-group elements ("Ni-Cu-Co-PGE") Selkirk project and the nickel, copper, cobalt Selebi project, both of which are located in Botswana.

The Selkirk Ni-Cu-Co-PGE deposit, located 75 kilometres north of PNRL's flagship Selebi Mine in Botswana, is a near surface deposit that has been extensively drilled by previous operators. Initial metallurgical test work carried out in 2021 by PNRL at SGS Canada in Lakefield, Ontario demonstrated that it was possible to produce separate nickel and copper grades at acceptable recoveries. To enhance recoveries, PNRL has been exploring alternate processing options for both the Selebi and Selkirk mines, including producing a lower grade nickel concentrate suitable for hydrometallurgical processing. Given the disseminated nature of the Ni-Cu-Co-PGE mineralization at Selkirk, a processing flowsheet designed to maximize Ni-Cu-Co-PGE recovery via a bulk flotation concentrate is being evaluated. This could add optionality for saleable products, which could include a separate Cu concentrate and a separate Ni-Cu-Co-PGE concentrate, to be further refined by hydrometallurgical processing.

Chris Fleming, SGS Canada, commented: "Recoveries of all the pay metals (Ni, Cu, Co, Au, Pt and Pd) to the solution phase were very high (generally >99%) in the initial batch autoclave testing of the Platsol process with concentrates from both the Selkirk and Selebi projects. In fact, in all my years of testing the Platsol process on ores and concentrates from around the world, I have never before experienced Pt and Pd recoveries of >99% by direct autoclave leaching under Platsol conditions. The downstream processes have been tested at bench scale and separate precious metal, copper, cobalt and nickel products have been generated-targeting a final nickel product of battery grade nickel sulphate hexahydrate. Although it is not possible to precisely quantify final metal recoveries to saleable products until continuous, integrated piloting is completed, based on commercial experience of base metal hydrometallurgical plants, overall recoveries of all pay metals from both Selkirk and Selebi nickel and copper concentrates or a combined bulk nickel-copper (+Co, PGE's) concentrate should be >95% in a well-designed, well-operated plant. SGS Minerals looks forward to working with PNRL to advance this project to a pre-feasibility stage."

Keith Morrison, PNRL CEO, commented: "PNRL's recent hydrometallurgical tests show very high extraction rates of Cu, Ni, Co and PGEs into leach solution and subsequently equally high recoveries into precipitates. We are very pleased that our vision for future low carbon critical metal mines is supported by these results. PNRL will continue with the evaluation of hydrometallurgical processing options for Selebi and Selkirk, providing a superior alternative to the legacy smelting. It will cut power usage, reduce pollution, boost metal recovery and facilitate local beneficiation. Next steps include flowsheet optimization studies to maximize Ni recovery to the flotation concentrate."

Detailed Platsol Testing

In late 2023 and early 2024, PNRL completed phase 1 scoping level laboratory tests at SGS Canada in Lakefield, Ontario, investigating the application of the Platsol hydrometallurgical technology on the Selebi and Selkirk concentrates, in particular the Selkirk concentrates, which contain potentially valuable levels of PGEs (see news release dated September 13, 2023).

The Platsol process is a high-temperature, chloride-assisted pressure leaching process developed at SGS Canada to simultaneously extract both base metals and precious group metals as soluble chloro-complexes into the autoclave leach solution. Previous work with Platsol has demonstrated that of all the many PGE minerals found in nature, only the sperrylite family of minerals respond poorly to Platsol. Since only minimal sperrylite was found in the Selkirk nickel concentrate and none in the Selebi Ni concentrate (Table 1), these concentrates are expected to respond well to Platsol, provided the PGE minerals are well exposed.

Table 1. PGE Association and number of grains

Association	Formula	Selebi Ni Conc	Selkirk Ni Conc
Genkinite	(Pt,Pd) ₄ Sb ₃	0	1
Sperrylite	PtAs ₂	0	6
Michenerite	(Pd,Pt)BiTe	0	29
Moncheite	(Pt,Pd)(Te,Bi) ₂ O	0	1
Merenskyite	(Pd,Pt)(Te,Bi) ₂ S	1	21
Kotulskite	Pd(Te,Bi)	0	59
Gold	AuAg	1	0
Total		2	117

Note: PGE identification is based mainly on acquired spectra from the TIMA-X analysis.

The Phase 1 Platsol studies using a 2 litre autoclave tested the optimal conditions (pressure, temperature, residence time, grind size) and extraction rates of metals into the leach solution. Results showed very high extractions rates are possible for all metals, including PGEs (Table 2).

Table 2. Results of Phase 1- Initial laboratory testwork on Platsol testing of Selebi and Selkirk concentrates.

Test No.	Date	Concentrate, conditions	Extraction to leach solution, %					
			Ni	Cu	Co	Pt	Pd	Au
P1	11 Aug	Selkirk Ni conc. 220°C	98.8	99.8	99.0	99.5	98.2	90.8
P2	14 Aug	Selebi Ni conc. 220°C	99.3	99.8	98.2	95.5	94.3	55.3
P3	21 Aug	Selkirk Cu conc. 220°C	99.1	98.9	85.0	82.9	87.0	74.2
P4	29 Aug	Selkirk Cu conc. 235°C	94.3	90.2	97.4	85.4	83.2	79.0
P5	9 Sept	Selkirk Cu conc. 225°C & 10 microns grind size	98.8	99.7	82.4	97.3	97.1	94.7
P6	26 Sept	Selkirk bulk Ni-Cu conc 225°C & 10 microns grind size	99.4	99.6	97.8	96.9	96.9	96.2

Note: Extraction is based on levels in leach solution and residue.
Pressure constant at 100psi and residence times constant at 120 minutes.

Phase two extraction from solution focused on the Selkirk nickel concentrate. A larger volume of Selkirk nickel concentrate was tested in a 20 litre autoclave giving extractions rate shown in Table 3.

Table 3. Extraction rates of metals for Selkirk nickel concentrate used in Phase 2 scoping study

Test No.	Date	Concentrate	Extraction to leach solution, %					
			Ni	Cu	Co	Pt	Pd	Au
P8	8 Nov	Selkirk Ni	97.8	99.7	98.9	99.6	98.9	94.0

Tests using 5 litres of autoclave solution measured PGE and base metal recovery through precipitation of the leach solution. Table 4 shows the high recovery of PGEs to precipitate.

Table 4. Overall recoveries of PGEs for Selkirk nickel concentrate tested in Phase 2 scoping study

Item	PGE recovery-Ni conc to PGE precipitate, %		
	Pt	Pd	Au
PGE recovery (rounded)	97	97	81

Downstream processing to remove copper, cobalt and nickel followed established methods, with high

recoveries of metals using multi-stage processes. In a commercial plant, solution would be recirculated and expected recoveries of copper, nickel and cobalt are indicated below in Table 5.

Table 5. Expected overall recoveries of base metals for Selkirk nickel concentrate tested in Phase 2 scoping study

Item	Expected base metal recovery to final product, %		
	Ni	Cu	Co
Metal recovery (rounded)	>95	>95	>95

Qualified Person

The scientific and technical content of this news release has been reviewed and approved by Phillip Mackey, Consulting Metallurgist, who is a "qualified person" for the purposes of NI 43-101.

Historic Estimates

Certain scientific and technical information in this news release pertaining to Selkirk (including the mineral resource estimates presented in Table 1 and Table 2) are considered to be historical in nature and should not be relied upon as a current mineral resource estimate. The historical information contained in this news release does not comply with NI 43-101. While management believes that these historical mineral resource estimates could be indicative of the presence of mineralization on the Selkirk Mines property, a "qualified person" (for purposes of NI 43-101) has not completed sufficient work to classify the historical mineral estimate as a current mineral resource estimate and the Company is not treating the historical mineral estimates as current mineral resource estimate.

About SGS Canada Inc.

SGS Canada Inc. is accredited to the requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation, including geochemical, mineralogical, and trade mineral tests. To view a list of the accredited methods, please visit the following website and search SGS Canada <https://www.scc.ca/en/search/palcan>.

About Premium Nickel Resources Ltd.

PNRL is a mineral exploration and development company that is focused on the redevelopment of the previously producing nickel, copper and cobalt resources mines owned by the Company in the Republic of Botswana. We are driven by our belief that the demand for these metals will continue to grow in the medium to long term, as a result of global urbanization and the increasing adoption of electric motors over internal combustion engines. These metals are vital for achieving a low-carbon future.

PNRL is committed to governance through transparent accountability and open communication within our team and our stakeholders. Our skilled team has worked over 100 projects collectively, accumulating over 400 years of resource discoveries, mine development and mine re-engineering experience on projects like the Company's Selebi and Selkirk mines. PNRL's senior team members have on average more than 20 years of experience in every single aspect of mine discovery and development, from geology to operations.

ON BEHALF OF THE BOARD OF DIRECTORS

Keith Morrison
Director and Chief Executive Officer
Premium Nickel Resources Ltd.

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Cautionary Note Regarding Forward-Looking Statements:

Certain statements contained in this news release may be considered "forward-looking statements" within the meaning of applicable Canadian securities laws. All statements, other than statements of historical fact, are forward-looking statements and based on expectations, estimates and projections as at the date of this news release. These forward-looking statements, by their nature, require the Company to make certain assumptions and necessarily involve known and unknown risks and uncertainties that could cause actual results to differ materially from those expressed or implied in these forward-looking statements. Forward-looking statements are not guarantees of performance. Words such as "may", "will", "would", "could", "expect", "believe", "plan", "anticipate", "intend", "estimate", "continue", or the negative or comparable terminology, as well as terms usually used in the future and the conditional, are intended to identify forward-looking statements. Information contained in forward-looking statements are based upon certain material assumptions that were applied in drawing a conclusion or making a forecast or projection, including management's perception of geology and mineralization; assumptions, limitations and qualifications in the Selkirk Technical Report; the ability to the Company to expand mineral resources beyond current mineral resources estimates; the utility of any historical data in respect of the Selkirk deposit; the results of any testing; the ability of exploration activities (including drill results) to accurately predict mineralization; the significance of the metallurgical study; the timing and results (if any) of the Phase 2 Platsol testing program; the significance of PGE in the concentrate; perceptions of historical trends; current conditions and expected future developments; current information available to the management of the Company; risks relating to mining activities and the business of mineral exploration; the general business and prospects of the Company; public disclosure from operators of the relevant mines, as well as other considerations that are believed to be appropriate in the circumstances. The Company considers its assumptions to be reasonable based on information currently available but cautions the reader that there can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements and the Company's assumptions, many of which are beyond the control of the Company, may ultimately prove to be incorrect since they are subject to risks and uncertainties that affect the Company and its businesses.

For additional information with respect to these and other factors and assumptions underlying the forward-looking statements made in this news release concerning the Company, please refer to the public disclosure record of the Company, including the risk factors outlined in the most recent management discussion and analysis of the Company and the filing statement of the Company dated July 22, 2022, both of which are available electronically on SEDAR+ (www.sedarplus.ca) under the Company's issuer profile. The forward-looking statements set forth herein concerning the Company reflect management's expectations as at the date of this news release and are subject to change after such date. The Company disclaims any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, other than as required by law.

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