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Companies Announcement Office
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Conclusion of Operations for the Lance Project Low-pH Field Demonstration

HIGHLIGHTS

- Field demonstration operations concluded at the end of November
 - Seven months ahead of guidance due to the success of a close-spaced pattern
- Primary objectives for the Low pH field demonstration were met
 - Evaluation of multiple production pattern configuration alternatives
 - Data obtained for development of an updated uranium recovery curve
 - Peak recovery grade of 150 ppm U_3O_8 achieved from over twenty-five pore volumes in the close-spaced pattern
 - Commencing data analysis to update technical assumptions
 - Uranium concentrate produced from recovered solutions
- Secondary objectives to continue
 - Bench and pilot-scale evaluation of advanced uranium recovery technologies
 - Field demonstration area to be preserved for future pilot testing of recovery plant optimisation concepts
- Two new key management positions filled

Peninsula Energy Limited ("**Peninsula**" or "**the Company**") (ASX:PEN, OTCQB:PENMF) is pleased to provide the following update on the Low-pH field demonstration at the Company's flagship, 100% owned Lance Project ("**Lance**" or "**the Project**") located in Wyoming, USA. The field demonstration of Low-pH In-Situ Recovery ("**ISR**") has yielded usable data and meaningful observations. Consequently, the field demonstration operations were concluded at the end of November.

The last field demonstration update in September 2021 outlined actions that had been taken across key focus areas to enhance and accelerate the field demonstration, including the preparation of a small-scale production pattern. Subsequently, the new small-scale pattern was activated and successfully operated. The operation of a reduced scale pattern allowed the Company to rapidly advance an area to approach full depletion.

Commenting on the field demonstration efforts, Peninsula Managing Director and Chief Executive Officer Wayne Heili said *"Over the past 16 months, operation of the field demonstration has delivered valuable results as we consider progressing the Lance Project toward a return to production. We can now compile and evaluate the site-specific data into the format needed to produce an updated economic evaluation for the Project. Once completed, we will be able to use the results together with an assessment of the prevailing uranium market, to drive our re-start decision."*

ACHIEVEMENT OF THE FIELD DEMONSTRATION PRIMARY OBJECTIVES

Previously, Peninsula has highlighted the achievement of targeted solution chemistry, principally pH level and Oxidation-Reduction Potential ("**ORP**"), along with corresponding elevated uranium production

grades for the field demonstration area. Importantly, operations have continued to run well, complimenting the previous results. Through recent efforts, the Company has met the primary objectives of the field demonstration.

At the start of the Field Demonstration in mid-2020, the Company identified several primary objectives including:

1. Evaluate larger well spacing for production patterns and the impact on
 - a. Wellfield acidification rates
 - b. Total acid consumption, and
 - c. Uranium recovery efficiency
2. Testing of alternatives for enhancing the recovery solution oxidation potential, and
3. Evaluating alternative solids management methods

ISR Pattern Evaluations

Peninsula has effectively used the field demonstration to evaluate multiple ISR pattern configurations and to identify optimal design parameters for the Lance Projects. The initial design of the field demonstration area (“**MU1A**”) featured a ring of injection wells surrounding three production wells and atypical distances between the injectors and producers. The injector to producer well spacing for the initial patterns was selected to match the 2018 Feasibility Study assumption of approximately 125 feet, which is 67% larger than the well spacing of the historical alkaline ISR patterns utilised in the first two mine units at Lance. This design proved to be inefficient for demonstration/testing purposes. The time required to achieve an effective water flood from the injection wells to the production wells was undesirably long. Further, the amount of protore and/or non-mineralised host rock material included in the pattern area led to higher than anticipated acid requirements and slower overall rates of acidification. While larger pattern sizes help drive lower capital costs, the complex and sinuous nature of the mineral deposition at the Project leads to the inclusion of a higher ratio of non-mineralised rock in each larger scale pattern.

As a remedial measure, the Company installed two interior injection wells (MU1-OZ345 and MU1-OZ347) located between the three original production wells. See **Figure 1** below for location details. As previously reported, the shorter direct flow paths between the added injection wells and the recovery wells favourably impacted the wellfield performance, but the rate of progression (total pore volumes recovered per month) for the field demonstration was not affected since the pattern volume and overall flow rates were unchanged.

The Company subsequently prepared a small-scale test pattern within the larger MU1A area. The new pattern features three new wells (MU1-OZ348, OZ349 and OZ350), with much closer spacing. The new small-scale pattern provided a means to sweep a discrete area’s volume quickly and efficiently. The pattern was commissioned in September.

Since the commissioning of the new pattern, the production grade specific to this small area peaked above 150 ppm U_3O_8 . The pattern grade responded promptly as the pattern area had the benefit of being within the already established MU1A area, which had been treated with Low-pH solutions in conjunction with the large pattern operations. As noted, the scale of the pattern allows for short timeframes in displacing the contained solution volumes. Since activation, twenty-five pore volumes have been processed with an average produced grade of 67 ppm. The rapid recovery and depletion of the uranium contained in this discrete area has generated valuable data for the development of a complete recovery curve and to inform process design elements necessary to update the Project technical assumptions.

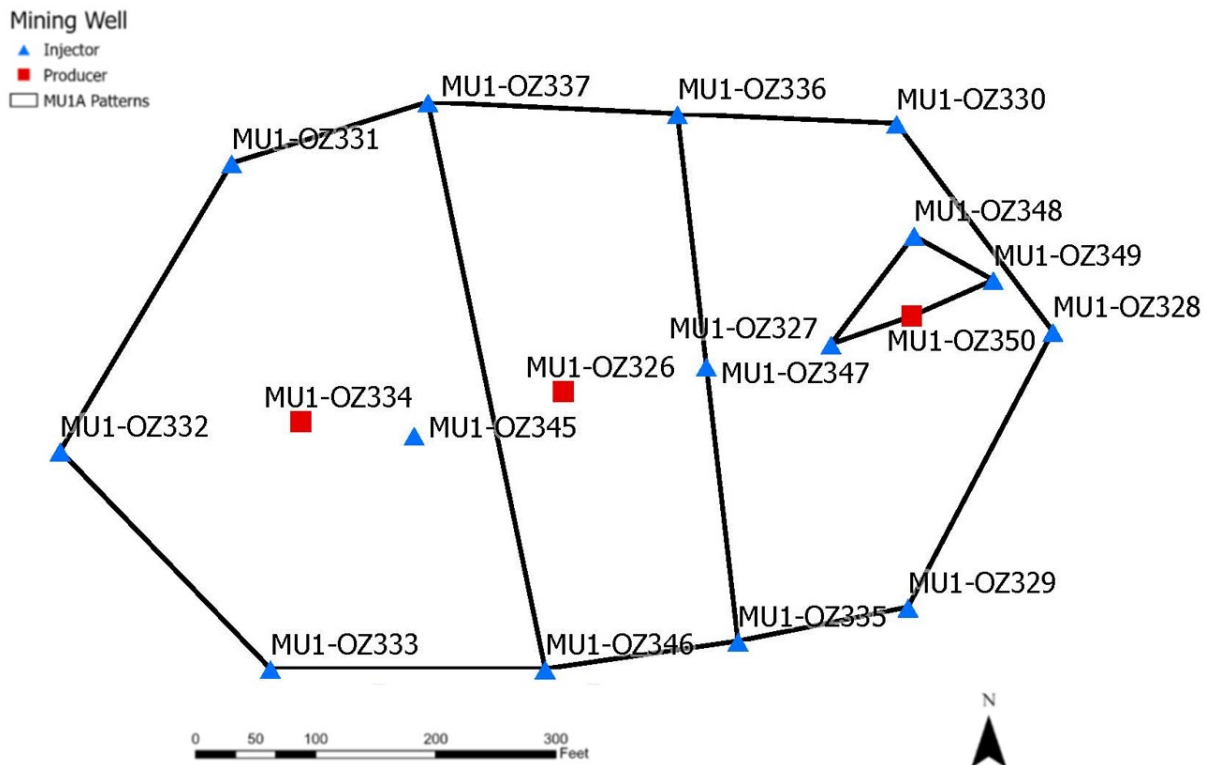


Figure 1: Modified Patterns within MU1A

With the field demonstration generating commercially economic uranium grades, the produced solutions were processed through a pilot scale ion exchange system to capture and recover the uranium. Fully loaded ion exchange resins were subsequently treated to remove the contained uranium and yellowcake concentrates were produced. The concentrates will be utilised to demonstrate the efficacy of the downstream plant processes in producing a high-quality yellowcake product.

Oxidant Addition

Through laboratory testing, the Company identified the potential to improve the ISR uranium recovery profile at Lance via the addition of an oxidisation agent. Gaseous oxygen and liquid hydrogen peroxide were identified as leading candidates for economic oxidant addition on a commercial scale.

The MU1A field demonstration was initiated with gaseous oxygen being added to the injection stream. Oxygen gas is commonly used in alkaline uranium ISR operations, and an oxygen addition system was already in place given the Lance Project's history as an alkaline ISR production project. Over the course of the field demonstration, gaseous oxygen was determined to be limited in its capacity to achieve the ORP target. Consequently, a hydrogen peroxide addition system was designed, installed, evaluated, and subsequently delivered the target ORP levels associated with Low-pH ISR.

The license amendment application for an expanded list of oxidants, including hydrogen peroxide, has progressed through the Wyoming Department of Environmental Quality ("WDEQ") process and a draft license revision is expected to be published for public comment shortly.

Solids Management

The Company recorded significant quantities of fine solids during the field acidification phase of the successful 2019 Low-pH Field Leach Trial. Prior to the mid-2020 commencement of the field

demonstration, the Company developed a preferred method to manage the impact of the fine solids on the uranium ISR recovery systems. One of the primary objectives of the field demonstration was to determine the efficacy of the use of ponds as the preferred solids management system. The solids management system as implemented during the field demonstration has proven to be cost-effective in removing fine solids materials from the wellfield recovery stream.

A license amendment requesting authorisation for the use of ponds for the purpose of fine solids management is in the process of being drafted for submission to the WDEQ.

FIELD DEMONSTRATION SECONDARY OBJECTIVES

The MU1A area will be preserved in its current state to maintain the capacity to produce solutions representative of actual Low-pH ISR production streams for further evaluations of advanced uranium recovery technologies. The larger pattern areas are still capable of generating economic uranium concentrations in the produced solutions, in some instances 50 to 60 ppm U_3O_8 .

The innovation of the recovery plant process for Low-pH uranium ISR has been maintained as a secondary objective of the MU1A demonstration effort. Peninsula has used the opportunity presented by conducting a field demonstration to evaluate advanced uranium recovery plant circuit alternatives. Each of the advanced uranium recovery alternatives under evaluation hold the potential to improve the cost and efficiencies of the industry standard technologies for uranium recovery and concentration.

The Company, with the involvement of a third-party consultant, completed desktop evaluations and bench scale testing of a proprietary advanced membrane separation application. The Company continues its evaluation of the test results with an objective to advance the technology through pilot testing.

The Company has also completed desktop evaluations and is advancing plans to complete laboratory scale testing of a proprietary technology that has the potential to serve as a replacement for conventional ion exchange resin processes. If currently active laboratory testing efforts confirm the potential of this technology, it may also be advanced to pilot phase testing.

NEXT STEPS

Peninsula's experienced team has now commenced evaluating the field demonstration data set. Due to the adjustment of multiple variables throughout the progression of the field demonstration and the observed complexity of the mineral system at Lance, the data will require a degree of interpretation and analysis before finalising technical assumptions that can apply across the entire ore body. The Company contemplates a two-month period of data analysis and process design evaluation prior to commencing an update of the Lance Project capital and operating costs.

Permitting of the identified process enhancements is currently underway. A final decision on resuming production operations with the Low-pH ISR method will be based upon the results of the updated studies and the prevailing uranium market conditions.

KEY STAFF ADDITIONS

The Company is also pleased to announce it has significantly strengthened its senior management team with two key appointments.

Mr. Brian Pile joined the Lance Project team as Strata Energy Inc's ("**Strata**") Vice President – Project Development, in mid-November. Strata is the wholly owned US subsidiary of Peninsula which operates the Lance Project. Brian brings 22 years of project experience ranging from development of feasibility studies, engineering, and construction through operational start-up, related to in-situ recovery of uranium in Wyoming, Nebraska, and Kazakhstan. Mr. Pile's primary responsibility at present is the evaluation of the learnings from the MU1A field demonstration and the preparation of updated capital and operating costs for the Project.

Mr. Ken Milmine joined the Lance Project team as Strata's Director of Health, Safety and Environment in August 2021. Ken brings 25 years of experience working in the health and safety, regulatory and environmental management roles for mining companies, including extensive in-situ uranium experience in Wyoming. Mr. Milmine is actively working to complete the development and implementation of a Quality Management System and an Environmental Management System with the intention of the Company becoming ISO 9001 and ISO 14001 certified.

Sincerely Yours,



Wayne Heili
Managing Director / CEO

This release has been approved by the Board of Directors.

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ABOUT PENINSULA ENERGY LIMITED

Peninsula Energy Limited (PEN) is an ASX listed uranium mining company which commenced in-situ recovery operations in 2015 at its 100% owned Lance Projects in Wyoming, USA. Following a positive feasibility study, Peninsula is embarking on a project transformation initiative at the Lance Projects to change from an alkaline ISR operation to a Low-pH ISR operation with the aim of aligning the operating performance and cost profile of the project with industry leading global uranium production projects.