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Companies Announcement Office
Via Electronic Lodgement

Low-pH Field Demonstration Update – Test Adjustments Deliver Favourable Results

HIGHLIGHTS

- Test modifications have delivered favourable results
 - Modified test patterns improve response time
 - Target pH levels are close to being achieved
 - New oxidant is delivering results
 - Uranium in recovery solution increases
- Pilot uranium recovery circuit has been activated
- Field Demonstration expected completion unchanged (1H-2022)

Peninsula Energy Limited (“**Peninsula**” or “**the Company**”) (ASX:PEN, OTCQB:PENMF) is pleased to provide an update on the MU1A low-pH field demonstration at the Company’s flagship, 100% owned Lance Project (“**Lance**”) located in Wyoming, USA.

Following the previous update on 26 February 2021, Peninsula implemented a number of test modifications which have now delivered favourable results.

The Lance field demonstration of low-pH In-Situ Recovery (ISR), which started in August 2020, is designed to provide key data on pattern configurations, pH adjustment, acid consumption and oxidants ahead of a decision to restart production at the Project.

Commenting on the progress of the field demonstration, Peninsula Managing Director and Chief Executive Officer Wayne Heili said “*We are currently eight-months into the field demonstration and are happy with how it is progressing. Adjustments made since our February update have delivered positive results. We will continue to run the field demonstration through the first half of 2022 and the information gained will be invaluable as the Company progresses the Lance Project toward a return to commercial production.*”

REVISED PATTERN CONFIGURATION

Three contiguous full-scale ISR patterns (injection wells feeding a centrally located production well) are operating within a previously unmined area of Mine Unit 1 (collectively “**MU1A**”). The chemical parameters within the original field demonstration patterns responded to injection, but at a slower than optimal rate.

The Company has adjusted the pattern configuration by installing and activating two new injection wells between each pair of recovery wells (see **Figures 1A** and **1B**). The result has been a considerably improved response for the key chemical parameters.

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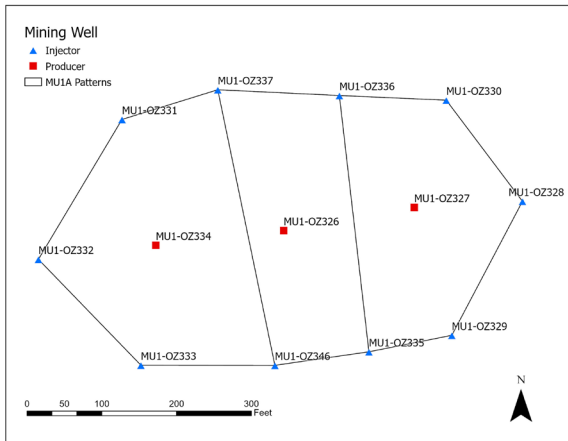


Figure-1A: Original test pattern configuration

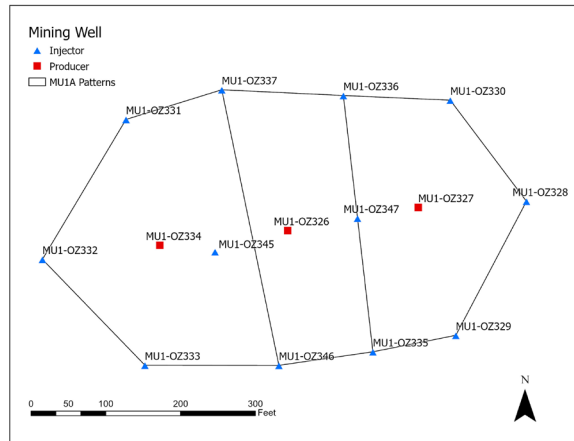


Figure-1B: Test patterns with additional wells

Once completed, the field demonstration will have generated comprehensive data on the influence of this design criteria, which will in turn inform the optimal design for commercial scale production ISR patterns and the corresponding screen interval selection methodology.

CHEMICAL PARAMETER RESPONSE

Achieving and maintaining the correct pH and oxidation-reduction potential (“ORP”) of the process solutions is paramount to successful uranium in-situ recovery operations.

At the time of the February update, only one of the demonstration patterns had reached the target pH of approximately 2.0 standard units (“S.U.”). Subsequently, and without further adjustment to acid solution addition rates or concentrations, the two lagging patterns have responded favourably, yielding a current composite recovery stream pH of 2.3 S.U. The rate of pH response in the test patterns appears to have been a function of the selected pattern dimensions and design.

As previously reported, the field demonstration exhibited a trend toward consuming more acid than was modelled and subsequently projected in the 2018 Feasibility Study. This too is understood to be a function of the selected pattern dimensions and screening design, which cannot be simulated in laboratory testing. The higher level of acid consumption is not a function of acid consuming mineral content, which had been assessed prior to the start of the field operations. The Company will continue to closely monitor the progression of the system pH and will evaluate opportunities to optimise the pattern design criteria and its impact on chemical requirements before commencement of commercial operations.

Gaseous oxygen was selected as the initial oxidant to adjust ORP levels, as an oxygen addition system was already in place at Lance. However, gaseous oxygen addition was not bringing the system ORP to the required range rapidly enough. In February 2021, an addition system for hydrogen peroxide, as used in our laboratory studies, was commissioned, and has proven effective. Subsequently, the recovery stream ORP has responded, increasing from where it had plateaued around 200 millivolts (“mv”) up to approximately 400 mv. The Company is confident that the ORP will continue to increase to the target range of 450 to 600 mv.

PILOT URANIUM RECOVERY CIRCUIT ACTIVATED

Although the target levels for pH and ORP have not yet been fully achieved, the uranium concentration in the field demonstration recovery stream is now responding positively to the current pH and ORP levels. Since late February, the recovery stream uranium grade has doubled and is now in the 20 to 25 mg/L range, which is in line with expectations relative to the dimensions of the patterns and the number of pore volumes processed since commencing acidification.

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With increasing uranium grades, the Company has now activated the pilot ion exchange uranium recovery circuit. Currently the ion exchange circuit has not operated long enough to obtain meaningful performance data. A simple filtration system has been installed ahead of the pilot circuit in response to an event in which a suspended solids load was introduced to and blinded the resin beads. Using a settling pond to manage the suspended solids load typically encountered at stages during low pH ISR has been successful. However, an unusually high wind event stirred the solids bed in the pond temporarily and created the system upset. Ion exchange resin testing will continue, and the performance will be reported in the future as meaningful data becomes available.

The Company will continue technical evaluations related to the potential for application of membrane separation systems to enhance resin performance. Enhanced resin loading has the potential to significantly reduce downstream processing and operating costs. A laboratory scale test is planned on production solutions from the field demonstration in the coming months.

Peninsula will provide updates on the MU1A low-pH field demonstration as additional meaningful results become available.

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.