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Companies Announcement Office  
Via Electronic Lodgement

## PROJECT TRANSFORMATION INITIATIVE COMMENCES AT LANCE

### Highlights

- Laboratory testing indicates that using an alternative mining solution could transform the Lance Project's operating performance and cost profile to be much closer to global industry leading ISR projects;
- Multiple laboratory tests confirm extremely positive results using a lower pH solution chemistry on Lance core samples;
- Average product solution uranium grades of 295 mg/L U<sub>3</sub>O<sub>8</sub> obtained from laboratory tests after 25 pore volumes of treatment using lower pH solution, over 10 times higher than average actual alkaline operations solution grades of 22 mg/L U<sub>3</sub>O<sub>8</sub>;
- 95% Uranium recovery achieved after only 25 pore volumes during low pH laboratory testing as compared to 40% recovery at that stage under actual alkaline operations;
- The Company has held positive initial discussions with the relevant regulatory body and the Company is commencing the license and permit amendment process;
- Pre-established groundwater target restoration values would not be modified with the use of low pH leach solutions;
- Lance operations using alkaline lixiviant to continue as authorised in parallel with a permit amendment program;
- Company's current production and uranium sales contract portfolio provides a consistent revenue stream throughout the transformation timeline.

### Summary

Peninsula Energy (Peninsula or the Company) wishes to inform shareholders on the outcomes of recent research initiatives aimed at improving the operating performance at the Company's Lance Projects in Wyoming, USA (Lance Projects). These outcomes include extremely encouraging laboratory test results using lower pH solutions (mild acids), which have returned dramatically increased peak uranium solution grades averaging nearly 1.0 g/L with uranium recoveries typically over 90%. These initial results indicate that utilising a low pH system could be a major transformational development for the Lance Projects and could align the operating performance and cost profile with the industry leading global uranium production projects.

The transition to a low pH recovery system could not only positively transform the Company's key asset in the United States during the currently challenging uranium market conditions but could also ultimately position the Company to rapidly grow when uranium

markets improve. All 1st quartile uranium operations globally are ISR utilising a low pH lixiviant.

Peninsula Managing Director/CEO Wayne Heili stated “The Board and management team are encouraged by the project transforming potential uncovered in the recent research conducted at Lance. Peninsula is looking at a game-changing process development that could place the large scale Lance Project side by side with world leading uranium ISR production facilities from a performance and cost perspective.

From a regulatory perspective, we have received a positive response from the relevant regulator which bodes well for a smooth and timely process to amend existing permits. In the interim the Company will continue to steadily produce uranium as we are now, supported by a very strong contract base which underpins Peninsula’s business plan.”

#### 1Q FY18 Lance Projects Operating Performance

Production derived from operations at the Lance Projects during the quarter ended 30 September 2017 was approximately 34,500 pounds U<sub>3</sub>O<sub>8</sub> with approximately 42,500 pounds U<sub>3</sub>O<sub>8</sub> dried and drummed in the quarter. Sales during the quarter totalled 132,934 pounds U<sub>3</sub>O<sub>8</sub> (92,934 pounds from Lance, 40,000 pounds from market purchases) at an average price of \$US50 per pound for cash receipts of \$US6.6 million.

These production results represent consistent improvement over recent quarters but still remain below internal target levels. All previously reported production improvement initiatives are continuing and production from the Company’s nine (9) commissioned header houses using alkaline lixiviant will form the basis of on-going operations over the near-term. The Company is also bringing a tenth header house into readiness in mid-2018 to increase operating flexibility.

#### Research and Technical Assessment

Following comprehensive technical reviews and analysis, the Company has concluded that the Lance operating performance under the current alkaline lixiviant process is unlikely to achieve the production rates and unit costs required for sustainable long-term commercial success at anything other than substantially increased uranium prices, and that the operating unit of the business would continue to rely on cash flow from non-project related uranium purchases and sales.

Research efforts undertaken during 2017 have brought a deeper understanding of the nature of the Lance uranium deposit. This work firstly confirmed that the uranium resource is robust, as reported in our published JORC-Code compliant resource statements, but it also identified several key variations between the Lance trend mineral deposit and other Wyoming roll-front type deposits.

Peninsula’s geology team has recognised that the Lance mineralisation is contained in a different geologic setting than most other identified Wyoming Powder River Basin uranium deposits. Similar to the majority of uranium deposits mined in Kazakhstan, the Lance mineralisation is set in Cretaceous aged sediments rather than the younger Tertiary aged sediments typical in the Powder River Basin. With the passage of more time, it appears that the Lance deposit was subjected to a secondary alteration event that effectively bound much of the contained uranium in a less accessible host rock environment.

The Company has now employed state-of-the-art petrographic investigation techniques to reveal important mineralogical differences. This new appreciation for the Lance mineralisation led Peninsula's technical team to investigate the possibility of using alternative solution chemistries to boost the uranium recovery potential of the project.

#### *"Game-Changing" Results*

Laboratory scale tests were conducted to screen representative Lance Project core samples for amenability to alternative leach solutions, notably both mild sulphuric and citric acid. The results of these tests were very encouraging and indicate that the uranium bound within the host rock during the secondary alteration event can be released into solution. The initial laboratory tests returned greatly increased solution grades averaging 295 mg/L with uranium recovery averages at 95% through 25 pore volumes treated. By way of comparison the uranium recoveries of recent comparable tests using alkaline solution on Lance core averaged 35% recovery through 25 pore volumes (40% recovery achieved after 25 pore volumes during project to date operations). To obtain further confidence in the indicative results, the initial laboratory tests were duplicated and refined. Further test work also simulated post-leach groundwater restoration efforts.

The laboratory test results indicate that the operating performance of the Lance Projects could be dramatically improved through the use of the alternate lower pH leach solutions similar to those employed at ISR projects in Australia, Kazakhstan and elsewhere. The test results also indicate that groundwater restoration efforts following low pH solution mining is efficient and effective.

#### *Permitting Amendments*

To change from an alkaline based mining solution to a low pH solution will require the approval by the regulatory body of amendment requests for the existing permits and licenses. Initial discussions with the relevant regulatory authority have been positive and have not identified any legal impediments to the use of low pH ISR solutions at the Lance Projects. Based on these preliminary discussions with the regulator, the Company holds a reasonable expectation that amendments to existing operating permits and licenses could be granted within the next 18 to 24 months. During the amendment process, Peninsula will continue operating the Lance Projects in accordance with the currently approved licenses and permits.

While no existing uranium ISR operations located within the United States currently use low pH leach solutions, early commercial scale ISR operations have utilised acid-based solutions. There are no regulatory prohibitions established which would preclude the use of these proposed solutions. Notably, low pH leach solutions are currently authorised for use in the United States at In-Situ copper extraction projects and have been previously used in uranium ISR trials and commercial facilities in Wyoming. Low pH solutions are commonly used at ISR uranium operations located in other nations throughout the world.

Peninsula's laboratory research indicates that the quality of the affected groundwater can be successfully returned to pre-operational conditions following the use of lower pH ISR solutions. These results demonstrate consistency with the Lance Project's current regulatory requirements. Currently established target restoration values would not need to be modified when considering the potential use of low pH ISR solutions. The initial research indicated that low pH solution environments may potentially be restored more efficiently than typical alkaline solution environments.

Peninsula's US operating subsidiary, Strata, will actively engage with the local community and stakeholders throughout the permit amendment process. Strata have enlisted a qualified contractor to prepare a White Paper to inform stakeholders on the likely questions and concerns related to low pH ISR operations.

#### *Central Processing Plant and Capital Expenditure*

Changing from an alkaline based ISR solution to a low pH ISR solution is not expected to require substantial changes to the current processing plant and/or other infrastructure. The Company has contracted an independent engineering firm to prepare a detailed capital and operating cost forecast for the project which considers the impact of a transition to low pH operations. With only minor modifications expected, capital expenditure requirements for the transition to low pH in-situ recovery are expected to be minimal. Unit operating costs using a low pH leach solution are expected to be considerably lower than what they would be under an alkaline leach solution.

#### *Production Profile over the next 24 months*

In parallel to the permit amendment process, operations at the Lance Projects will continue as they are with production from the currently active operating areas. No further wellfield development capital expenditures are currently scheduled under the existing alkaline leach permit beyond those for Header House 10. On-going uranium sales will generate revenue sufficient to allow time to complete assessment, licensing amendments and transition to an alternative leach solution regime.

To ensure that future Lance-sourced product delivery commitments continue to be met, and to further reduce future risks, the Company has opened discussions with an existing customer regarding possible contract variations to allow additional flexibility and possible adjustments of our product delivery schedules.

The Company will update shareholders regularly as it progresses the steps required to complete this transition.

#### *Quarterly Activities Statement and Webcast*

On 31 October 2017, the Company will release its Quarterly Activities Statement for the quarter ended 30 September 2017. A webcast will be hosted by the Company on 1 November 2017. Registration details for those who wish to attend the webcast were released on 25 October 2017.

Yours sincerely,



**Wayne Heili**  
**Managing Director/CEO**

For further information, please contact our office on +61 8 9380 9920  
during normal business hours.