



DEEP | EARTH | ENERGY | PRODUCTION

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## **DEEP COMPLETES FIRST MILESTONE LAUNCHES INTO GEOTHERMAL DRILLING PROGRAM**

DEEP Earth Energy Production Corp. (“DEEP”) is pleased to announce that Milestone 1 of the Bankable Feasibility Study, funded under contract by MPM Construction Services, is now complete. MPM has been issued shares representing 10 percent of DEEP for the completion of this milestone. DEEP is now underway with Milestone 2, which includes the drilling and testing for production, and injection zone viability.

During Milestone 1, GeothermEx Inc. (“GeothermEx”) (a Schlumberger Company) evaluated the proposed drilling design as conceptualized from the Pre-feasibility Study (a production well to the Winnipeg and Deadwood formations and a separate injection well to the shallower Mannville formation). The goal of this work was to ensure that sufficient information will be generated to support a Bankable Feasibility Study upon completion of the initial drilling and testing, in addition to long term production testing occurring in Milestone 2

The first drilling design proposed by GeothermEx considered a full sized production well with a 9 5/8 inch production section and 7 inch main hole section. A second well would be drilled to the Mannville for brine water disposal. Once preliminary quotes were received for this design, costs were considerably higher than originally anticipated. These elevated costs were due to the slow rate of penetration (ROP) for such a deep, large diameter well and the length of time required to complete the coring and fluid testing. A second option was requested by DEEP to support the requirement of cost minimization, while maintaining the necessary data collection required to progress this project to a Bankable Feasibility Study.

The second option proposed by GeothermEx is drilling a smaller diameter well to the Winnipeg and Deadwood Formations. After successful testing of the Winnipeg and Deadwood, the well would be recompleted as a Mannville Formation disposal well, and the Mannville injection test would occur. The well would be sized to allow the future use as an injection well. This option would allow for a significant reduction in drilling costs by reducing drilling times using a smaller diameter well and reducing material costs, while allowing testing of both the production and injection sections with a single well. A moderate 30° deviation was recommended by GeothermEx to provide a 20 percent increase in the length of the production interval, increasing the likelihood of intersecting sub-vertical fractures.

This proposed well design would have a 6 ¼ inch open-hole main section, completed with 4 ½ inch slotted liner. This smaller sized section may limit the production rates that could be achieved during the long-term production test, but GeothermEx states that, with an appropriately sized pump, the long-term production test will be able to project what a full sized production well would deliver. These data will be used to construct a reservoir model and support a Bankable Feasibility Study, assuming that the resource encountered is capable of production and injection at the required levels. With GeothermEx’s determination that sufficient data can be collected from the single well, DEEP’s Board has approved this drilling and testing design. A Request for Quotes (RFQ) is in progress and

once those quotes have been considered, the drilling contract is anticipated go out for bid, with a drilling contract awarded near the end of April. Drilling is planned to commence in June.

The selected initial development site is located south of Torquay, Saskatchewan, in Township 1. This location is near the CNRL Torquay 3-8-1-11 well, which has the highest reported temperature of wells within the southeastern Saskatchewan target area at 127°C. This is a result of the depth of the geothermal resource at this location. GeothermEx is in agreement that the blended resource temperature is expected to be at or near that anticipated by DEEP (120°C)

Subsurface rights to the geothermal resource for the production of geothermal brine have been acquired from the Province of Saskatchewan under a Lease of Space Agreement Disposition. Access to the Mannville Formation for brine disposal has been acquired through agreements with Steppe Resources Inc in the previous Milestone

All surveying for the well site and access road has been completed along with completion of the environmental checklist approval for drilling. Surface rights have been obtained through a lease with the local land owner. DEEP experienced a slightly longer surface rights acquisition process as a relocation was required to satisfy subsurface conditions.

Some delays were encountered in this past Milestone 1 related to provincial approvals for this geothermal drilling program, given the unique well design and testing program. DEEP was requested by the Ministry of Economy to submit a proposal to estimate the reservoir performance expectations as a pilot project to support the well design. Late last year, DEEP received this approval from the Ministry of Economy for a geothermal pilot project for drilling a directionally drilled production well and withdrawing formation water from the Winnipeg and Deadwood Formations. At the same time, DEEP received approval for one vertical well for disposing of the formation water into the Mannville Sand.

DEEP is pleased to have completed the first milestone of permitting and project planning and is looking forward to commencing with the drilling and testing phase of the Bankable Feasibility Study. The successful addition of renewable base-load power will directly benefit all residents of Saskatchewan and assist SaskPower in achieving its goal of 50% renewable power generation by the year 2030.

Kirsten Marcia has recently been appointed a Director at Large of the newly formed Geothermal Canada. In 2017, a group of like-minded individuals felt the time was ripe to resurrect the original scientifically oriented society with a new name and renewed vigour. As geothermal energy gains prominence in Canada, it was felt that professionals, students, governments and other interested people needed a venue to discuss technical and academic aspects of the industry. Thus on February 1st, 2018, CGA was reborn as the Pan Canadian Society for Geothermal Research, Innovation, & Collaboration, colloquially known as Geothermal Canada ([www.geothermalcanada.org](http://www.geothermalcanada.org)).

Sincerely,

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