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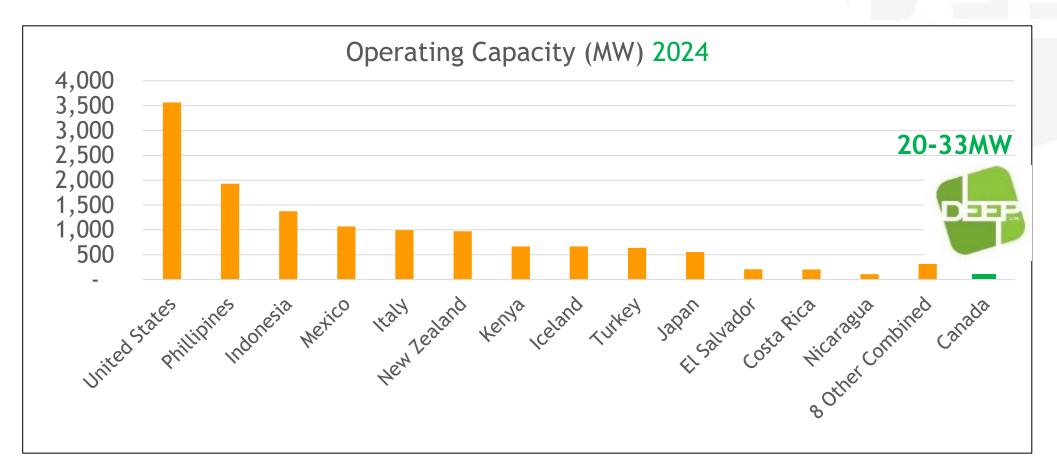
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#### **STATUORY RIGHTS OF INVESTORS:**

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# CANADA LAGS IN GEOTHERMAL - A SUCCESSFUL PROJECT WOULD OPEN THE DOOR TO A BRAND NEW CANADIAN CLEAN ENERGY INDUSTRY





Global geothermal capacity reaches 14,900 MW

## WHY SASKATCHEWAN? WHY NOW?

- Hot water in the Williston Basin has historically been considered an oilfield operational cost versus a valuable resource
- We wouldn't even know this geothermal resource existed if it weren't for the oil and gas industry drilling into it
- Highly supportive and streamlined regulatory environment thanks to 60 years of oil & gas and mining operations



Iceland Strokkur geyser



DEEP's drilling location, south of Torquay, SK



## A MADE-IN-SASKATCHEWAN ENERGY OPPORTUNITY



saskatchewan.ca

# Rich in RESOURCES Uranium potential Potash and salt resource area Base metal potential Coal field Gold potential Oil pool Kimberlite occurence Gas pool



Bitumen (oil sands potential)

- Highly supportive and streamlined regulatory environment thanks to 60 years of oil and gas development and mining operations (incl. uranium!)
- Using Canada's world class oil and gas technology and expertise – unleashed for the first time on renewable energy
- In line with Sask Builds
   Government Procurement
   Policy, employing 100s of
   Saskatchewan contractors
- Open to collaboration with First Nations and Metis organizations



Helium resource potential

#### **POWER PURCHASE AGREEMENT "PPA"**



- First geothermal Power
  Purchase Agreement contract
  in Canada, announced May
  16, 2017
- Supports SaskPower's goal to reduce emissions from 2005 levels by 40% by 2030
- Currently in negotiations to expand PPA to 20-33 MW.



# POWER GENERATION TECHNOLOGY – ORGANIC RANKINE CYCLE (ORC) - BINARY

Proven technology >40 years of field implementation around the world



- Map of geothermal facilities installed with ORC technology
- ORC power generation is used in any industry that generates heat; paper mills, gas compressor stations, cement factories, gas processing plants, oil and gas refineries, incinerators, etc.

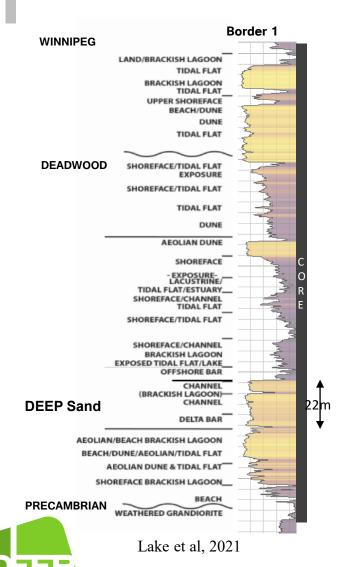


## **LOCATION**





## **BORDER 1 – DEEP SANDSTONE**



- The DEEP project is located within the Williston Basin, centrally located along the north side of the Canada/United States border.
- Depositional environments were interpreted from core, cut from the first Border-01 discovery well
- In DEEP's conceptual depositional model, a coastal environment existed in southeastern Saskatchewan during the Cambrian period consisting of shoreface sediments, delta bars, channels, lagoon and aeolian dunes.
- The primary sandstone has approximately 10-16% porosity

#### **DRILLED AND TESTED**



- Six wells have been drilled and tested by DEEP
- The resource is (+125°C)
- ~3,500 depth
- Deepest wells ever drilled in Saskatchewan
- Hot Sedimentary Aquifer



# SASKATCHEWAN'S DEEPEST HORIZONTAL WELL – OCTOBER 2020

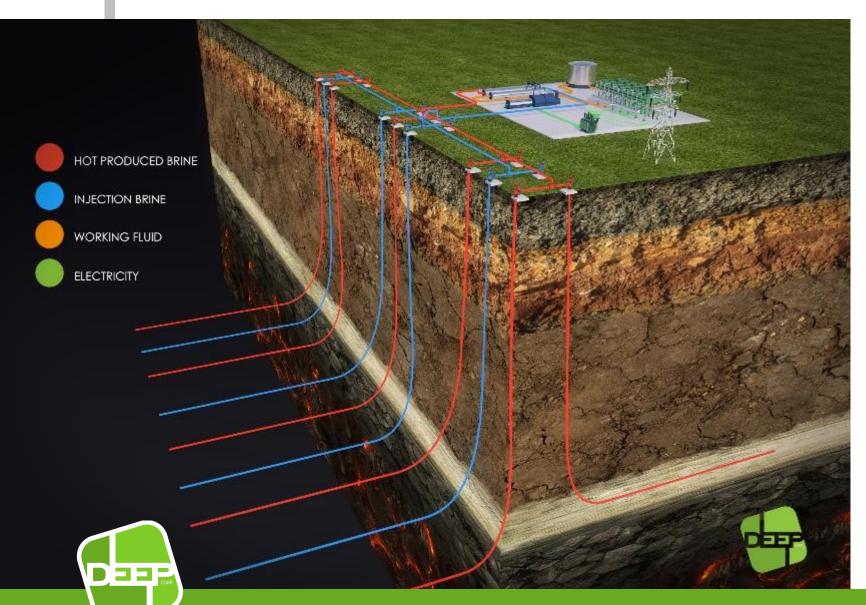


- The deepest horizontal well in Saskatchewan's history, allowing for the installation of a large volume submersible pump – TVD 3,450 metres
- Produced out of this well and injected into nearby vertical wells for 54 days for reservoir performance data critical to completing the Feasibility engineering
- Canada's first large volume geothermal production and injection test loop
- The only geothermal facility in the world to use horizontal drilling



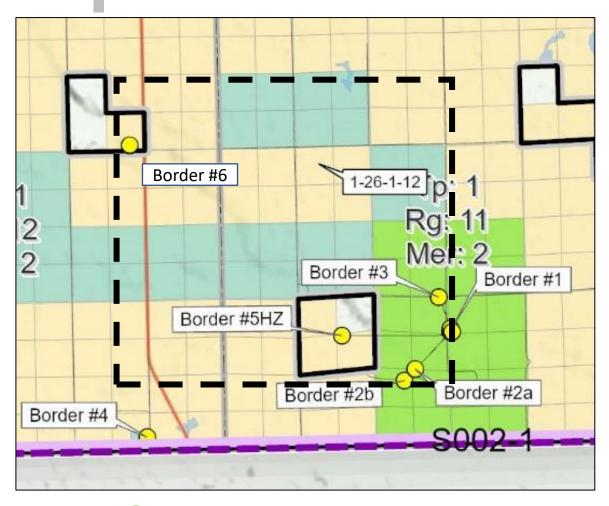


## SUBSURFACE FIELD DESIGN OPTIMIZES AT 20-33MW



- Preliminary subsurface design optimizes the well spacing and configuration to produce 20-33 MW of power
- Each well will be drilled to a depth of 3.5 km plus horizontal leg
- Total production and injection is 960 L/sec @125 degrees C

## **RECENT FIELD ACTIVITY - NEW STRAT WELL**



- Border-6 drilled to a depth of 3480 metres
- Located in an area that required additional well control - will be repurposed as a monitoring well
- 81 metres of core and open hole logs
- Flow and injection testing will be conducted throughout October
- Directionally drilled by Phoenix
   Technologies (\$3M Investor)
- Drilling Rig Panther Drilling (Saskatchewan)
- FLOW TESTING COMMENCES TODAY!



## **GLOBALLY UNIQUE POWER HUB**

 The only geothermal power facility in the world to pursue utilization of waste oilfield flare gas to power the facility's internal energy requirements (pumps, cooling towers, lighting)





## **FUTURE BUILD-OUT IS SIGNIFICANT**

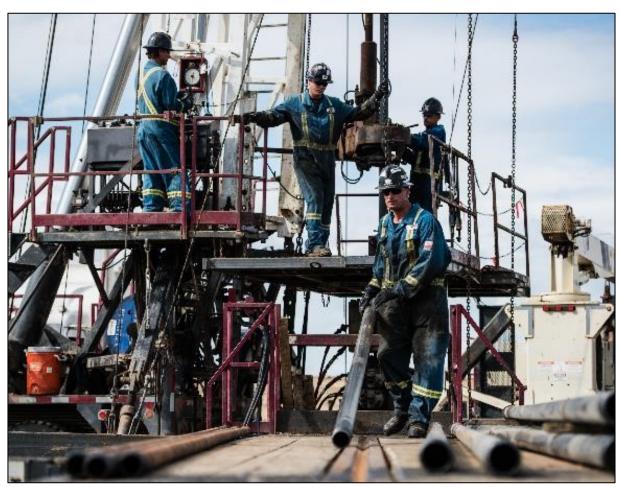


- The predictable resource supports multiple fields
- DEEP's long term strategy is to build at least 100 -160 MW of clean, baseload power facilities plus direct/waste heat projects
- DEEP owns the subsurface rights to develop 5 x 20-32 MW fields
- Will see a significant reduction in resource exploration costs on subsequent fields; expensive learning is behind us



Courtesy: ORMAT

## **DIVERSIFYING OUR ENERGY PORTFOLIO**



- This first 20-33 MW field would offset approximately 155,000 metric tonnes of CO<sub>2</sub>/year, equal to removing ~34,000 cars off the road annually
- Taking the "best of both industries" by merging highly skilled oil and gas expertise with specialized geothermal reservoir and power generation expertise,"
- Redeploys a uniquely skilled workforce into a new clean energy industry and attract a diverse and innovative labour force



## DEEP HAS DEMONSTRATED RAPID GROWTH AND EARLY-STAGE DEVELOPMENT IN ITS SHORT HISTORY

- SaskPower PPA expansion
- Detailed engineering complete
- Debt and equity financing in place







## DIRECT HEATING OPPORTUNITIES

## GEOTHERMAL: THE CATALYST FOR A NEW SASKATCHEWAN AGRICULTURE OPPORTUNITY



- In addition to power generation, DEEP's waste heat can heat massive greenhouses or other direct heating opportunities
- Major private and public sector greenhouses
- Research into diverse highvalue crops, to increase farm profitability
- Saskatchewan is investing \$4
   Billion into irrigation infrastructure to diversify crop growing options

https://greenportwestholland.nl/en/about/



## \$1.5B INDUSTRY FOR SASKATCHEWAN AND CANADA







100-160 MW of geothermal power and greenhouse development could be a new \$1.5 Billion industry to stimulate the Southeast Saskatchewan economy and contribute to the province's growth



## **EXCITING TIMES ADVANCING THIS WORLD CLASS PROJECT**

