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MINING OUR RESOURCES

Elder offers traditional knowledge

By Magnus Ferguson

As if looking for a rare and increasingly-in-demand commodity isn't enough, junior exploration company Avalon Rare Metals Inc. is also aiming to work with the Yellowknives Dene First Nation to pioneer in another area: to power the potential mine at Thor Lake using a combination of wind and diesel.

If it's successful, Avalon will become first company to power a new mine using wind energy in Canada.

In April, at the request of the Yellowknives Dene First Nation, the Aurora Research Institute sent a Whitehorse-based scientist, J.P. Pinard PhD. "Doctor Wind", to the Avalon site, located 100 km southeast of Yellowknife, for a preliminary assessment of where a wind farm could potentially be located at Thor Lake.

Pinard, a vocal advocate of wind power who helped organize the 2009 Wind-Diesel Workshop in Ottawa last month, has helped the GNWT and Aurora Research Institute install wind monitoring stations in communities like Tuktoyaktuk, Paulatuk, Sachs Harbor and Norman Wells.

"Like a mining prospector, I look for areas that have energy potential just like a prospector would go sample rocks on surface and try to define if they might have a lot of gold," said Pinard.



Elder Alfred Baillargeon of the Yellowknife Dene First Nation providing traditional knowledge on the wind to the research team at Avalon's Thor Lake exploration camp on Chief Drygeese Traditional Territory SE of Yellowknife.

Using data from Environment Canada, Pinard determines whether a site has two key ingredients for wind power. The first is good wind speed. According to Avalon, Thor Lake – which is located in a constricted straight in the Hearne Channel on Great Slave Lake – experiences annual wind speeds of up to 7.27 metres per second, above the recommended minimum of five metres per second for operating a wind farm.

But you need more than just sufficient wind speed to make a go of it – the direction and consistency of the wind is also key, added Pinard.

"That's very important because it allows you to understand how the landscape will mesh

with any wind increases or wind potential. You might have an area that has a ridge which would be a good spot for a set of wind turbines. You want to know the wind direction, because if it's parallel to the ridge, then it's not very good."

A flyover of Thor Lake confirmed that the site is host to a relatively tree-less ridge that bisects the Hearne Channel, which, paired with adequate wind speeds and seasonal consistency, could create what Pinard called the "Venturi effect," where the wind hits an object and travels upward, resulting in even higher wind speeds.

Though rare, the use of wind energy at mining operations is becoming increasingly popular, said Pinard.

"In the last couple of years, there have been a number of mines in Alaska... that have expressed interest in exploring wind. It seems like a natural thing for them." More recently diamond mines in NWT have conducted positive feasibility studies.

And while reducing their environmental imprint is certainly a motivating factor, companies are also seeing wind as a cost-savings measure, he added.

"A lot of these mines want to be good corporate citizens but they also realize they could save money if they knew they had good wind potential."

Installing a wind monitoring station at Thor Lake would benefit not only Avalon but the Government of the Northwest Territories, which is actively conducting research into wind power, said Wade Carpenter, chair of the Department of Environment and Natural Resources' Wind Energy Committee.

The GNWT has committed \$1.6 million dollars in its current budget to fund a

demonstration wind energy project in the NWT.

"From our perspective, we're interested in collecting as much wind resource data as we can, because the more data you have, the better informed you are," said Carpenter.

Rare earth minerals are actually a key ingredient of wind turbines, one of the fastest growing uses for rare earths, said David Connelly, a spokesperson for Avalon.

"A large turbine uses over 200 kg of rare earths in the two tonnes of magnets in the wind turbine generator. Currently the only producing source is China. We want to change that and reduce the supply risk to wind and water turbines."

The original idea to generate wind power at Avalon was suggested to the company by Yellowknives Dene First Nation Chief Ed Sangris.

Elder Alfred Baillargeon, who accompanied Pinard during the site visit, using the occasion to provide traditional knowledge to the evaluation of potential wind turbine sites in an area near where he used to hunt for caribou with his uncle.