

# Volcanic magma could become power source

Andy Fell, UC Davis News, 2-19-11

When a team of scientists drilling near an Icelandic volcano hit magma in 2009, they had to abandon their planned experiments on geothermal energy. But the mishap could point the way to an alternative source of geothermal power.

"Because we drilled into magma, this borehole could now be a really high-quality geothermal well," said Peter Schiffmann, professor of geology at UC Davis and a member of the research team along with fellow UCD geology professor Robert Zierenberg and UCD graduate student Naomi Marks. The project was led by Wilfred Elders, a geology professor at UC Riverside.

A paper describing geological results from the well was published this month in the journal *Geology*.

When tested, the magma well produced dry steam at 750 degrees Fahrenheit. The team estimated that this steam could generate up to 25 megawatts of electricity -- enough to power 25,000 to 30,000 homes.

That compares to 5 to 8 megawatts produced by a typical geothermal well, Elders said. Iceland already gets about one-third of its electricity and almost all of its home heating from geothermal sources.

The team was drilling into the Krafla caldera as part of the Iceland Deep Drilling Project, an industry-government consortium, to test whether "supercritical" water -- very hot water under very high pressure -- could be exploited as a source of power.

They planned to drill to 15,000 feet -- more than two miles deep -- but at 6,900 feet, magma (molten rock from the Earth's core) flowed into the well, forcing them to stop.

The composition of magma from the borehole is also providing insight into how magmas form beneath Iceland, Schiffmann said.

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