



MAGNETIC FIELDS TO RESOURCE YIELDS USING MAGNETOTELLURIC SURVEYS FOR OIL & GAS EXPLORATION

Measuring magnetic fields and electrical currents running through the ground allows geologists to see through dense volcanic rock in the Nechako Basin of central B.C. This research could lead to new oil and gas discoveries and bring economic opportunities to a region hit hard by the mountain pine beetle.

Normally, oil and gas industries rely on seismic surveys to find new resource-rich areas. But in the Nechako Basin, the thick volcanic rock obstructs the view. Maps and cross-sections of the Nechako Basin subsurface, from magnetotelluric survey methods, can help solve this problem.



Preliminary data reveal locations of sedimentary rocks that may host oil and gas reservoirs, making them important areas for follow-up.

In combination with data from gravity and seismic surveys, scientists can create a detailed picture of the region's geology. This data can help reduce the overall risk of exploration. And, this technology is cost efficient and environmentally neutral.

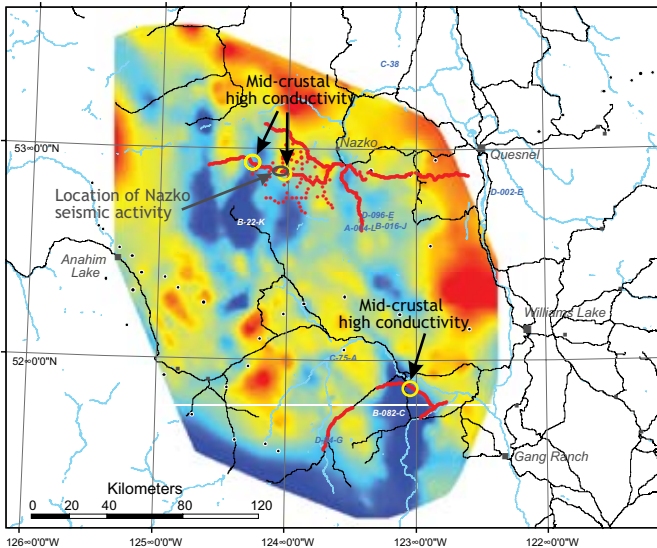


Photo courtesy of Peter Fernberg.

In 2007, geologists made magnetotelluric measurements at over 800 sites in areas west of Quesnel and Williams Lake. Data were collected along forestry roads using sensitive equipment to measure the magnetic and electric field in the ground.

NATURAL RESOURCES CANADA SCIENTISTS USE MAGNETOTELLURIC SURVEY METHODS TO MEASURE THE EARTH'S MAGNETIC AND ELECTRICAL (OR "TELLURIC") FIELDS. VARIATIONS IN THE FIELDS ARE CAUSED BY AURORAL AND THUNDERSTORM ACTIVITY AND ARE SENSITIVE TO THE TYPE OF SUBSURFACE ROCK AND THE FLUIDS WITHIN THEM – SUCH AS GROUNDWATER AND MAGMA.





The magnetotelluric survey is one of seven geoscience projects funded by the Government of Canada under the Mountain Pine Beetle Program. Maps and data from this survey are available free to anyone interested, such as communities and First Nations making land-use decisions, or industry wanting to lower exploration risks and costs.

While mapping the area, scientists also discovered a significant geological feature below the surface. The feature is likely magma and can be linked to recent volcanic activity west of Nazko. This discovery will provide scientists with new information to better understand natural hazards in the area.

- *Data was collected at over 800 sites in areas west of Quesnel and Williams Lake*

THIS PROJECT IS A COLLABORATION BETWEEN NRCAN'S GEOLOGICAL SURVEY OF CANADA (GSC), GEOSCIENCE BC, AND THE BRITISH COLUMBIA GEOLOGICAL SURVEY, OIL & GAS DIVISION. FOR FREE DATA FROM THE MAGNETOTELLURIC PROJECT SURVEY, SEARCH FILE 5988 AT GEOPUB.NRCAN.GC.CA



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Photo courtesy of Onil Patry.

For more information on Natural Resources Canada's Mountain Pine Beetle Program visit forest.forward.nrcan.gc.ca

Natural Resources Canada's Geoscience surveys funded through the Mountain Pine Beetle Program complement other public Geoscience work in the region by the British Columbia Ministry of Energy, Mines and Petroleum Resources and by Geoscience BC.