

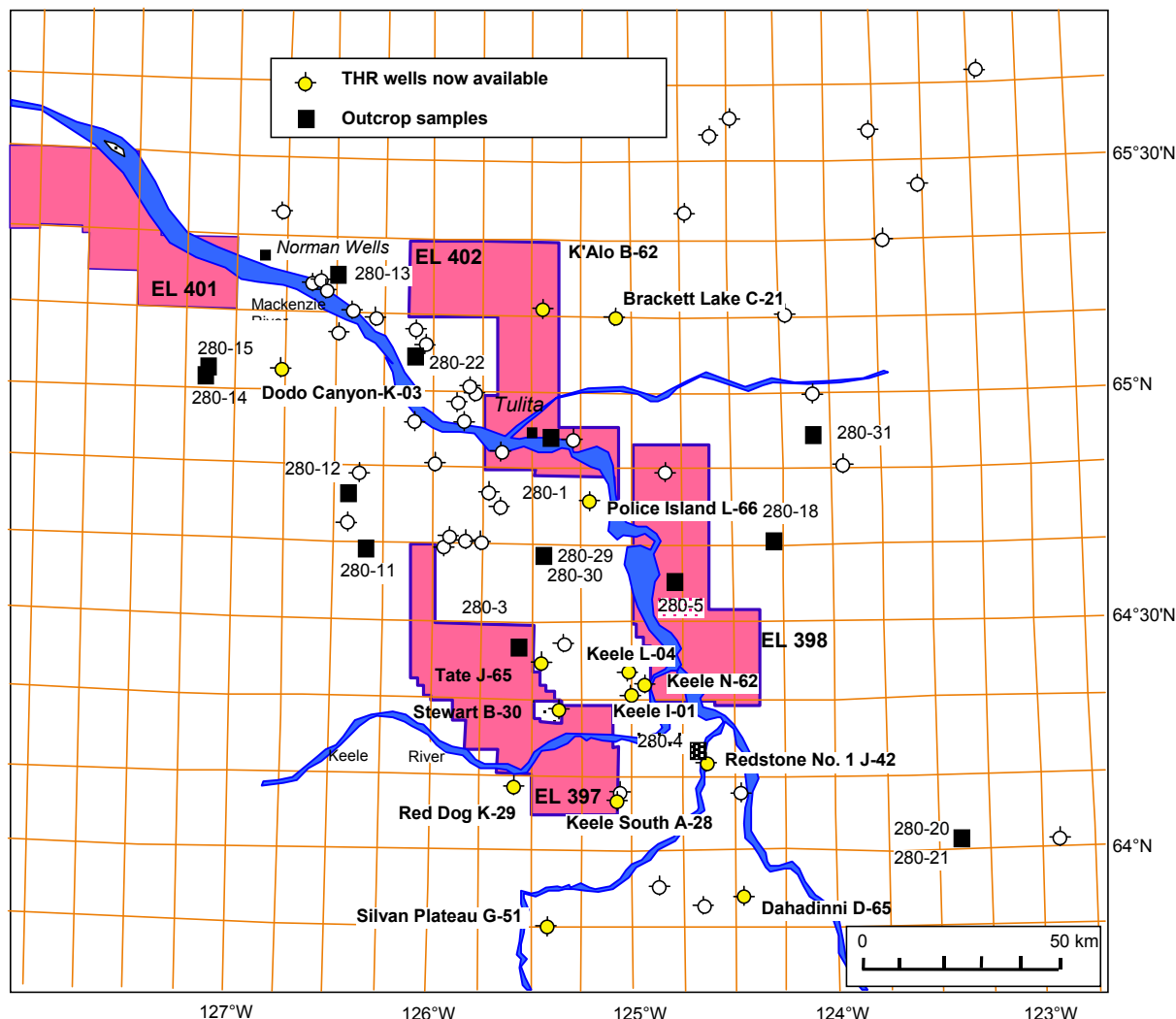
Northwest Territories, Canada

McKenzie Corridor



Defining the timing and magnitude of paleo-thermal events controlling maturation histories and structural development

Mackenzie Corridor, NWT Geotrack mini-well and outcrop report series 2000



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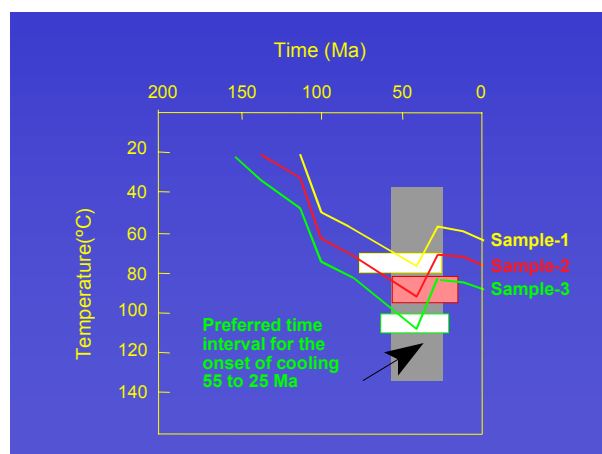
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GEOTRACK'S THR STUDIES IN THE NORTHWEST TERRITORIES

INTRODUCTION The concept of a petroleum system is only helpful if the variables or parameters used in the concept are known or constrained within known limits. Much time and effort is wasted in industry by developing “sophisticated” basin models that are fundamentally flawed due to errors in the thermal history of the basin sediments – i.e., time of maximum burial, time of generation, magnitude of heating. Geotrack International has worked over the last 15 years developing techniques and approaches that allow *direct* constraints on the thermal history of a sedimentary section for the purposes of finding oil and gas.

- ❖ *In the Central McKenzie Valley of the Northwest Territories, the timing of key events and their relative impact on the structural history and generation history is widely acknowledged as associated with high risk, principally because of its uncertainty.*

Why not remove this uncertainty? While it is common practice to *assume* these parameters as part of software-driven basin modelling work or structural reconstructions, Geotrack has pioneered efforts worldwide to measure these critical parameters *directly*. In the NWT, any models describing the petroleum system will be severely impaired if critical parameters such as the timing of heating events are inferred rather than controlled by direct measurement.



SPECIFIC RELEVANCE TO THE NWT A fundamental issue concerning prospectivity in the region is the timing of active hydrocarbon generation from potential Devonian and Cambrian source rocks in the region. As an example - previous work in the region around Parcels 1 and 2 has suggested that the Devonian section reached peak maturity after Cretaceous time – i.e., in this case, there would be no break in the downhole maturity trend at the sub-Cretaceous unconformity. Our new integrated AFTA and VR results clearly shows this model is incorrect, and was likely to have been constructed by falsely attributing caved Cretaceous organic matter to an *in-situ* Devonian population. The new mini-well series also provides previously unavailable and *direct* control on the timing and magnitude of maturation levels of potential Cretaceous source rocks in the region. Such data and conclusions are essential for targeting commercial discoveries.

SCOPE AND COST OF FURTHER WORK On the map overleaf, we show the location of the study wells in relation to the newly awarded acreage. Each of the indicated wells have been studied using our thermal history approach and reports are available immediately for \$US9,900 (discounts available on group purchase). The study involving the 16 outcrop samples (shown as solid squares) is available for \$US22,500, and provides excellent geographical coverage. We welcome suggestions for any new wells in the region, and would be pleased to make specific recommendations on target horizons for sampling. . Such new wells will still only be charged at \$US9,900 if Geotrack retains ownership of the results, or \$US15,000 if you contract the work on a proprietary basis. Alconsult International (Calgary) has assisted us on this project, and retains copies of all reports from the current mini-well series at their office to facilitate further discussion. We would be happy to answer any of your questions or work with you in devising a longer-term strategy to better understand the nature and influence of the thermal and uplift history of the region in relation to the petroleum system(s) in the region.