# Mackenzie Delta: A Case of One Residual Gravity Anomaly and 16 Dry Exploration Wells

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## Abstract

The importance of integrating a detailed gravity data into the process of selecting well locations for exploration drilling is illustrated by this example from the Mackenzie Delta area. Residualization of the Bouguer gravity field revealed a long (~ 95 km) residual gravity anomaly striking parallel to and downdip from the regional-scale Eskimo Lakes Fault Zone (ELFZ). The shape, structural position, evidence from three public-domain seismic sections and results 2-D gravity modeling are consistent with interpretation of this anomaly as a gravity signature of a detached faulted megablock. Six significant oil and gas discoveries were reported within this block. The exploration drilling success ratio could be higher as 16 of 27 dry wells were drilled in high-risk areas: 10 wells - on the edges of residual anomaly (which defines the main body of a detached block), and 6 wells – immediately west of ELFZ from where the detached block moved downdip. Comparison with a known oil-bearing structure associated with a detached block (Grand Banks – Hibernia, offshore eastern Canada) is also shown.