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Anticosti Basin: Fairway Identification in an Emerging Shale Play using basin analogues and recent geophysical data

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Summary

Located in the Gulf of St. Lawrence in Quebec, Anticosti Island extends over a length of 220 km and a maximum width of 56 km and covers an area of 7,943 km² (3,103 mi²). Anticosti is a large ESE-WNW oriented rhombohedra shaped structure situated along the Laurentia passive margin of Ordovician carbonates that extends from western Texas to Newfoundland. The geological units forming the island are of Paleozoic age, ranging from the Cambrian to the end of Silurian. The Middle Ordovician Macasty Shale is identified as the source rock of the hydrocarbon of the basin.

Currently undertaken exploration phase recognized the potential of the Macasty Shale as a liquid-rich resource play (potential for light oil/condensate production). The Macasty has good to excellent organic richness (Type II kerogen). The Macasty in the deepest area of the island is found between 2,399 and 2,487 metres in depth, where it has attained its full thermal maturity for Oil Generation and is in the Late Oil Window to Early Condensate – Wet Gas Window of thermal maturity (Rock-Eval/Tmax data). Petrophysical properties compares favorably with other North American shale resource plays and which may be a positive indicator for potential resources initially-in-place. Technical evaluation indicates that the level of thermal maturity observed thus far in the Macasty in the Deep Macasty Fairway compares favorably with published findings for the oil-rich Utica/Point Pleasant Shale in Ohio and the Eagle Ford Shale in Texas.

Processing of the airborne geophysical data clearly establishes the delineation of the Jupiter Fault Zone (JFZ). General faulting pattern is also obvious north of the JFZ. Subtle structures south of the JFZ are not clearly defined. Vintage seismic are available mostly north of the JFZ. A number of "sag" features at the top of Trenton-Black River platform have been identified on this data. Completed in September 2012, a 224 line-kilometres regional 2D seismic survey covering an area of 250,000 acres essentially located south of the JPZ has been acquired. After processing and interpretation of the seismic data, a first ever drilling exploration program of the Anticosti Deep Fairway will be undertaken.