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***“Late Paleozoic Tectonics and Hydrocarbon Systems of Western North America – The Greater Ancestral Rocky Mountains”***

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**New Findings in the Search for Paleozoic Petroleum Systems in Venezuela**

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Potential, and economically attractive, Paleozoic Petroleum Systems, as they exist in Northern Africa and Southern South America, are proposed for Venezuela in the light of new data and technology. Recent findings from biomarker studies on crude oils from Guafita–La Victoria and traditional Barinas Fields indicate the presence of both isomers and 24 norcholestanes that suggests the existence of a source rock older than the well known Upper Cretaceous La Luna – Querecual Formations, with an age window from the Devonian to Jurassic. In the south thrust front of the Merida Andes, studies of new and revisited outcrops have shown a continuous and thick (200 m) marine Lower Silurian shales with present organic richness of 2.34% that implies a Lower Paleozoic passive margin thicker than the well known Cretaceous one. In the same area, but close to the Andes axis, the presence of more than 200 m of black, overmature lacustrine shales of Jurassic age also indicates a new potential source rock with a total organic content of 5%.

Older 2D seismic profiles across a narrow, elongated Paleozoic foreland basin fringing the Precambrian shield, show the frontal folded structures of the buried Paleozoic folded belt in which two main types of structural traps have been recognized: low relief anticlines of Late Carboniferous - Early Permian age next to the Pre-Cambrian shield, and inverted normal faults related to the Late Miocene - Pliocene deformation. Stratigraphic traps might be expected as updip pinch-out of Carboniferous - Permian sandstones.

Reservoir rocks have been found to be mainly sandstones, at least 30 feet thick with up to 14% porosities and highly fractured granitic basement. Locally, the reservoir rocks are saturated (>70%) with crude oil, the nature of which is being investigated.

All together the new data and new ways to look at it are leading us to the definition and evaluation of the Paleozoic opportunities in Venezuela.