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Dennis Carlton¹, Fred E. Digert², Robert E Zilinski³ (1) Evergreen Resources, Inc, Denver, CO (2) International Exploration Associates, Ltd, Boulder, CO (3) Consultant, Englewood, CO

Tamarugal Basin, Chile: A Sleeping Giant?

Recent field work in the Tamarugal Basin, Northern Chile, confirms the presence of a Jurassic "back-arc basin" similar to the Neuquen Basin of Argentina with over 15,000 feet of marine sandstones, oolitic limestones, and black shales with total organic carbon values as high as 6%. A series of north-south compressional folds/thrusts were mapped on the surface and in the subsurface by geophysical techniques. The mapped structures are in the magnitude of 20 by 6 miles with greater than 1,000 feet of closure. Magnetic data show that the previous Tamarugal Basin wells, drilled in the 1960's, were located along the western magmatic arc; no wells have tested the Jurassic back-arc environment.

Geochemical/geothermal modeling indicates that the main hydrocarbon potential in the basin is gas. Due to extensive and rapid burial, the Early through lower Late Jurassic shale source beds passed through the oil window and into the gas window by the close of the Jurassic. Following Cretaceous and Early Tertiary tectonism, ongoing gas (and possibly oil) expulsion from the Late Jurassic source beds continues to charge the structures.