Objectives, Methods and Technologies for Analyzing Natural Marine Hydrocarbon Seeps to De-risk Oil and Gas Exploration off Myanmar and in Other Frontier Basins

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ABSTRACT

Myanmar, one of the oldest oil producing regions, is underexplored and the offshore regions are largely unexplored. However, even with few wells and sparse exploration activity, four multi-Tcf gas fields have been discovered in different geologic settings in both carbonate and clastics. Most producing offshore discoveries in Myanmar are mostly biogenic gas or mixed gas condensates. Yetagun is the only offshore thermogenic gas field. The sole discoveries to date in the offshore Rakhine Basin are the Pliocene Shwe biogenic gas fields (discovered in 2004-2006) in the north and the two discoveries by Woodside in 2016: the Shwe Yee Htun-1 in Block A-6 in the southern Rakhine, and Thalin 1-A exploration well in Block AD-7 in the far north Rakhine (Racey and Ridd, 2015; Woodside, 2016). Our experience shows that the use of multi-beam echosounders and skilled seep specialists in the field can, on an order of magnitude, increase the success of a marine geochemistry program over a 2D seismic and sample grid method. Similarly, sampling programs based on 3D seismic can also be improved by employing seep scientists and cost effective multi-beam echosounder data acquisition. The authors have experienced a 70% increase in cores with seep indications from targets picked from 3D seismic data alone to targets picked with 3D data plus multi-beam echosounder data. Good methodologies are critical - the real cost of a poorly executed seeps field program is inconclusive or incorrect conclusions.