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**REVIEW OF THE PETROLEUM GEOLOGY OF THE NORTHERN
BASINS OF NEW GUINEA ISLAND**

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ABSTRACT

Six sedimentary basins are located along the northern margin of New Guinea Island. The Bintuni, Salawati and Waropen basins either are productive or have registered significant hydrocarbon flow rates on well tests. The Sepik, Ramu and Meervelakte basins exhibit gas and oil seeps and shows in wells, but no sustained flow. The basins all formed in the Neogene, but they are characterized by three distinct petroleum systems. The Bintuni Basin in Irian Jaya produces from a Jurassic reservoir filled with thermogenically derived gas and condensate from a Mesozoic source. The Salawati Basin in Irian Jaya produces light oil from Miocene reefs. The oil is generated from Cenozoic aged organic rich carbonate source rocks. Miocene reefal buildups fringe the perimeter of the basin. The Sepik Basin in Papua New Guinea contains several Miocene reefal buildups in outcrops that fringe the basin perimeter. Seismic reflection data indicate large reefal buildups at depth. The one well in the Sepik Basin encountered thirteen separate oil shows. Geochemical analysis of oil recovered in a side-wall core suggest a Miocene algal

source. The Meervelakte Basin in Irian Jaya is a rank frontier area. No wells have been drilled and no seismic data acquired. Interestingly, the basin is fringed by coralline Miocene reefs in outcrop and a large, active oil seep is located on the north flank of the basin. The Waropen Basin in Irian Jaya contains several wells, on three separate structures, that tested significant volumes of biogenically derived methane gas. The gas flowed from Pliocene sand reservoirs. The Ramu Basin in Papua New Guinea contains numerous gas seeps that issue biogenically derived methane gas from Plio-Pleistocene outcrops.

In summary, the sedimentary basins along the northern margin of New Guinea Island exhibit a wide variety of petroleum source rocks and reservoirs. The Salawati and Bintuni Basins are mature areas exhibiting world-class production. The Waropen Basin has exhibited significant biogenic methane gas flows. The remaining basins contain analogous geologic settings, but they are under explored or in the case of the Meervelakte Basin, never explored. By comparing the petroleum geology of the productive and non-productive basins, a clearer understanding emerges of the risks and potential rewards of the sedimentary basins of the northern margin of New Guinea Island.

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