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Abstract:

The Geology of the Amazon Basin of Brazil
and Case History of Exploration 1954-1960,¹
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Systematic exploration for oil in the Amazon basin of Brazil was begun in a large way with the formation of Petrobras in 1953 and which got underway in 1954. This has been actively pursued ever since. Prior to this time little was known of the Amazon geology except for paleontological studies of the Paleozoic areas on the north and south rims of the basin. These were started in the late half of the 1800's. A few shallow wells had been drilled on the Tapajos River on the south side of the basin and on the Monte Alegre Dome on the north side.

Under the direction of the Conselho Nacional de Petroleo, a government entity, some exploration was done in the late forties and early fifties prior to the formation of Petrobras. Three wells were drilled in the Amazon Delta and two were drilling in the Amazon Basin proper when Petrobras took over in 1954.

The Amazon Basin is an east-west trending Paleozoic basin with Cambrian, Silurian, Devonian and Pennsylvanian rocks. No Ordovician, Mississippian, Permian, Triassic or Jurassic has so far been recognized. Continental Cretaceous and Tertiary cover 95% of the basin area and all except a narrow outcrop belt of Paleozoic on the north and south rims of the basin.

This huge basin appears to be structurally featureless. North-South trending positive areas, which are known as the Gurupa, Parintis Purus and Iquitos Arches interrupt the east-west depression at four to five hundred mile intervals. Except for the Monte Alegre Dome, which was caused by igneous intrusion, no local structure has been found by any of the exploration methods used including drilling. The geological history is one of a gentle breathing during Paleozoic time involving sediments that were deposited between two great crystalline shields known as the Guiana and Brazilian Shields.

Over \$150,000,000 have been spent on Amazon exploration since 1954 on surface geology, gravimeter work, airborne magnetometer surveys, seismograph surveys and drilling. Over 100 holes ranging in depth from 1500 to 4000 meters were drilled by the end of 1960. No commercial oil was discovered. All geophysical surveys are made impotent by the injection of great masses of igneous rocks and lava flows into the Paleozoic section. These flows are thought to be early Mesozoic in age.

Although the Paleozoic section is more than 15,000 feet thick in the center of the basin, the geological setup of source rocks, structure and reservoir rocks does not exist in the right combination of geological conditions and it is doubtful that the Amazon will ever be a large producer of oil.

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