

STRATIGRAPHY AND PETROLEUM POTENTIAL OF THE
ACARAU AND PIAUI-CAMOCIM SUB-BASINS, CEARA
BASIN, OFFSHORE NORTHEASTERN BRAZIL

by

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ABSTRACT

The Acarau and Piauí-Camocim sub-basins are subdivisions of the Ceará basin, situated offshore in the northeastern continental margin of Brazil. Two main drilling phases, 1971-1973 and 1981, mark the exploratory activities in these areas. Twelve wells were drilled, but with no commercial production of petroleum. Although shows of hydrocarbons are common in most wells, only four of them yielded very small amounts of hydrocarbons during drill-stem tests (three gas; one oil).

The stratigraphic column represents the gradual infilling of an Atlantic-type marginal basin, highly influenced by tectonics (extensional and transpressional regimes) in the earlier stages and by sea level changes in the later phases. Five major depositional sequences constitute the stratigraphic framework of the studied areas. Sequence I (Early to Late Aptian) was deposited under strictly continental conditions and is represented by alluvial fan, lacustrine and fluvial depositional systems. Sequence II (Middle Aptian to Albian/Cenomanian) is represented by transitional to marine environments (deltas, shorelines, offshore) and characterizes the first invasions of marine waters into the rift-valleys. Sequence

III (Turonian to Santonian) represents marine transgressive sediments deposited under oceanic anoxic conditions. Sequence IV defines a period of high influx of terrigenous sediments, causing the development of a prograding continental margin. Sequence V (Eocene to present) is characterized by very shallow marine depositional environments (fan deltas intertonguing with carbonate platforms).

The most prospective reservoirs are the sandstones of Sequence II. The best source rocks are the anoxic deposits of Sequence III and lacustrine shales of Sequence I. The areas which present the best conditions of association of reservoirs and thermally mature source rocks are the northeastern and northern portions of the Acarau sub-basin.

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