

The Cretaceous Ibura Evaporites, Sergipe Basin, Brazil: Sedimentary Facies, Paleoenvironments and Oil Generation

Flavio Zaborne Oliver, GeoQuest, Schlumberger, Av. Presidente Wilson, 231/13th floor, Centro, Rio de Janeiro, 22080-030, Brazil, phone: 55 21 38246880, foliver@slb.com and **Maria Augusta M. Da Silva**, Departamento de Geologia, Universidade Federal Fluminense, Av. Litorânea, s/n, Instituto de Geociências, 4° andar, Gragoatá - UFF, Niteroi, 24210-340, Brazil.

The Sergipe basin, located at the northeastern Brazilian continental margin, shows a thick Cretaceous (Aptian) evaporitic sequence, locally named Ibura Member of the Muribeca Formation, related to the opening and early evolution of the South Atlantic Ocean. Fifty-one samples collected from two wells that recovered the basal evaporitic section were analyzed on the basis of new concepts on evaporite sedimentology. (Algal)Carbonates, nodules and entherolitic anhydrite, halite nodules, chevron halite, laminated and banded halite, pure halite, and black shale facies were recognized. Facies associations point to a salt pan model as proposed by Lowenstein & Hardie (1985) as the most likely depositional environment for this lower section. Black shales were analyzed for TOC (Total Organic Carbon), pyrolysis (Rock Eval), carbon isotopes, GC and CG-MS analysis. The chromatograms show a clear distinction of the basal section into two geochemical facies: a lower facies characterized by marine and continental derived organic matter; and an upper facies characterized by marine contribution only. The lower facies indicates a periodic influx of both continental and marine waters, showing good circulation and oxygenation resulting in low preservation of organic matter, as the upper facies show a notable change in the environmental conditions allowing the deposition of higher contents of organic matter. The water circulation was more restricted in this upper facies, with predominance of marine waters over the continental water influx. Pyrolysis results show that the black shales are immature with no production of oil and gas.
