

# **Campanian Radioactive Phosphatic Layer Associated With Carbonate Rocks From Jandaíra Formation, Potiguar Basin, Rio Grande do Norte, Northeastern of Brazil.**

<sup>1</sup>MATSUDA, N. S., <sup>2</sup>SOUZA, P. C., <sup>3</sup>DOS ANJOS, S. M. C.,  
<sup>1</sup>MATSUMOTO, R. <sup>1</sup>University of Tokyo, Tokyo, Japan; <sup>2</sup>UFOP,  
Ouro Preto, Brazil; <sup>3</sup>Petrobras, Cenpes, Rio de Janeiro, Brazil.

A very interesting Campanian radioactive phosphatic layer was found using gamma ray log profile in the upper section of carbonate platform of Jandaíra Formation, Potiguar Basin, Rio Grande do Norte, Northeastern of Brazil. The radioactive anomaly show at least 25 times than local background and cover an area of about 3.500 km<sup>2</sup>. The thickness varies from 3 to 20 metres.

Detailed study was carried out using cutting samples to characterize the petrography, mineralogy, geochemistry and paleontology and they indicated that the anolamous radioactive section is a phosphatic layer with at least 10% of P<sub>2</sub>O<sub>5</sub> content.

The main P<sub>2</sub>O<sub>5</sub> mineral is fluorapatite (collophane) which occurs as diagenetic substitution of grainstones, packstones, micrites matrix and also as filling of fossils chambers. The carbonates are composed of planctonic and benthonic bioclasts, intraclasts, ooliths, pellets and peloids that settled over shallow water grainstones of green algae and benthonic forams. The phosphatic layer is covered by relatively deep water mudstone of planctonic and benthonic forams and calcispheres. It was probably formed onto a hardground surface formed by a condensed section related with upwelling current occurred during some transgressive phase. The origem of radioactive anomaly is due to high concentration of uranium (62ppm) and also at least 11 rare earth elements and some trace elements were enriched in this section.

As the phosphate layer with apatite hold uranium elements and its natural radiation is signed in gamma ray log profile so, it is possible to make research and explore uranium bearing mineral like as phosphates, using gamma ray log tool.