

# **GEOPHYSICAL AND GEOLOGICAL DATA INTEGRATION TO DELIMITATION WINDOWS OF OIL AND GAS GENERATION IN THE AMAZON BASIN.**

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**ABSTRACT:** In this work, data from 6 selected wells were used to evaluate the generation of oil in the basin, using the Temis software for delimiting the windows of oil and gas generation; compare the results obtained in Temis with the reflectance index of vitrinite data available in the literature of the wells; compare the results with seismic and gravimetric and magnetometric maps. The integration of the basin modeling with geologic and geochemical data suggests that the Barreirinha Formation source rock started to generate petroleum during the Late Carboniferous. The main phase of petroleum generation and expulsion occurred from Late Carboniferous to Permian time and was completed by the Early Triassic. Any later tectonic event remobilized those hydrocarbons previously trapped. Probably because of the long distances of both vertical and horizontal migration, it is believed that an important amount of the expelled hydrocarbon was dispersed along migration pathways. A significant part could also have been remobilized and lost during Cretaceous uplift of the basin margins.

## **Integration of Seismic and Potential Field Data (Gravity and Magnetics)**

In this section we made an integration of geophysical data, we put a seismic line with well logs and grav map to see the relationship between information extracted from each one. Also we plotted some mag and grav maps to see the biggest igneous intrusions in the basin. Were plotted on the seismic line 254 some logs (Gamma, SP and resistivity) of the Well A and a gravity anomaly map to evaluate the consistency of the gas generation window result for well A. This allowed a better interpretation of the results obtained in Section 2D. Note that, due to stored characteristics of each method, including differences in scales, the similarities are clear. Both depict layers tabular without significant deformation and igneous intrusions in matching points. We can infer that the section has good approximation to reality; it is therefore suitable for obtaining the sections to be used in the thermal model Amazon basin.

## **Results and Conclusions**

The models have shown that basement heat flow was not enough for the thermal maturation of the basin. However, the sum of the basal heat flow with the flow from intrusions is responsible for its thermal maturation. These two sources are directly related to the generation of hydrocarbons confirmed by their existing petroleum systems. The simulations with the models allowed the verification of the thermal effect of intrusion into sections; the thermal history was obtained from thermal maturation logs of the Easy %Ro model, and the identification of gas/oil windows. The Easy %Ro values obtained show that the intrusion favored generation hydrocarbon basin. Indicates a potential exploration of regions not yet explored for both cases gas and oil. The influence of the thermal effect of igneous intrusions on thermal maturation of the Amazon Basin appears to be crucial for the generation of hydrocarbons in some areas of the basin, validating the unconventional such systems.

**KEY-WORDS:** SEISMIC, HEATFLOW, HIDROCARBONS.