

## TRANSITION BETWEEN SERGIPANO BELT AND PEAL DOMAIN, SOUTHERN BORBOREMA PROVINCE: TECTONIC FRAMEWORK BASED ON AEROMAGNETIC DATA

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The aim of this work was to integrate structural and aeromagnetic data to investigate the principal limits between crustal blocks that occur in transition zone between the PEAL domain and Sergipano Belt in northeastern Brazil. The aeromagnetic data were taken from project 1104 Paulo Afonso - Tetônio Vilela in XYZ format and work on the program Oasis Montajtm V. 9.3 Geosoft. The integration of geological and the analysis of power spectrum segmentation (semiquantitative analysis) with different depths allowed interpreting the lineaments into shallow, intermediary and deep sources. In order to perform the qualitative analysis of the lineaments and the magnetic domains, the Anomalous Magnetic Field (AMF) generated from the areas was processed with the Analytic Signal Amplitude (ASA), Tilt Angle (TDR), Derivative on directions X, Y and Z, Integral Vertical of ASA (VIAS), Total Horizontal Derivative (THDR) and Tilt Angle of the Total Horizontal Derivative (TAHG) for the different sources to compare the different products generated with the edge traces or the center of the magnetic sources, which the different filters mentioned above provide. In the study area (1:250,000/SC.24-X-D – Arapiraca geologic map) four crustal blocks are defined that are separated by shear zones, these are: PEAL, Araticum, Arapiraca, and Macururé blocks. There are several hypotheses regarding the origin of these different blocks as distinct terranes, however we show based on geophysics that their signature is very similar and therefore that they are most likely part of one and the same block divided by faults. A sinistral strike-slip shear zone boundary that limited Arapiraca and Araticum blocks is likewise unwarranted based on the aeromagnetic lineaments interpretation, suggesting similar tectonic evolution for these blocks. The most significant magnetic boundary contrast occurs between Arapiraca and Araticum domain against Macururé domain. This may be a result of three geodynamic scenarios: (1) the apparent (not yet determined) increase of metamorphic grade and deformation intensity from Macururé to Arapiraca block; (2) the Arapiraca block/domain represent a detached basement of São Francisco craton (Paleoproterozoic/Archean) affected by Neoproterozoic deformation; or (3) the Arapiraca domain represents a continental rift sequence (may be related to Canindé domain) and their metasedimentary rocks are related to closure of Sergipano ocean. In integral vertical of ASA we found very deep and continuous crustal sources for Arapiraca block which can be extended to Canindé domain in central portion of the Sergipano belt. This magnetic framework is compatible with an exhumation of the deep crustal levels of Arapiraca block by a reverse to normal overprint top-to-WNW in the Belo Monte Jeremoabo shear zone, suggesting related origins for Arapiraca, Araticum and Canindé domain. Currently geochronological investigation will constrain the geodynamic evolution of the belt, as well the correlation between tectonic events and block fragmentation by shear zones.

**KEYWORDS:** SERGIPANO BELT, AEROMAGNETOMETRY, POWER SPECTRUM ANALYSIS

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