



Structure of the Demerara Plateau : syn- and post-rift deformations at the intersection of transform and divergent margin segments

C. Basile (1), A. Maillard (2), M. Patriat (3), W. Roest (3), L. Loncke (4), and V. Gaullier (4)

(1) Université Joseph Fourier, OSUG, LGCA CNRS-UMR5025, Grenoble Cedex 09, France (cbasile@ujf-grenoble.fr, 0033 476514058), (2) Université de Toulouse; UPS (SVT-OMP); LMTG; 14 Av. Edouard Belin, F-31400 Toulouse, France, (3) IFREMER Géosciences Marines, Plouzané, France, (4) IMAGES laboratory, University of Perpignan, France

The continental margin of French Guyana presents a divergent segment (East of Demerara Plateau) between two transform segments (North of Demerara Plateau and the eastern margin). This area was surveyed in 2003 by GUYAPLAC cruise, that improved our knowledge of its structure and evolution, which is presented here relatively to the post-rift unconformity, regionally dated early Albian by drill-holes.

Post-unconformity sediments were stacked by aggradation on the Plateau. After their deposition, they were systematically affected by two processes : tilting oceanwards (towards ENE) of the whole margin, and massive fluid escapes. Fluid escapes are evidenced in seismic lines by a polygonal faulting network, linked at seafloor with pockmark fields, and rooted below the post-rift unconformity. Unlike most of the transform margins that were uplifted along the continent-ocean boundary, the late oceanward tilting of the Demerara Plateau may be in relation with its peculiar position at the intersection of transform and divergent continental segments.

The post-rift unconformity seals complex and highly deformed structures, involving tilted blocks, folds and reversed faults. The post-rift unconformity is itself sometimes shifted by the polygonal fault network, that seems to be influenced by the deeper structures : the density of post-unconformity faults increases above the structural highs (top of tilted blocks, fold hinges) cut by the unconformity. Detailed analysis demonstrated that the unconformity progressively eroded folded structures, allowing the datation of the reverse slip on previously normal faults bounding tilted blocks. However, the spacing of available seismic lines does not allow to identify probable strike-slip displacements or transpression. Relationships of these features with possible magmatic intrusions on northern and northeastern edges of the Plateau are also unclear.

Such tectonic inversion has been previously reported for other transform margins within the Equatorial Atlantic (Guinea, Côte d'Ivoire, Ghana). Unfortunately, the lack of accurate datations does not allow to decipher the origin of this inversion, that may be linked either to a global geodynamic change in plate displacements, or to an intrinsic characteristic of transform margin evolution. Anyway, this underlines the difficulty in correlating sedimentary unconformity with the beginning of oceanic accretion along transform continental margins, and consequently the essential reevaluation of the post-rift unconformity concept for those margins.