AAPG Annual Convention
Salt Lake City, Utah
May 11-14, 2003

Antonio Cosme Del Rey[1], Adriano Roessler Viana[2], Rafael Manica[3], Rogério Dornelles Maestri[3], Ana Luiza de Oliveira Borges[3] (1) PETROBRAS-Petroleo Brasileiro S.A, São Mateus, Brazil (2) PETROBRAS-Petroleo Brasileiro S.A, Rio de Janeiro, Brazil (3) Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil

Impact of Flow Oscillations in the Depositional Geometry and Architectural Elements Distribution of Sand-Rich Density Current-Driven Deposits

A series of 10 simulations of sand-rich density currents were performed in a 10m x 5m tank that reproduce a channel-basin system with a simplified geometry aiming to analyze the effects of both topographic and flow rate changes in the related sedimentary deposits.Mineral coal with r=1.190 g/cm? and grain size ranging between 0.125 and 0.297 mm was used in the analysis with currents density ranging between 1.002 and 1.015 g/cm?. Acceleration and deceleration of the current head propagation was observed and were related to internal instabilities of the current such as eddies and undulations in the interface between the traction carpet and its upper diluted portion. Those changes in the current velocity seem to be in the origin of the different bed-forms identified in the deposits, which follow a current intensity decrease pattern downstream. Through the canyon it was observed the successive development of planar upper flow regime surfaces, linear ripples, sinuous ripples, meandering channels, linear channels. In the non-confined basin an asymmetrical radial fan-shaped deposit was developed, with concentration of the flow energy in the basinward continuation of the canyon axis, where a high wave length, low amplitude, slightly sinuous ripple field is developed. The distal part of the basin fan presents an inversion of the fining tendency. The results evidence the complexity of flow evolution involving phases of acceleration and deceleration with shifts between erosion, transport and deposition.