

A New Palinspastic Plate Reconstruction of the Southern North Atlantic, with Implications for the Formation and Development of Basins on the Grand Banks of Newfoundland.

E.S. Aarseth* and A.C. Barnwell
Norsk Hydro Canada Oil & Gas
Suite 1190, 111 5th Ave S.W. Calgary, AB T2P 3Y6
Eivind.swensson.aarseth@hydro.com

J. Skogseid
Norsk Hydro ASA

R.C. Whittaker
GeoArctic International Services

and

Hunter, E.C. Stacey and M. McDonough
Petro-Canada

ABSTRACT

Previous reconstructions of the conjugate margins of the southern North Atlantic have often been non-palinspastic, and consequently failed to address crustal deformation prior to continental breakup. This usually resulted in severe plate overlap or excessive space issues around this complex junction resulting in a poor understanding of basin development. This new work is an attempt to address these problems using advanced GIS techniques to restore plate polygons to their pre-extended shapes and positions. Input into this restoration was from modelled and measured stretching (beta) factors, regional gravity and magnetic data and published poles of rotation. Using this approach allowed a regional palinspastic reconstruction that has reduced overlap and space problems by an order of magnitude over previous studies. The results were then coupled with regional paleolithological reconstructions, structure depth maps and sediment isopach maps to generate full paleogeographic reconstructions. Implications on the development, and therefore the petroleum potential, of the basins on and around the Grand Banks of Newfoundland could then be made.