

SEQUENCE STRATIGRAPHY AS A TOOL FOR COAL RESEARCH: AN EXAMPLE FROM THE EARLY PERMIAN RIO BONITO FORMATION OF SOUTHERNMOST BRAZILIAN GONDWANALAND

HOLZ, M. and KALKREUTH, W. Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil, CNPq researchers

Sequence stratigraphy is a powerful tool for prediction of facies relationships and is largely used in petroleum prospection and exploration. In order to test the applicability of sequence stratigraphy parameters in coal research, a high resolution stratigraphic framework was established for the economically important Candiota Coalfield (Rio Grande do Sul state, Brazil) and compared with the petrographic parameters of the coal seams. Organo-petrographic analysis of seven coal seams of two completely cored boreholes in that area has shown that petrographic parameters such as the content of vitrinite and inertinite maceral groups in the coal seams and associated Gelification and Tissue Preservation Indices vary significantly from base to top of the coaly interval, indicating much drier coal-forming environments at the top. The detailed sequence stratigraphic framework permits a comparison between the fourth order flooding events (= parasequence limits) and the vertical variation of coal parameters. Insofar, sequence stratigraphy and evolution of the petrographic parameters of coals are strongly correlative, evidencing stratigraphic control on the coal-forming conditions during the Early Permian (Artinskian/Kungurian). This leads to a twofold conclusion: not only may sequence stratigraphy explain variation of coal parameters, but those may be a helpful additional tool to depict flooding surfaces and therefore high-resolution sequence stratigraphy. Additionally, the recognition of the stratigraphic control on coal parameters permits a predictive model which might be useful in coal exploration.