



# SBGf Conference

18-20 NOV | Rio'25

**Sustainable Geophysics at the Service of Society**

**In a world of energy diversification and social justice**

**Submission code: 6VG05DP895**

See this and other abstracts on our website: <https://home.sbgf.org.br/Pages/resumos.php>

## **Stratigraphic Cycles and Facies Distribution of the Barra Velha Formation in the Southern Santos Basin (NW–SE Regional Section)**

**Camilo Ivan Ivan O. Aristizabal (Solintec Consultoria Serviços de Geologia LTDA.), Débora Pilotto (Solintec Consultoria Serviços de Geologia LTDA.), Maria Dolores Carvalho (MDConsultoria e Serviços Ltda.), Karine Cardozo (Solintec Consultoria Serviços de Geologia LTDA.), Enzo Borges (Solintec Consultoria Serviços de Geologia LTDA.), Michele Lemma (Solintec Consultoria Serviços de Geologia LTDA.), Bruna Greco (Petrinas)**

## **Stratigraphic Cycles and Facies Distribution of the Barra Velha Formation in the Southern Santos Basin (NW–SE Regional Section)**

Copyright 2025, SBGf - Sociedade Brasileira de Geofísica/Society of Exploration Geophysicist.

This paper was prepared for presentation during the 19<sup>th</sup> International Congress of the Brazilian Geophysical Society held in Rio de Janeiro, Brazil, 18-20 November 2025. Contents of this paper were reviewed by the Technical Committee of the 19<sup>th</sup> International Congress of the Brazilian Geophysical Society and do not necessarily represent any position of the SBGf, its officers or members. Electronic reproduction or storage of any part of this paper for commercial purposes without the written consent of the Brazilian Geophysical Society is prohibited.

### **Introduction**

In the pre-salt interval of the Santos Basin, the Barra Velha Formation (BVF) records, during the Aptian, a lacustrine environment highly sensitive to sedimentary, biological, and chemical processes. Its stratigraphic framework comprises both in situ and reworked limestones, reflecting a second-order transgressive-regressive sequence subdivided into three third-order intervals. The basal interval is marked by fine-grained facies, reworked deposits, and in situ shrub limestones, indicating a transgressive stacking pattern. The intermediate interval, enriched in clay minerals—mainly talc and stevensite—corresponds to the maximum flooding stage. The upper interval represents the regressive phase and consists of shallowing-upward cycles with fine sediments, reworked limestones, and in situ shrub facies. Recognizing this stratigraphic pattern is essential for understanding facies distribution, mapping reservoir bodies, constructing well correlation models, and interpreting the depositional evolution of the BVF.

### **Method and/or Theory**

This research aims to characterize the stratigraphic cycles of the Barra Velha Formation in the southern portion of the Santos Basin and to discuss its evolution and variations along a NW–SE section. The study integrates core data from six wells, conventional well logs, and a regional 2D dip seismic section in the depth domain. Limestones were classified into reworked and in situ facies based on a modified version of Dunham's classification

### **Results and Conclusions**

In lithological terms, the analyzed wells show a general predominance of reworked limestones over in situ carbonates. Preliminary results indicate that the stratigraphic framework of the Barra Velha Formation varies significantly along the NW–SE regional section. Wells located in structurally higher positions are dominated by boundstone, disaggregated boundstone, packstones, and grainstones, with subordinate amounts of reworked fine sediments. Chemical shrub facies are generally associated with fault zones, suggesting development under the influence of ascending heated fluids within the lacustrine system. In contrast, three wells in relatively lower structural positions are composed predominantly of fine sediments, followed by packstones and, locally, *in situ* facies. Mudstones are typically associated with talc/stevensite, spherulites, detrital minerals, and nodules.