

Late Permian Carbonate Coal Measures in the Heshan Coal Field, South China: A Sequence Stratigraphic Interpretation

Longyi Shao¹ Yongsheng Ma² Jialiang Chen³ Zongbo Shi¹
¹ China University of Mining and Technology, D11 Xueyuan Road, Beijing 100083. E-mail: ShaoL@mail.cumtb.edu.cn ² Oilfield Administration, China Petrochemical Corporation (SINO-PEC), A6 Huixin Dongjie, Beijing 100029, ³ Guangxi Coal Mine Administration, Nanning, Guangxi 530022

The Late Permian Heshan Formation in the Heshan coal field is a typical carbonate coal measures formed in a shallow water carbonate platform setting. Up to seven coal seams have been preserved with numbers 2, 3A, 3B, 3C, 4A, 4B and 5, in descending order. Four third-order unconformity-bounded sequences have been identified. Sequence I is from the bottom of the Heshan Fm to the base of the cherts beneath coal Seam 4B. Sequence II is from the cherts beneath Seam 4B to the base of Seam 4A; Sequence III is from base of Seam 4A to the base of the bauxitic mudstone beneath Seam 2; Sequence IV is from the base of the bauxitic mudstone beneath Seam 2 to the top of the Heshan Formation. Sequences I, II, and IV are strongly controlled by regional differential subsidence. Sequence III shows cyclicity of the coal and carbonate rocks, with extensive distribution in the central Guangxi area, reflecting strong control by sea level changes.

Within the Sequence III, four (fourth-order) parasequences are recognised, each consisting of a basal coal seam and overlying tidal flat and open platform limestones. In the Heshan coalfield parasequences and coals within the Sequence III thin first and then thickening upwards, with the thinnest being the parasequence with coal Seam 3B. As a result, the thickest coal in the carbonate platform setting was formed at the transgressive surface and the thinnest coal was formed at the maximum flooding surface.