PALYNOFACIES ANALYSES AND PALAEOENVIRONMENTS OF SOME LOWER CRETACEOUS ROCKS OF THE SIQEIFA 1X BOREHOLE, NORTH WESTERN DESERT, EGYPT

Magdy S. Mahmoud, Mohamed A. Masoud, Mohamed A. Tamam, and Miran M. Khalaf

Abstract:

A detailed palynofacies analysis was carried out on 56 ditch-cutting samples obtained from the lower Cretaceous of Siqeifa 1x borehole, north Western Desert, Egypt. The main aim of this study is to identify depositional palaeoenvironments in details, reconstruct vegetation cover and to infer palaeoclimate conditions. Three palynofacies types were recognised: palynofacies type (PF-1) corresponds to the lower-middle Alam El Buieb Formation (Berriasian-Barremian). This is deposited in a deltaic (prodelta) subenvironment during a Berriasian-early Barremian regression episode, and the lower upper Alam El Buieb deposited in an inner shallow marine environment during a partial regain of a late Barremian-Aptian transgression, under prevailing dysoxic-anoxic to suboxic-anoxic conditions. The second palynofacies (PF-2) represents the uppermost Alam El Buieb, Alamein, and Dahab formations (late Barremian-Aptian), where the uppermost Alam El-Buieb Formation was deposited in a distal bar of a prograding delta, accumulated during a minor local regression. However, the carbonate of the Alamein Formation and the shale of the Dahab Formation was deposited in a saline lagoon environment developed during a partial regain of the local early Aptian marine transgression. Suboxic-anoxic to dysoxic-anoxic conditions are interpreted to prevail during deposition of the PF-2. Third palynofacies (PF-3) represents the Kharita Formation (Albian), where the lower Kharita was deposited in a lagoon setting, while the upper Kharita was deposited in a deltaic environment due to a major marine regression, under dysoxic-suboxic conditions. Local pteridophyte vegetation on low lands near the borehole and conifers on relatively dry hinterlands is interpreted to thrive under a regional warm and relatively dry palaeoclimate. Possible seasonal dry periods may be developed during deposition of the uppermost Alam El Buieb, Dahab and Alamein formations.

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