

Facies and depositional environments of the early Cambrian, Khewra Sandstone, eastern Salt Range, Pakistan

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Abstract

The Early Cambrian Khewra Sandstone is well exposed in the southern part of the eastern Salt Range in its type section, the Khewra Gorge. The 130 m thick succession has unconformable upper and conformable lower contact is dominantly sandstone with subordinate claystone. In the lower part of the succession, fine grained sandstone alternates with units of silty mudstone and a minor amount of shale. Flaser bedding is the dominant sedimentary structure in the sandstone beds; asymmetrical ripples are abundant and burrows are moderately common, indicating a marine environment with rapidly changing current speeds. Most of the unit is interpreted as tidal flat sands, although there are lenticular-shaped beds that are interpreted as tidal channels. Parallel laminated fine sandstones with subordinate low angle cross-bedding overlie the tidal deposits and are interpreted as shoreface deposits. The middle and upper middle part of the Khewra Sandstone is fine-grained sandstone that is extensively planar tabular and trough cross-bedded. The beds are wedge shaped and lenticular, suggesting small channels that are interpreted as stacked tidal channels. The uppermost part of the succession comprises medium-grained, well sorted sandstone. Cross-bedding is less common than in the middle part of the succession but parallel lamination is common and low angle cross bedding occurs in some beds. Most beds are tabular beds; the bed geometry and sedimentary structures suggest that it was deposited in a wave-dominant environment.