

## **Foraminiferal Assemblages from Maximum Flooding Surface (MFS J30) of Middle Jurassic Dhurma Formation, Central Saudi Arabia**

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### **ABSTRACT**

A 19-m thick outcrop section of D5 Unit of the Dhurma Formation along a road cut Highway 5395 in within the Darma Quadrangle in central Saudi Arabia was described, logged, and sampled bed by bed for sedimentology and micropaleontology study. The outcrop section is predominantly composed of monotonous muddy carbonate and marl sediment. The basal 17.5-m portion of the outcrop is comprised of mudstone and wackestone intercalated with thin marl beds. The mudstone beds at the base are nodular, clayey and friable. Based on the foraminiferal assemblage composition, the thick mudstone-wackestone portion likely represents the Middle Jurassic J30 maximum flooding surface of Sharland et al. (2001). The planktonic foraminifera comprise approximately 5–10% of the assemblage at the studied locality, and are found within a benthic foraminiferal assemblage consisting of a mixture of smaller agglutinated species (*Nautiloculina*, *Haplophragmoides*, *Ammomarginulina*, *Sculptobaculites*), and calcareous species (nodosariids, ophthalmidiids, epistominids, polymorphinids, and spirillinids) without any larger foraminifera. The assemblage is indicative of open-marine shelf conditions, and represents a typical Middle Jurassic benthic foraminiferal fauna from a marly carbonate substrate. The discovery of planktonic foraminifera and open-marine benthic foraminiferal assemblages in the D5 Unit of the Dhurma Formation provides a new correlation tool for recognizing the J30 maximum flooding surface in the Middle East. This type of foraminiferal assemblage has never been reported by any previously published study in Saudi Arabia.