

Changes in foraminiferal assemblages during the early Toarcian biotic crisis in the Portland-Wight Basin (Kerr McGee 97/12-1 well, offshore southern England)

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The uppermost Pliensbachian-upper Toarcian sediments recovered from Kerr McGee 97/12-1 well (offshore southern England) were deposited in the Portland-Wight Basin and mainly consist of silty and calcareous claystones, marls, silty sandstones, and sandy limestones. In addition, in the early Toarcian black, locally organic-rich, claystones and silty claystones are recorded. The current study analyses the foraminiferal assemblages from the interval 408 – 518 m that has been assigned to the Margaritatus Zone (upper Pliensbachian) to the lower part of the Psudoradiosa Zone (upper Toarcian). The foraminiferal assemblages are dominated by the suborders Lagenina and locally Robertinina. Three main ecostratigraphic intervals have been identified, based on changes in the foraminiferal assemblages that occurred before, during and after the sedimentation of the early Toarcian black claystones (correlative with the Early Toarcian Oceanic Anoxic Event, T-OAE).

Ecostratigraphic interval I (upper Pliensbachian) is characterized by a diverse assemblage with specialist, opportunist and intermediate forms, but dominated by *Lenticulina muensteri*. Abundance of foraminifera is relatively low. This assemblage is interpreted to represent a phase that pre-dates the biotic crisis.

The ecostratigraphic interval II, during the deposition of the black claystones, shows an abrupt increase in opportunist forms such as the genus *Reinholdella* (91%). The diversity is very low but the abundance of foraminifera, specially *Reinholdella macfadyeni* and *R. dreheri*, is very high. The top of the black claystones is an almost barren interval for foraminifera and other microfossils such as the ostracods. Only two specimens of *Trochammina eoparva* were recorded. This second interval represents the biotic crisis phase, probably in response to decreasing oxygenation.

The ecostratigraphic interval III (from upper part of the lower Toarcian to the upper Toarcian) is characterized by an increase of diversity and abundance of foraminifera, as well as the dominance of *Lenticulina* (> 85 %). Other infaunal forms are recovered such as *Nodosaria*, *Marginulina*, *Eoguttulina*, and *Palmula*. This assemblage is interpreted to reflect the increased availability of oxygen from deep-infaunal to epifaunal microhabitats and the return to normal conditions at the sea bottom. Ecostratigraphic fluctuations in the foraminiferal assemblages from Kerr McGee 97/12-1 well across the T-OAE event are comparable with those from Mochras Borehole, the Lusitanian Basin (Portugal), and the Atlassic Basin (North Africa).

Key words: Foraminifera, Jenkyns Event, opportunist, Lower Jurassic