

A Preliminary Ichnofacies Model for the Avalon and Ben Nevis Formations, White Rose Field, Offshore Newfoundland

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Abstract

Preliminary results of analysis of Wells J-49, L-61, E-18-1, F-04, H-20 and L-08 within the Cretaceous, Avalon (Barremian-Aptian) and Ben Nevis (Aptian-Albian) formations, from the White Rose Field, Jeanne d' Arc Basin, offshore Newfoundland reveals the presence of a number of clastic strata that contain distinctive ichnofacies which are interpreted to reflect deposition in a range of shoreline palaeoenvironments, including deltaic settings and ranging through to the shoreface-offshore transition.

Lithologically the formations are dominated by variably-clean sandstones, with frequent siltstone and shaly siltstone intervals. Rarer conglomerate and carbonate beds are also present. The beds range from massive to those whose physical sedimentary structures include planar lamination, planar bedding and hummocky cross stratification. Soft sediment deformation and dewatering are indicated by the presence of localised contorted or slumped bedding and synaeresis cracks. Syn-sedimentary microfaulting is also apparent. Sideritised intervals occur frequently, with sideritised mudstone pebbles and centimetre to decimetre scale beds, zones with pyrite and limonite are also encountered.

A diverse trace assemblage is present, with elements including abundant Ophiomorpha, common Asterosoma, Chondrites, Planolites, Palaeophycus, Teichichnus, Cylindrichnus, Thalassinoides and Zoophycos and rarer Skolithos, Diplocraterion, escape traces and possible Piscichnus. Many intervals without identifiable traces are the subject of either biogenic mottling or cryptic bioturbation. Additionally an invertebrate body fossil assemblage is preserved, with oyster beds, bivalve coquinas and serpulid worm tubes, together with rarer gastropods and plant debris.