

Late Jurassic carbonates of the Grand Banks of Newfoundland

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From eastern Nova Scotia and the Grand Banks of Newfoundland to the Atlas Mountains of Morocco, to the Western Desert of Egypt, to the north Sinai, and on to the basins of Saudi Arabia, basinal and platform carbonates accumulated during the late Jurassic. Platform carbonates throughout the region were deposited in a general transgressive sequence with many associated minor sea level changes. Many intrashelf basins developed in this setting accumulated organically rich carbonates under euxinic conditions. Such carbonates are the identified source of oils accumulating in

the huge Jurassic reservoirs of Saudi Arabia. Similar Jurassic sourced oils have been reported in the Western Desert of Egypt. Aeromagnetic data have revealed many deep basins in the north Sinai. Basins having developed under similar geologic conditions to those in the Western Desert and in Saudi Arabia, are expected to similarly generate petroleum. Throughout the region the carbonates are characterized as oolitic limestones and bioclastic peloidal packstones and wackestones with isolated biohermal buildups. Steep platform or ramp margins are transitional to basinal sediments. Canadian

equivalents of these shallow carbonates reflect the strong influence of terrigenous siliciclastic influx. Saudi Arabian carbonates have significant coeval evaporite sediments.

Two periods of rifting in the Jeanne D'Arc Basin of the Grand Banks were separated by middle-late Jurassic passive margin sedimentation, at which time were deposited basinal Downing Formation fine clastics and shelf Rankin Formation limestone. Within the Rankin are source rocks of the Egret shale which, like their eastern counterparts, are interpreted to have accumulated in shallow neritic and brackish lagoons.

The coeval Downing Formation is dominated by a sequence of siltstones of deep marine limestone, with interbedded South Tempest sandstones of deep marine turbidite origin. On-going and beginning studies by the Global Petroleum Resource Evaluation Group will attempt to determine the depositional model and to evaluate the petroleum potential of these Jurassic units of the Grand Banks using the knowledge available from the Newfoundland and regional geologic setting.