

The Fundy Basin story

J. A. Wade¹, D. E. Brown², R. A. Fensome¹ and A. Traverse³

¹*Geological Survey of Canada (Atlantic), P.O. Box 1006, Dartmouth, Nova Scotia B2Y 4A2, Canada*

²*Canada-Nova Scotia Offshore Petroleum Board, 1791 Barrington Street, Halifax, Nova Scotia B3J 3K9, Canada*

³*Department of Geosciences, Pennsylvania State University, University Park, Pennsylvania 16802, U.S.A*

Transtensional rifting of the central part of Pangaea during the Mid and Late Triassic resulted in the formation of a series of half graben extending from Florida to The Grand Banks of Newfoundland. Many of these, such as the Newark and Hartford basins in the U.S.A., are onshore and are well studied, whereas others, particularly those in the offshore, are poorly known. One of the latter is the Fundy Basin (~16,500 km²), which lies mainly to the south of the Cobequid-Chedabucto fault system in Nova Scotia and beneath the Bay of Fundy. From studies of outcrops, the rocks in the Fundy Basin have long been recognized as being part of the Triassic-Jurassic Newark Supergroup. However, little has been known of the nature and petroleum potential of the extensive sedimentary section beneath the waters of the Bay of Fundy.

Continental red clastics and basalt flows of Triassic and Early Jurassic age crop out continuously along the Bay of Fundy and Minas Basin coast of Nova Scotia and at several sites in southern New Brunswick. These units thicken beneath the waters of the Bay to a maximum of nearly 10 km.

Proximal facies preserved along the New Brunswick margin of the basin consist of upper alluvial fan and fluvial clastics, which grade laterally into sheet flood deposits. Along the gently north dipping Nova Scotia margin, facies consist of distal alluvial fan, sheet flood and playa mud flat deposits. Facies projections suggest the probability that lacustrine sequences will be widespread along the basin axis.

Petroleum exploration programs in the Bay of Fundy from 1968-75 and 1980-83 resulted in the acquisition of over 4600 km of variable quality seismic data and the drilling of two exploratory wells. These data, combined with published material, the study of outcrop sections in Nova Scotia and New Brunswick, and regional synthesis, provide the basis for our model of areas of thick lacustrine facies within the basin, which could contain rich petroleum source rocks. In the Wolfville Formation and the lower part of the Blomidon Formation these may be overmature, but the upper Blomidon Formation and the Scots Bay Formation have the potential for appreciable quantities of hydrocarbons.