

Black shale Selli Level recorded in Cretaceous Naskapi Member cores in the Scotian Basin, Canada*

ISABEL CHAVEZ¹, DAVID J.W. PIPER², GEORGIA PE-PIPER¹, AND YUANYUAN ZHANG¹

1. *Department of Geology, Saint Mary's University, Halifax, Nova Scotia B3H 3C3, Canada* <chavezg.isabel@gmail.com>

2. *Natural Resources Canada, Geological Survey of Canada (Atlantic), Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, Nova Scotia B2Y 4A2, Canada*

Climatic fluctuations between arid and more humid conditions in the Early Aptian favoured the deposition of black laminated organic-rich mudstones, including the Selli Level. The black shale intervals are recognised over large areas of Tethys and western European basins. This interval was investigated in a 75 m-thick continuously cored section of varicoloured shale in the lower Naskapi Member from the Panuke B-90 well in the Scotian Basin, offshore eastern Canada. This study complements the paleogeographic range of correlatable black shales and provides information on their relationship to sea-level change and paleoclimate. Total organic carbon (TOC) was measured on 127 discrete samples, chemical environmental proxies (Th/K, Mn/Ti, K/Ti, Th/Ti, V/Ti) were measured with a portable X-ray fluorescence (pXRF) spectrometer, and colour parameters L*a*b* were measured by spectrophotometer. Several black shale levels are recognised and correlated with similar shales in Europe between the Barremian-Aptian boundary and the Selli level. The Th/K ratio proxy for hinterland humid or arid climate conditions shows no systematic variation with black shale levels. Several sea-level lowstands are inferred from condensed sandy intervals with some brackish water biota and tidal sedimentary structures. Black shale intervals are found in high-stand intervals, with no systematic relationship to inferred transgressions. The formation of black shales is related to paleoceanographic changes that may be driven by conditions remote from the Scotian Basin.

****Winner of the Encana Prize for best student oral presentation on the Offshore Geology of Eastern Canada***