

**Stratigraphy and Sedimentology of the Oil Shales and  
Associated Clastics of the Stellarton Group, Nova Scotia**

*R.D. Naylor, G.A. Prime and W.D. Smith  
Nova Scotia Department of Mines and Energy  
Halifax, Nova Scotia B3J 2X1*

Oil shale units of the east half of the Stellarton Basin occur within the grey coal-bearing members of the Westphalian B-C aged Stellarton Group. The upper three members of the Stellarton Group (Thorburn, Coal Brook and Albion) contain over 40 oil shale units. Individual units, some as thick as 50 metres, are traceable laterally 1-5 kilometres.

Oil shales are typically silicate-rich (quartz and clays) with humic and algal organic matter comprising up to 50 per cent (by weight) of the rock.

Lithologies interbedded with the oil shales include: 1mm - 2 cm alternating siltstone and claystone couplets (F), siltstone with thin (1mm and less) parallel sandstone laminae (F1), thinly interbedded flaser to lenticular siltstone and sandstone (S1), rippled sandstone (Sr), discontinuous-crested ripples (Sr<sub>1</sub>), weakly undulatory to straight-crested ripples (Sr<sub>2</sub>), bifur-

cating ripples (Sr<sub>3</sub>), high angle trough cross-bedded sandstone (St<sub>1</sub>), low angle trough cross-bedded sandstone (St<sub>2</sub>), horizontal tabular-bedded sandstone (Sh), massive and cross-stratified pebble to cobble conglomerate (Gc), coal (C) and coaly shale (Cs).

General depositional settings for the above lithologies include open lacustrine (oil shales, F), wave-influenced delta (F1, S1), distributary and wave-influenced delta front (Sr, Sr<sub>2</sub>, Sr<sub>3</sub> and St<sub>1</sub>), fluvial channel and levee (St<sub>1</sub> and Fm), alluvial fan - fan delta (Gc and ?Sh) and well- and poorly-drained swamps (C<sub>s</sub> and C). The restricted nature of the Stellarton Basin allowed for widespread abrupt transgressions and regressions of these depositional environments. As a result, further lithostratigraphic subdivision of the Thorburn, Coal Brook and Albion members could prove difficult.