3. Each time an arch or regional uplift occurs, the pressures and temperatures within the sediments change, volumes change, and as the pressures and temperatures return to equilibrium, the fluids move to adjust to the changing conditions. This is the time of oil and gas migration, and local traps present at the time of migration become the sites of oil and gas pools. Hydrodynamic phenomena are set up and the flow of all fluids is influenced by these uplifts. Either barren or productive regions may be due to these changes in fluid flow and fluid pressure.

4. The location of favorable rock and fluid regions is greatly helped by the preparation of paleogeologic maps and thus becomes a powerful exploration tool.

DEPOSITIONAL ENVIRONMENTS AND SANDSTONE PETROLOGY OF TRIASSIC SEDIMENTARY ROCKS, WESTERN NOVA SCOTIA, CANADA

GEORGE DEVRIES KLEIN[1]

The Triassic sedimentary rocks of the Canadian Maritime Provinces occur at Grand Manan Island, Point Lepreau, the St. Martin's area and Salisbury Bay in New Brunswick, and the Annapolis-Cornwallis Valley, the Minas Lowlands and the western shores of Chedabucto Bay in Nova Scotia.

The stratigraphic sequence of the Triassic of western Nova Scotia has been subdivided as follows (descending order):

Annapolis-Cornwallis Valley & Hants County

Scots Bay Formation (limestone and claystone)
North Mountain Basalt.
Blomidon Formation (Red claystone, siltstone, sandstone)
Wolfville Formation (Red conglomerate, sandstone, claystone).

Minas Basin North Shore

North Mountain Basalt
Blomidon Formation intertonguing with Wolfville Fm
McKay Head Basalt
Wolfville Formation.

The Wolfville Formation was divided into 2 facies. A Gerrish Facies, recognized on the Minas Basin North shore, is characterized by crudely stratified and thick-bedded red sharpstone conglomerates interbedded with fine- to medium-grained sandstone and claystone. The irregular sorting and the crude stratification is similar to that described from alluvial fan sequences. It is inferred that the Gerrish Facies represents alluvial fan sedimentation.

A second facies of the Wolfville, the Hants Facies, occurs on the Hants County Minas Basin shore and the Annapolis-Cornwallis Valley. It is characterized by interbedded red roundstone conglomerate, coarse- to medium-grained sandstone and claystone. Channel stratification, planar, lenticular and wedge-shaped cross-stratification, imbricate boulders, current lineation and claystone breccia blocks are characteristic and suggest that the Hants Facies represents a transitional zone between a floodplain and the alluvial fans of the Gerrish Facies.

The overlying and intertonguing Blomidon Formation is also divided into 2 facies. A Del Haven Facies, characterized by interbedded red fine-grained sandstone,

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siltstone and claystone, is dominated by even, uniformly-thick bedding, rhythmic lamination, oscillation ripple marks, graded bedding and disturbed bedding. Such features in combination suggest that the Del Haven Facies represents lacustrine deposition below wave base. In contrast, the Digby Facies of the basal Blomidon Formation is characterized by the same 5 primary structures and lithologies in combination with groove casts, lenticular cross-stratification, ripple stratification, current ripple marks, groove casts, flute casts, raindrop imprints, salt casts and oriented plant fragments. The Digby Facies is inferred to represent a periodically-exposed plain of coalescing deltas near the shores of "Lake Blomidon."

Modal analyses of 85 thin sections of sandstones from the Wolfville Formation indicates that orthoquartzite, low-rank graywacke, high-rank graywacke, impure arkose and arkose are present. Low-rank graywacke is limited to those areas where the Wolfville overlaps Lower Paleozoic metamorphic rocks and Mississippian sediments. High-rank graywacke, impure arkose and arkose occur where the Wolfville overlaps Devonian granites and their associated contact aureoles. Orthoquartzites are found where the Wolfville overlaps or is in fault contact with Pennsylvanian sandstones.

Mapping of 2443 cross-bedding directions at 67 localities suggests that the different sandstone types were derived from the pre-Triassic rocks surrounding the depositional basin and that lateral variation in sandstone composition is controlled by lateral changes in source-area rock composition.

Comparison of the sandstone composition of the Wolfville Formation with ancient sandstones and modern marine sands supports the conclusion that source-area composition, rather than tectonics, controls the composition of ancient and modern sandstones.

GEOLOGICAL HISTORY OF OKLAHOMA'S VEGETATION

L. R. Wilson[1]

The recorded history of Oklahoma's vegetation begins in the Cambrian Period some 750 million years ago and is traceable to the present. The earliest known fossil plants in the State are marine algae extensively exposed in the Arbuckle Mountains. Presently Oklahoma's oldest reported land vegetation is Devonian and one of the largest known Devonian tree fossils was found near Ada. During Carboniferous time coal-forming swamps were numerous and the ancient vegetation, now coal, has contributed much to the wealth of the State. Permian time was arid but a rich fossil flora indicates that the State was not entirely a desert as might be supposed from the redbed nature of most of the Permian rocks. In the latter part of the Mesozoic Era the vegetation evolved into modern types. Fossils of these are present in the Cretaceous rocks of northwestern Oklahoma. The early Tertiary vegetation was subtropical but toward the end of that time became more like that of the modern prairies. During the Glacial Period northern forests migrated southward and remained until the ice in the north was melted. The present vegetation is a complex of southern, western, eastern and northern floral elements. The accompanying chart is a summary of Oklahoma's vegetation through geological time.

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