

THE LUKES ARM - SOP'S ARM - BOONES POINT COMPLEX: AN EARLY
TRANSPRESSION ZONE IN NOTRE DAME BAY, NEWFOUNDLAND

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A large movement zone, the Lukes Arm - Sop's Arm - Boones Point Complex, extending from Sop's Arm to New World Island in Notre Dame Bay, has been interpreted as a belt of subaqueous debris flows deposited from an overriding south-directed nappe. However, detailed structural study in the Bay of Exploits has revealed that the Lukes Arm - Sop's Arm - Boones Point Complex is a tectonic melange related to transcurrent movement.

The deformational history of the Bay of Exploits area (eastern Notre Dame Bay) can be divided into three distinct stages. During the first stage of deformation, thrusting in Early Silurian time was followed by climactic F_2 folding as a result of continental collision. A regional axial-planar S_2

cleavage is associated with F_2 folds. In the second stage, continued shortening caused the formation of a major transpression zone (the Lukes Arm - Sop's Arm - Boones Point Complex) extending from New World Island to Sop's Arm. Transpression obliterated the D_1 structures but generated four generations of folds that were later overprinted by mylonites in zones of intense shear. The time of initiation of transpression in the zone is constrained by overprinting criteria to a period between Late Llandovery to Early Devonian. The sense of movement in this zone was dextral followed by sinistral movement. The third stage of regional deformation consisted of brittle faults with associated angular folding.