Faulting and Deformational History of the Cobequid Highlands, Northern Nova Scotia

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The Cobequid Highlands region contains rocks that range in age from Early Hadrynian or older to Early Jurassic. The oldest Precambrian rocks, the Bass River and Mt. Thom complexes, a "basement" unit (Great Village River Gneiss) which was deformed and metamorphosed prior to c.940Ma. Younger "cover" rocks (Gamble Brook and Folly River Schists) were deposited, intruded, and deformed with the "basement" prior to c. 700Ma. These rocks contain folded mylonite zones which may represent ancient fault zone remnants. The younger Precambrian mafic volcanic rocks (Jeffers and Warwick Mountain formations) were deformed during the Cadomian Orogeny of approximately 600 ma. Dioritic and granitic plutonism followed the two periods of folding. No information exists about the Taconian Orogeny because no Cambrian or Early Ordovician rocks are preserved. The Acadian orogeny was heralded by the deposition of now exposed conglomerates at the top of the Silurian-Early Devonian section. The Acadian folding event began in Middle Devonian time. During the last part of the Devonian great volumes of felsic and mafic volcanic rocks were erupted. Much of this thickness was preserved by faults (perhaps contemporaneous in part) which down-dropped or rotated the volcanic pile. Large volumes of diorite then granite were intruded in the Early to "Middle" Carboniferous during "Middle Carboniferous (Namurian) time. Some of the plutons were mylonitized and cut by E-W faults while others were intruded into the faults. Some of the faults had 20 to 100 km or more of probable dextral movement. The major fault movements constituted the "early" Alleghenian - Hercynian Orogeny. Stata and plutons of early Namurian age or older were penetratively deformed along

a narrow (20 to 50 km) zone parallel to the Minas Geofracture. Late Carboniferous rocks rest unconformably on the older strata and contain numerous conglomerates near the E-W faults. Graben formation began in Middle to Late Triassic time and produced fanglomerates and related fine-grained sedimentation. None of the Triassic or Early Jurassic strata were penetratively deformed.