

MESOZOIC-AGE OVERPRINT(S) IN GEOCHEMICAL AND PALEOMAGNETIC ATTRIBUTES OF LATE DEVONIAN CARBONATES, WESTERN CANADA

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The Late Devonian Wabamun Group of the Western Canada Sedimentary Basin represents a series of stacked west to northwesterly dipping carbonate ramps, characteristic of an open to restricted broad marine setting. Dolomitization is usually dominated by fine to medium crystalline subhedral dolomites, but coarse dolomite is present as cement and replacement. Three wells in the Limestone Field of southwestern Alberta were sampled for petrologic, geochemical and paleomagnetic analysis. There are only minor differences in geochemistry between the three dolomite types. The carbon and oxygen isotope values for all dolomites overlap, ranging from -5.5 to -7.5 per mil and 1.4 to -0.8 per mil, respectively (n=30). There is no evidence for a Devonian stable isotopic signature. Their Sr-isotopic values also overlap and depart from the postulated Devonian signature, ranging from 0.70843 to 0.70984. Paleomagnetic analysis reveals no evidence of primary magnetizations in the three wells. In one well, the in-situ viscous remanent magnetization (VRM) is apparently due to the present Earth's magnetic field, and the characteristic remanent magnetization (ChRM) is Late Cretaceous in age. The ChRM in the second well is apparently Middle Jurassic in age, and the VRM is very scattered. The in-situ VRM and ChRM in the third well do not fall on or near the apparent polar wander path. Faulting may have affected the magnetization directions: the latter two wells are relatively close to thrust faults, whereas the first is not.