SUBSURFACE FACIES OF THE CUTBANK SANDSTONE, MANNVILLE GROUP, SOUTHERN ALBERTA

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The Cutbank Sandstone in southern Alberta (Townships 1 to 40, Ranges 1 to 20W4) is a distinctive sandy stratigraphic unit occurring at the base of the Mannville Group. Variously known as 'the Basal Quartz', 'the Taber Sandstone', 'the Ellerslie Sandstone', or 'the Deville Member', this unit is 10-30 m thick and lies between the pre-Mannville unconformity and the shaly sediments of the 'Ostracode Zone'. Within the area studied it shows four contrasting facies, defined by distinctive gamma ray log signature and characteristic sedimentary sequences exhibited in cores.

Facies 1 (channel) is characterized by a 'blocky', 'fining-upward' gamma ray pattern. Lithologically it starts with a gravel on a scoured base, grading upwards into cross-bedded, medium-grained sandstone and rippled siltstones, and finally to laminated, bioturbated mudstone. Facies 2 (channel margin?) shows an irregular, 'blocky' gamma ray pattern, and alternations of mud-chip conglomerates, bioturbated fine sandstones, and crossbedded medium-grained sandstones. Facies 3 (tidal flat) has a 'spiky' gamma ray pattern, and shows an alternation of bioturbated mudstones and flaser bedded sandstones with a few shell layers. Facies 4 (lag breccia) has a 'fining-upward' gamma ray pattern, and consists of a chert breccia grading upward into structureless medium sandstone.

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