Datashare 134

Using high-resolution microresistivity image logs to reconstruct paleoenvironments and stratal architectures: An example from the McMurray Formation, Leismer area, northeastern Alberta, Canada

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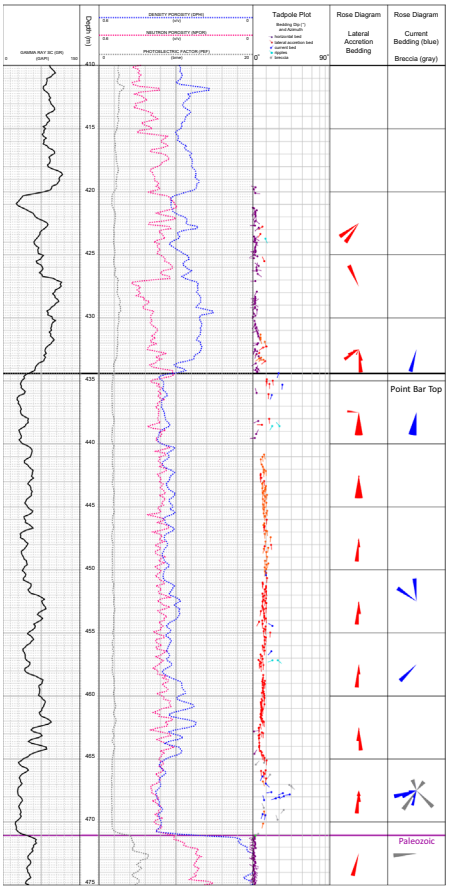

Figure S1. Open-hole log suite and tadpole plot for a single continuous point bar in the McMurray Formation, Kirby area, northwestern Alberta. The well displays a single point bar starting at 539.0 m and continuing up to 498.2 m for a total thickness of 40.8 m (134 ft). Gamma-ray values for most of the point-bar unit are approximately 30 gAPI and indicative of a clean sand lithology, but lateral-accretion bedding, in the form of inclined stratification, dipping south-southeast occurs throughout the point-bar interval. Lateral-accretion dip angles change from shallow to steep to shallow (6°–14°–6°) from the base to the top of the unit representing epsilon cross-stratification, which is the hallmark of an individual point bar. Current beds dip from south to north-northwest with individual bedsets identifiable as clusters of similarly dipping bedding (cf. Brekke et al., 2017). The interbedded lateral-accretion beds and current beds were deposited by a single genetic unit. Overlying this point bar is the associated ridge in a scroll bar setting from 498.2 to 493.2 m for a total thickness of 5.0 m. In this example there is a dramatic change in lithology from point bar to scroll bar without a change in dip orientation. The scroll bar interval is dominated by flat-lying bedding in nearby wells with flat-lying beds representing the swale part of the scroll bar system (redrawn from Brekke, 2015).

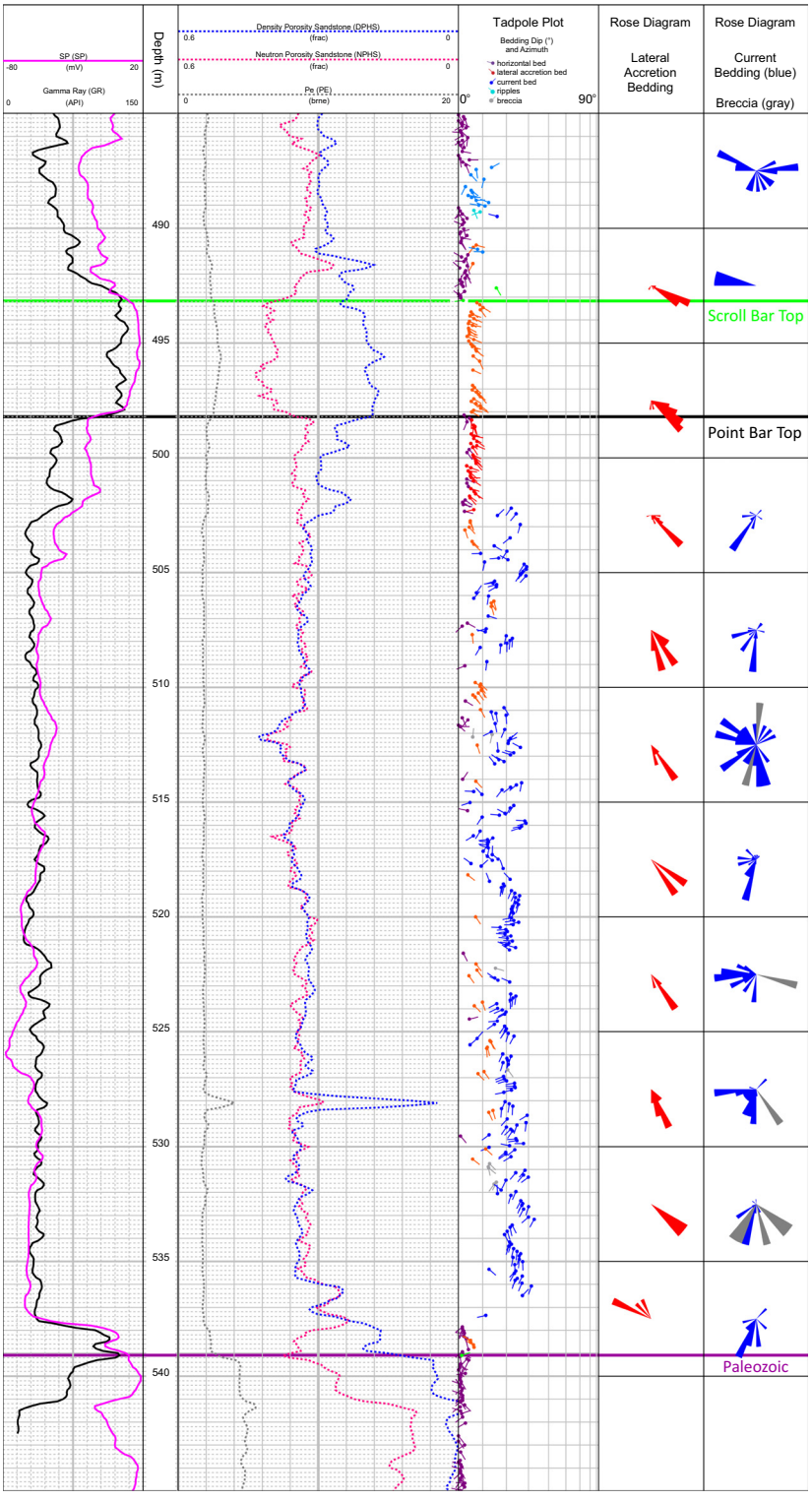

Figure S2. Open-hole log suite and tadpole plot for a single continuous point bar in the McMurray Formation, Meadow Creek area, northwestern Alberta. The well displays a single point bar starting at 471.0 m and continuing up to 434.4 m for a total thickness of 36.6 m. The gamma-ray signature shows four muddying upward cycles that could be interpreted as four stacked channels based on lithostratigraphic correlations, but lateral-accretion bedding is continuous and dips south throughout the point-bar interval. Lateral-accretion dip angles change from shallow to steep to shallow (4°–14°–4°) from the base to the top of the unit representing epsilon cross-stratification. Current beds are uncommon, but dip dominantly to the west (redrawn from Brekke and Evoy, 2004).