

High Resolution Correlation and Paleogeography of Bluesky Formation Shoreface Deposits, NW Alberta and NE BC

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ABSTRACT

The shoreface deposits of the Bluesky Formation (Early Albian) are overlain by the marine mudstones of the Wilrich Shale and are underlain by the coastal plain deposits of the Gething Formation, defining an overall transgression of the Boreal Sea. Over 1200 well logs are available in the study area, which covers T84-86 and R12W6-14W6. A closely spaced grid of east to west and south to north oriented cross sections were constructed across the study area. The main objectives of this study are to define the three-dimensional architecture of the Bluesky shoreface deposits, reconstruct the paleogeography, and examine the shoreface stacking patterns through time.

The Bluesky Formation consists of an 18 m thick shoreface sandstone package in the southeast, and grades into a 7 m thick interbedded marine mudstone and siltstone package in the northwest. High resolution correlations have identified a series of marine flooding surfaces that partition the shoreface sandstone package into a stack of small-scale, coarsening-upward successions that are 1.5 to 5 m thick. These successions form a progradational to retrogradational stacking pattern. Each succession shows a consistent trend of thinning and muddying towards the west and/or northwest, with a relatively abrupt transition in the southern part of T86. Isopach and sand content maps of each succession have been used to reconstruct the Bluesky paleoshoreline trends. Bluesky coastlines were slightly arcuate, and show subtle changes in orientation through time. The high resolution correlations reveal that the uppermost Bluesky shoreface successions (i.e. retrogradational stack) grade northwards into the Wilrich Shale, implying time equivalency between the upper and lower parts of these lithostratigraphic units, respectively. It is equally possible that the uppermost Bluesky shoreface successions pass southwards into time equivalent Gething Formation coastal plain deposits.