K2O Grades of the White Bear Member of the Prairie Formation

Kenmare 100K Sheet, North Dakota

2019

This series of maps of the Kenmare 100K Sheet was based on gamma-ray log measurements recorded in API units taken at six-inch increments throughout the potash-containing portion of the log. Corrections for borehole size and drilling mud weight as well as random errors of the individual run were made (Crain & Anderson, 2014). The corrected gamma-ray measurements were converted into apparent potassium oxide (±$\delta$K) concentrations and potash member thicknesses were obtained using the grade-thickness method described in Nelson (2007).

From each log, the gamma-ray response was defined as the area above which the gamma-ray response declines to one-half its maximum value. When a potash member displayed multiple gamma-ray log peaks separated by troughs representing salt or interbeds such as clay or anhydrite, the grade-thickness method was applied to each individual gamma-ray peak that met the criteria of the white bear member. Grade calculations of the corrected gamma-ray measurements were made (Crain, 2014) (Crain & Anderson, 2014). The corrected gamma-ray measurements were separated by more than four feet from the main body of the potash member. This occurred most frequently in deposits of the White Bear Member which may appear as one or more thin potash intervals at the upper or lower boundaries of the member were not included in thickness or average-potash-thickness calculations.

Borehole corrections for borehole size and drilling mud weight as well as removal of the baseline potash-containing portion of the log. Corrections for borehole size and drilling mud weight as well as random errors of the individual run were made (Crain, 2014).

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