K2O Grades of the White Lake Member of the Prairie Formation

Kenmare 100K Sheet, North Dakota

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This series of maps was developed based on potash data from 101 wells gathered by the North Dakota Industrial Commission—Department of Mineral Resources, Oil & Gas Division. The White Lake Member was identified on the basis of petrographic and geophysical logs. The results of this analysis were computer-generated with minor adjustments made by the author. Areas with a geological anomaly may not be accurately portrayed. The potash member thickness for each well is based on an isopach map generated from them, then adjusted from Buck (1987).

All calculations were based on gamma-ray log measurements recorded in API units taken at six-inch increments throughout the potash-containing portion of the log. Correction for borehole size and drilling mud weight as well as removal of the halite gamma-ray response were made.

The corrected gamma-ray measurements were converted into apparent potassium oxide (K2O) concentrations. Average K2O concentrations and potash member thickness were obtained using the grade-thickness method described in Nelson (2007). The corrected gamma-ray measurements were converted into apparent potassium oxide (K2O) concentrations. Average K2O concentrations and potash member thickness were obtained using the grade-thickness method described in Nelson (2007).

When a potash member displayed multiple gamma-ray log peaks separated by troughs representing salt or other insolubles such as clay, this was subject to thickness at the lower or higher boundaries of the correcting data not included in thickness or an area-potash-grade calculation. If the corrected gamma-ray measurements were less than 10 API or separated by more than four feet from the main body of the potash member, this occurred most frequently in areas of the White Lake Member. K2O concentrations were interpolated or removed.

The volume of potash from the White Lake Member represented by this sheet is approximately 10,700 acre feet.

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