K₂O Grades of the White Bear Member of the Prairie Formation
Crosby 100K Sheet, North Dakota

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This series of maps of the Crosby 100K Sheet was based on public data from 225 wells gathered by the North Dakota Industrial Commission - Department of Mineral Resources, and from the oil and gas leases on federal land. The data was identified on the geophysical logs of 197 wells. Logarithmic curves were generated via PRISM (ver. 2.3.12) geological software utilizing a grid size of 254 rows and 254 columns. The contour lines were computer-generated curves that were adjusted by an eyepal. All corrections and adjustments made by the author. Areas with a geological anomaly may not be accurately portrayed. The potash member thickness for each well and the isopach contour maps generated from them, were modified from Kruger (2014).

All calculations were based on gamma-ray log measurements recorded at 2 ft intervals throughout the entire potash member. All calculations were done in API scale as well as on the dark logarithmic signal were made (Kruger, 2014). Log & Antilog, 1966). The converted gamma-ray measurements were converted into apparent potash equivalent scale (K₂O) as well as a gray value for better analysis. The potash member thickness were obtained using the gamma-ray thickness method described in Nelson (2007), where total thickness is equal the difference between the elevations at which the gamma-ray measurements first show 0.5% K₂O concentration.

When a potash member displayed multiple gamma-ray log peaks separated by triangle representing each as individual beds of 2 feet or more thickness, the individual peaks were not included in thickness to generate potash grades calculations. For each well, the thickness of each potash member in 2007 API or separated by more than four feet from main body of the potash member. Maps received were frequently in deposits of the White Bear Member, which may appear as one or two separate potash bodies overlaying in a single well, and then considered as one separated by an interval of shale.

References:

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References:

0 200 400 600 800 1000 1200 1400
2 4 6 8 10

Scale 1:300,000

Legend

Thickness

Log Contour

Avg K₂O % / Thickness (feet)

Other Features

City

State Highway

County Highway

Scale 1:100,000

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49°0'0" 48°30'0"
1
1
R97W
2
R96W
Isopach contours were generated via PETRA (version 3.9.13) and Kruger (2014). All calculations were based on gamma-ray log measurements recorded at 2 ft intervals throughout the entire potash member. All calculations were done in API scale as well as on the dark logarithmic signal were made (Kruger, 2014). Log & Antilog, 1966). The converted gamma-ray measurements were converted into apparent potash equivalent scale (K₂O) as well as a gray value for better analysis. The potash member thickness were obtained using the gamma-ray thickness method described in Nelson (2007), where total thickness is equal the difference between the elevations at which the gamma-ray measurements first show 0.5% K₂O concentration.

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