The Application of Geostatistics in Oil Sands Resource Modeling

Dr. Bruce M. Davis*
Norwest Corporation, Denver, Colorado, USA
bdavis@norwestcorp.com

and

Virginia L. Odegaard
Norwest Corporation, Suite 400, 205 - 9th Ave S.E., Calgary, AB, T2G 0R3

ABSTRACT
The application of geostatistical techniques to the modeling of oil sands deposits has to this point largely been confined to research related activities. There have been a few situations where these techniques have been used to relate drill hole spacing with estimation uncertainty to better select the number and locations of holes to be drilled. For the most part, however, geostatistics has not been widely applied as a modeling tool in oil sands deposits.

A case study of TrueNorth Energy's Fort Hills Oil Sands Project is presented showing some of the uses of geostatistical techniques in oil sands modeling. The process of modeling, incorporating a statistical approach, is outlined. The modeling process is described from initial investigations of the sample data using Exploratory Data Analysis (EDA), through facies modeling to the modeling of grade and fines in this surface mineable oil sands deposit. Results are compared to other methods, and the strengths and weaknesses of various approaches are examined.