Preliminary Results of Bromine Distribution and Partitioning in Salt Deposits at Sussex, New Brunswick

John A.R. Stirling
Research and Productivity Council, P.O. Box 6000, Fredericton, New Brunswick E3B 5H1
Brian Roulston
Potash Company of America, P.O. Box 1489, Sussex, New Brunswick E0E 1P0
and
D.C.E. Waugh
Denison Potocan Potash Company, P.O. Box 5005, Sussex, New Brunswick E0E 1P0

Barren zones or salt horses are areas within the potash ore that are predominantly halite. The barren zones vary in size, location and extent. Underground mapping carried out by the mines has indicated that they are formed by a replacement mechanism after deposition of the sylvinite beds. From a mining point of view, it is important to be able to predict and map these areas. Therefore, a knowledge of the genesis of the barren zones would greatly aid in the endeavor.

In April 1985, a study of the potash deposits was started under funding from the New Brunswick-Canada Mineral Development Agreement. During this program samples of the barren zone were collected from both of the potash mines in the Sussex area. The most consistent and unique feature observed was the Br concentration in the samples of the barren zones as compared to samples of ore and stratigraphic halite (halite which is part of the stratigraphic sequence as opposed to halite in the barren zones).

In the ore the concentration of Br increases with K to a maximum of 1200 ppm. The Br concentration in the stratigraphic halite is less than 150 ppm and in the barren zones is between 160 and 300 ppm. This indicates that the barren zones were formed by a different mechanism than that which formed the stratigraphic halite. After these data were compiled it was decided to analyze the minerals for Br by electron microprobe to determine

partitioning of Br between halite and sylvite. This data will be compared to published models of Br partitioning in salt systems. The preliminary data supports the initial findings. The microprobe analysis is continuing and only the preliminary results will be presented.