The future for geology –3D interactive data: an example from the Sussex area of the Moncton sub-basin, New Brunswick, Canada

JANELLE APPLEYARD[1], TERRY DANYLUK[1], BALAZS NEMETH[1], ARNFINN PRUGGER[1], BRIAN ROULSTON[2], AND CHRISSY WILLISTON[3]

1. PotashCorp, Technical Services, Earth Science and Mining, 500 – 122 First Av. S., Saskatoon, SK, S7N-0T1 Canada <arnfinn.prugger@potashcorp.com> ¶ 2. PotashCorp, New Brunswick Division, P. O. Box 5039, Sussex, NB, E4E 5L2 Canada ¶ 3. Mira Geoscience, 320 Victoria Av., Montreal, QC, E4E 5L2 Canada

The fault-bound Moncton sub-basin in southern New Brunswick is part of the larger Maritimes Basin which extends throughout much of eastern Canada. It is within this sub-basin that the potash deposit mined at Penobsquis occurs. In 2001 a new potash discovery was made in the Picadilly region just

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south of the Penobsquis mine. This discovery initiated a potash exploration program that involved drilling, 2D seismic, 3D seismic, airborne EM, and analysis of existing gravity data. These data were analysed and integrated to create a spatially accurate regional model of all formations in the Sussex area of the Moncton sub-basin. This regional geological information is considered important for understanding the processes that created / altered the observed potash mineralization in this area. Initial surfaces of formation interfaces were created from seismic reflections and regional geological maps. Underground surfaces were calibrated using borehole data and deep layers lacking drillhole pierce-points were calibrated using surface gravity data. The process of creating these surfaces, constrained using all available data, will be described. The current best-fit model of each geological interface in the basin will be shown, formation-top by formation-top, and in cross-section, using real-time, interactive, and 3D visualization software.