



2D and 3D reflection seismic investigations in the Brunswick No. 6 area, Bathurst Mining Camp, New Brunswick, Canada

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The Brunswick No. 6 deposit is located in the Bathurst Mining Camp, northern New Brunswick, Canada. Exploration for new base metal deposits in the camp requires focused investigation of geological structures at depth. For this reason, seismic reflection data in the Brunswick No. 6 area were acquired along three 2D profiles in 1999, with a total length of about 30 km and followed by an about 38-km² 3D data set over the area. We have recovered, processed and re-interpreted these seismic data in conjunction with petrophysical and geological data from the study area. More specifically, a 3D geological model provided the framework for the interpretation of the seismic profiles. The 2D and 3D seismic data were processed with special focus to refraction static corrections, velocity analysis and DMO corrections that are very important for the data recorded in crystalline environment. Sequences of reflective and transparent zones in the seismic data suggest good correlations between the reflections and surface geological observations. Contacts between reflective and transparent zones represent a series of reverse faults juxtaposing various formations in the Brunswick area. The processing results indicate that the highly prospective and mineralized Brunswick horizon is part of a continuous reflective package that extends down to at least a depth of about 4-5 km. The reflective package can be tracked in all 2D profiles and 3D processed cube over the Brunswick No.6 area. The reflectivity character can be used to guide future deep mineral exploration in this mining camp.