

products of the volcanism are deposited into the sub-basin and intersperse the continuing deposition of Que River shale over the Mica Sandstone basal sequence.

B. VMS Ore Formation

If VMS formation is a product of sub-aqueous hydrothermal activity on the basin floor, this may be controlled by intra-basin faults acting as conduits for alteration systems. The hydrothermal systems are presumably driven by heat sources related to the volcanism and high thermal gradients along the faults.

The spatial relationship between the VMS and the intra-basin faults is a fundamental aspect of the model. Given the structural setting these faults assumed to be transtensional.

C. Basin Closure

Volcanism and sedimentation continued subsequent to formation of VMS until a change in tectonics halted the extension of the basin. At this stage the early folds have formed along a 100° MN trend, possibly indicating the trend of the σ^1 plane at this time.

Major changes in the tectonics produced a new stress field which resolved a NW-SE shortening effect on the basin. This was accommodated by re-activation of the basement extension faults and folding and faulting of the overlying sediments. Most shortening was taken up by reverse movement on the basement faults, there was relatively low strain in the volcano-sedimentary cover sequence, other than immediately over the reactivated faults.

VMS bodies overlying the controlling faults are folded and faulted during fault reactivation. With higher strain the orebodies may be attenuated and broken into distinct bodies, as at Que River.

D. Late Faulting

Normal faults and some strike faults developed after folding. These offset the original trends of basement faults and cover fold axes. The Jack Fault may have been formed at around the same time as this episode of faulting, possibly due to re-activation of the basement structure to accommodate horizontal movement. Many of the early formed joint planes also appear to have been re-activated as faults during this period. Offsets of the VMS