NOTICE OF THESIS PROPOSAL PRESENTATION
Geodesy and Geomatics Engineering
Doctor of Philosophy

Jason Bond

June 20, 2005
Head Hall – Room E-11 @ 3:00 pm

Co-Supervisors: Dr. Adam Chrzanowski
                        Dr. Marcelo Santos
Examining Committee: Dr. Peter Dare
                        Dr. Anna Szostak-Chrzanowski
Chair: Dr. Sue Nichols

OPTIMIZATION OF THE INTEGRATION OF GEODETIC TECHNOLOGY FOR DEFORMATION MONITORING IN OPEN PIT MINES: AN INTERDISCIPLINARY APPROACH
ABSTRACT

Meticulous design and implementation of a deformation monitoring system allows people to function in an informed manner in the deformation zone, since technological developments permit continuous and fully automated monitoring. As industrial requirements for accuracy increase, further innovations are required to meet these demands.

Current limitations affecting geodetic technologies (robotic total stations (RTSs), GPS, pseudolites (PLs) and interferometric synthetic aperture radar (InSAR)) are presented and discussed. Research areas are identified including: quantifying the pointing error associated with automatic target recognition, mitigating the effects of refraction on angular observations, improving the vertical component of GPS baseline solutions over large height differences, integrating pseudolite technology, integrating InSAR and deformation analysis using deterministic modelling. Each of these research topics will help contribute to the development of a more versatile deformation monitoring system.

The proposed research will deliver a filter capable of reducing the influences of refraction on RTS angular observations; GPS+PL software capable of processing pseudolite data and accounting for large height differences between master and rover stations; and an interdisciplinary methodology for optimizing deformation monitoring systems using integrated RTS+GPS+PLs+InSAR technology and deterministic modeling. The implementation of such an integrated system has not been demonstrated to date.

Faculty Members and Graduate Students are invited to attend the 20 minute presentation