



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

Yongwon Ahn

**Tuesday, February 14, 2006
Head Hall – ADI Room @ 8:30 am**

Supervisor:	Dr. Peter Dare
Supervisory Committee:	Dr. Richard Langley Dr. Don Kim
Chair:	Dr. Marcelo Santos

**A Hybrid Approach for Long Baseline GPS RTK Positioning in the Arctic:
*Network versus Single-Baseline RTK***

ABSTRACT

In the case of sparse networks where large variations in atmospheric conditions exist within the network, the differential error effects cannot be reduced to negligible levels, affecting adversely the rover positioning solution. The effective estimation of these error signals within a network to improve network solutions is crucial. In addition, detailed error modeling in a network to assist a rover outside a network is an innovative and next necessary advancement of high precision RTK positioning for long baseline RTK. One of the methods to enhance the network solution is the new definition of a covariance function using least squares collocation. This will involve a detailed classification of the error sources affecting GPS measurements.

In this thesis, the main atmospheric issues associated with a network RTK and/or residual orbital errors will be analyzed and their mitigating techniques will be developed. The effectiveness of the methods using real data, especially in a sparse network, e.g. Arctic, or marine data will be evaluated. One of the beneficial effects to be expected is that increased range of RTK to cm accuracy can enable its use in new places. For example, marine surveys will be possible at greater distances from the shore. Similar advantages would exist in the Arctic.

Faculty Members and Graduate Students are invited to attend this presentation