NOTICE OF UNIVERSITY ORAL

GEODESY AND GEOMATICS ENGINEERING

Master of Science in Engineering

George Dias

February 13, 2006
@ 9:00 am
Room E-11 - Head Hall

Board of Examiners:	**Co-Supervisors:**	**Dr. David Coleman, GGE**
		Dr. Ahmed El-Rabbany, Civil Engineering, Ryerson University
	Examining Board:	**Dr. David Wells, GGE**
		Dr. Glen Jordan, Forestry & Env. Management
		Dr. Lee Alexander, Coastal & Ocean Mapping, University of New Hampshire
	Chair:	**Dr. Marcelo Santos, GGE**

INTEGRATING CANADIAN ICE INFORMATION INTO ELECTRONIC NAVIGATIONAL CHARTS

ABSTRACT

Some of the world's major shipping lanes run through ice-infested waters. To safely navigate these areas, mariners rely on daily ice charts produced by national governmental agencies. Most ice charts are designed to be displayed primarily on paper. Many vessels now possess Electronic Chart and Display Information Systems (ECDIS) on board that allows mariners to view Electronic Navigational Charts (ENC). Current ENC specifications allow for only one very limited description of ice conditions. New international standards specifying how detailed ice information is to be displayed in ECDIS should come into effect by the end of 2006.

The Canadian Ice Service (CIS) produces daily paper charts to assist mariners navigate Canadian ice-infested waters. The CIS produced the charts using computer imaging and mapping software. While the electronic versions of the charts do contain detailed ice information, the format of the data must be altered to match the ENC format.

Using Arc Macro Language (AML) scripting, a prototype tool was created that converts daily ice charts from an ArcInfo formal file to the proposed format for displaying ice information. An investigation was then performed to determine which is better: to use the developed tool to create electronic ice charts or to alter the CIS chart production process so that an ENC, not a paper chart, is the primary product.

It was found that the developed tool automatically creates an electronic ice chart in at most five minutes, well below the one-hour processing time originally sought by the CIS. Since using the tool requires no changes to the current chart production system, using the tool to create ENCs is far more economical than altering the existing ice chart production process.

It is recommended that use of the prototype tool be completed and adopted in favour of altering the current chart production process, which potentially involves the costs of implementation and staff retraining.

Faculty Members and Graduate Students are invited to attend this presentation.