The Continuing Development of the IHO Category A Program at the University of Otago

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New Assets at the University

• Previous practical ‘voyage’ 2-3 weeks onboard RNZN survey ship
  – Limited involvement in planning/management
• University purchase of 21m RV Polaris II
  – Greater range than previous vessel
  – Benthos C3D bathymetric sidescan and sub bottom profiler
• Now able to conduct in house ‘voyage’
  – Students conduct planning, operations, processing, reporting to LINZ standards
Program Development

- Category A program redeveloped to meet changing technology, and student progression towards conduct of final voyage
  - Essentially one year beyond standard surveying degree
- Series of subjects (papers), some of which are available to other surveying students to provide insight into Hydrography, and enable participation in small surveys
  - Eg engineering works

Naval Schools v Universities

- Same goal of producing Hydrographic Surveyors
- Different approaches – different cultures, different timetabling techniques
- Naval School – core staff some outside expertise, lectures in series, practical work gained as needed
- University – readily available range of expertise, lectures in parallel, weekly timetable with practical slots
Nautical Sciences

- Differences between working on land and on water
  - Need for ‘securing’, fire fighting and other safety aspects, ‘Rule of the Road’
- For Nautical Charting – what does the mariner need?
  - Understand the working world of the mariner
  - Charts more than just a ‘road map’, integral part of the safety system of the vessel and its personnel

Maritime Experience

- Effect of weather on equipment
  - Far more significant than on land equipment
    - Wind, sea state, swell, turbidity
- Ability to steer vessel directly correlating to data collection coverage
- Attempt to give maximum exposure – different vessels (5m half cabin cruiser up to 21m Polaris), different locations (wharf areas, in harbour (<5m), channels, coastal navigation)
Standards of Competence

- A number of changes and improvements over the years – now in 10\textsuperscript{th} edition
- Most areas included are ‘obvious’
  - Not all, and not to everyone
  - Must be underlying reasoning, short synopsis for each section beneficial for explanation, especially for those outside the Hydrographic community

Need for a Solid Theoretical Understanding

- Ever increasing levels of technology involved – reflected in changing Standards
- No longer simple and ‘intuitive’ – in danger of becoming ‘black box’ technology
  - Need to understand different approaches to multibeam surveying for different results
  - Dangerous when considering uncertainties without underlying theoretical knowledge of equipment
  - CUBE will give an answer – is it the ‘right’ one?
- Need solid theoretical understanding, followed by practical experience for better understanding and application