



# Silver Sponsor of the NIBC 2024 Maritime Arctic Conference

**RAdm Nigel S. Greenwood** CMM, CD, RCN (Ret'd)  
Master Mariner FRIN, FNI



# Strategy ♦ Analysis ♦ Leadership

*Greenwood Maritime Solutions Ltd is an incorporated consultancy specializing in maritime risk and operational assessments in both civil and military domains.*

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Nigel Greenwood is a naval veteran of 37 years service with the following qualifications:



- ❖ BSc (Physics and Oceanography)
- ❖ MA (International Studies)
- ❖ Master Mariner/ at-sea Command experience
- ❖ NI Ice Navigator (Level II)
- ❖ Pilotage Risk Management Methodology
- ❖ CSIS/RCMP HRTA Methodology
- ❖ Licensed Security Consultant

# GMSL and Associates cover the following areas of expertise:

- ❖ Naval and civil maritime operations
- ❖ Ice Navigation
- ❖ Ship-handling and Command Mentorship
- ❖ Naval force development and project management
- ❖ Harmonized Risk and Threat Assessment
- ❖ Security & Emergency Planning/Exercising
- ❖ Naval Architecture and Marine Engineering
- ❖ Physical Oceanography
- ❖ Marine Biology
- ❖ Computer programming

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# Recent Clients:

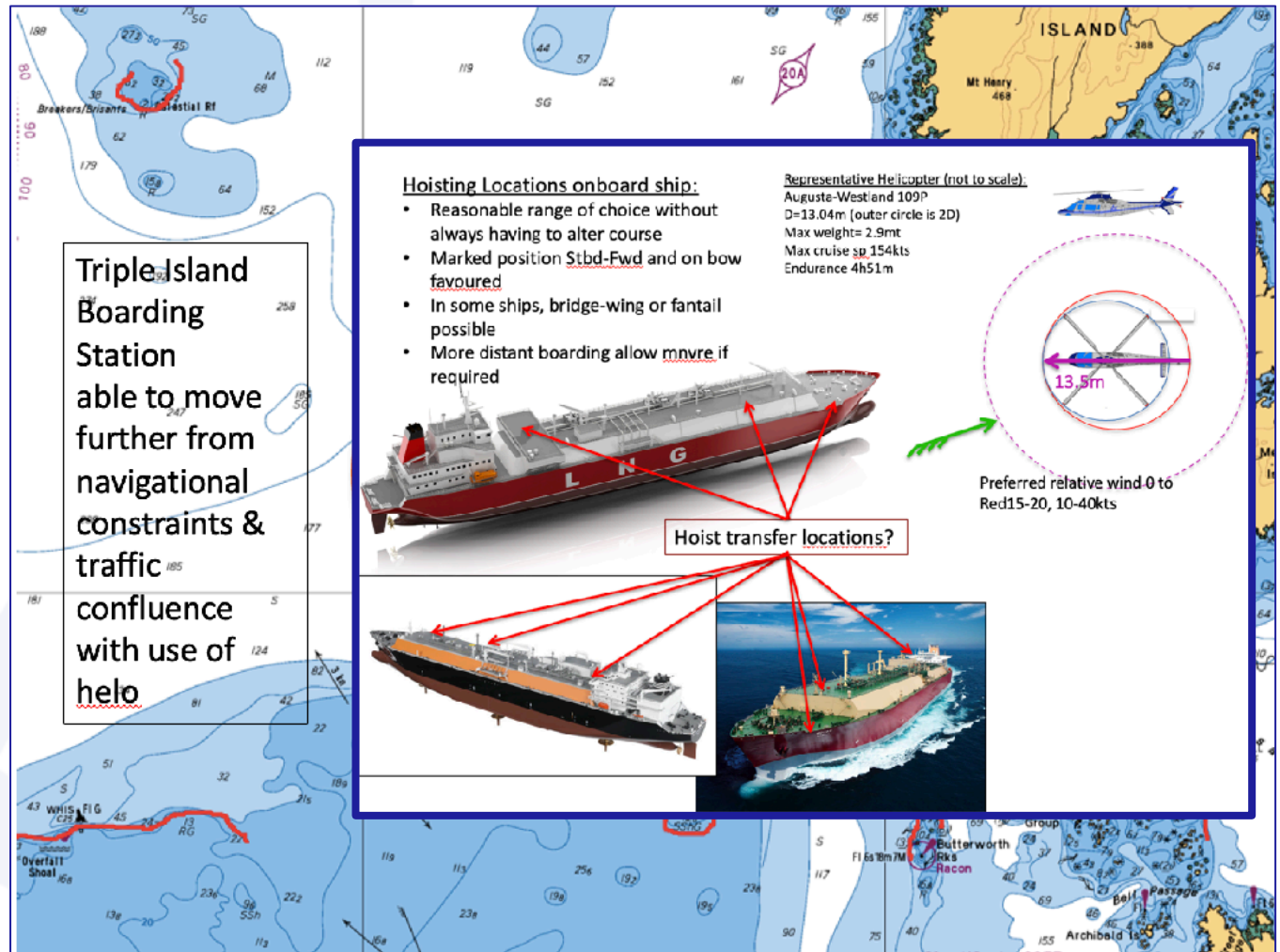


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# Notable Projects: Boarding LNG Ships by Helo (PPA)

- ❖ Current risks
- ❖ Helos in the marine environment
- ❖ Global experience of helo boarding
- ❖ Risk appreciation

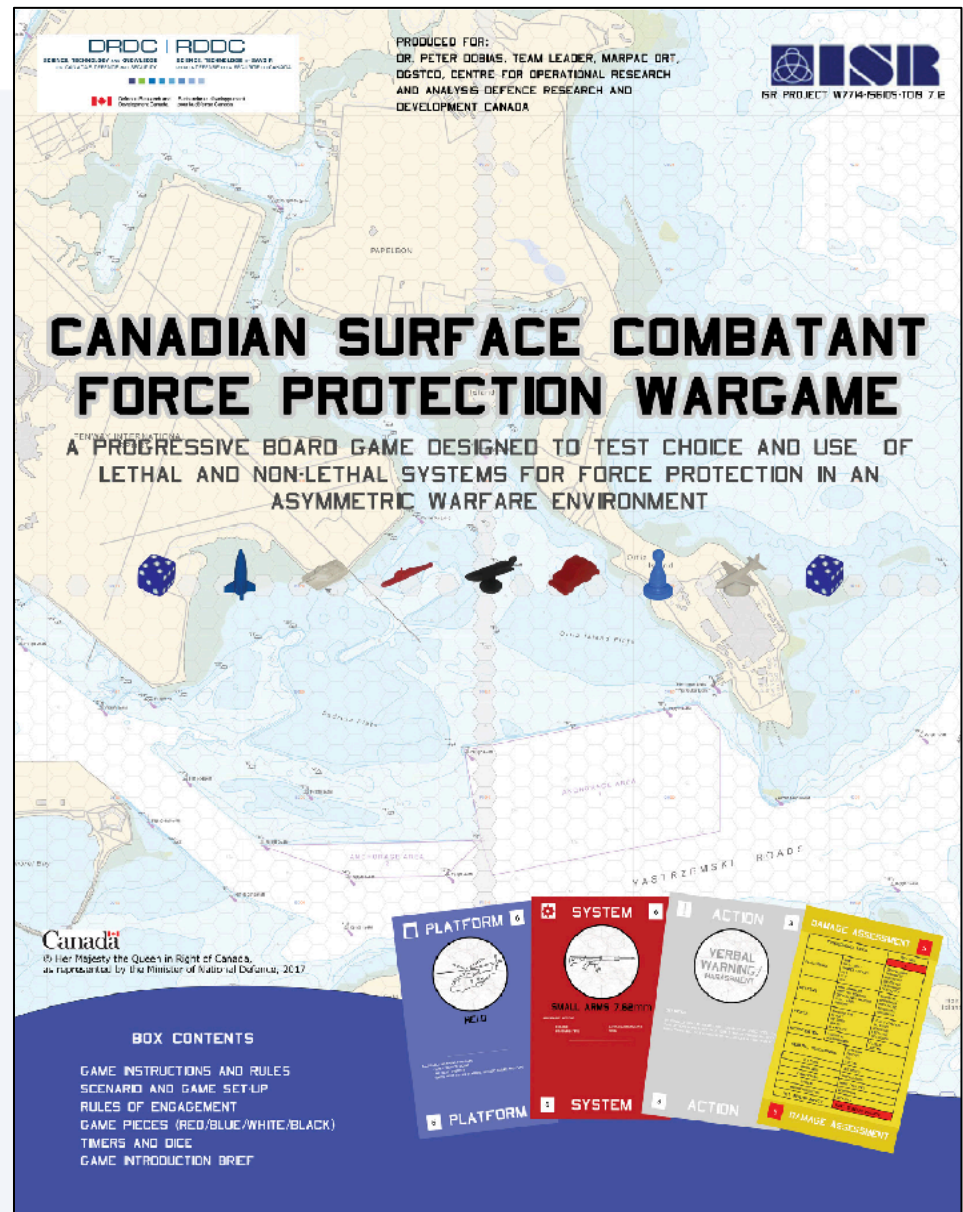


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# Notable Projects:

Designed a board game to test player's choice of non-lethal defense measures in a force-protection situation (DRDC)

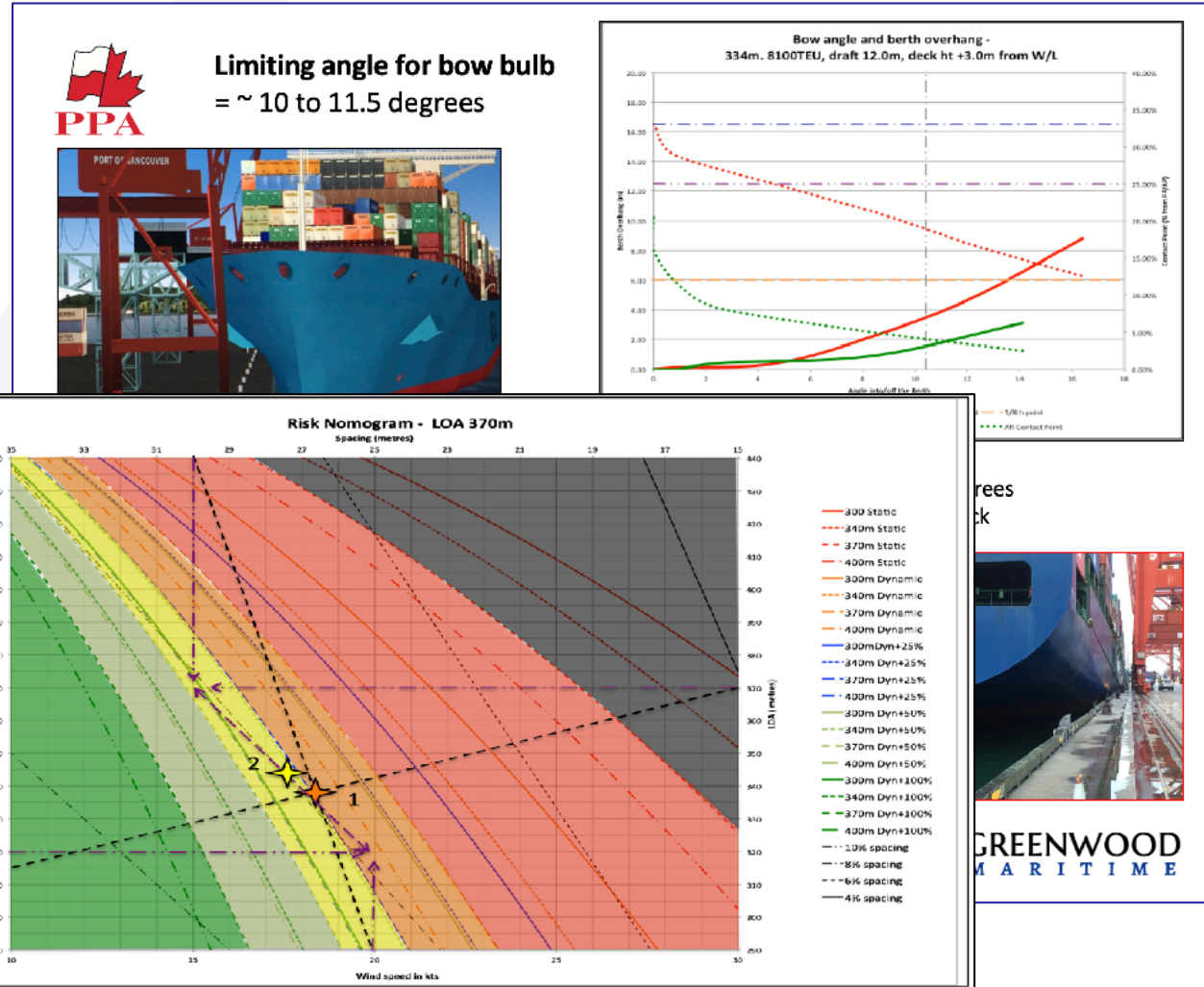
- ❖ Concept
- ❖ Graphics
- ❖ Game Board and Pieces
- ❖ Correlation of Defence Choices to Attacker's Choice
- ❖ Scorekeeping



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# Notable Projects: Berthing Risk Assessment (PPA/VFPA)

- ❖ Examined risk (spacing, fendering, tugs, size, berthing manoeuvres)
- ❖ Examined safety record
- ❖ Researched global practice
- ❖ Compiled risk nomogram
- ❖ Revised operational limits




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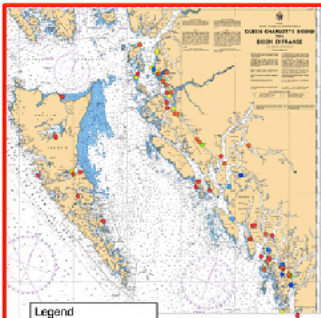
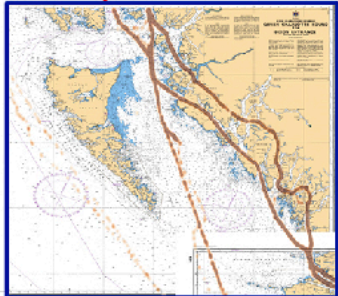
# Notable Projects for PPA:

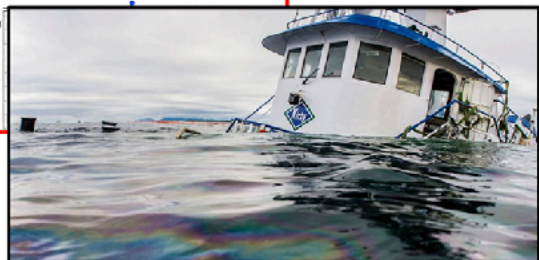
- ❖ Assessment of changes to Pacific Pilotage Regulations
- ❖ Solicitation of industry/community views




PPA Waivers 11/16

A Risk Assessment of the Pacific Pilotage Authority's Process for Granting Waivers from Compulsory Pilotage on the BC Coast












Prepared for the PPA by Greenwood Maritime Solutions Ltd, 23 May 2017



- ❖ Risk appreciation
- ❖ Recommendation of improved practices



Compulsory Pilotage Tonnage Thresholds Review








Prepared for the Pacific Pilotage Authority  
 This report examines issues associated with raising the tonnage threshold for compulsory pilotage on the BC coast as a result of the 2018 Pilotage Act Review

Prepared by Nigel Greenwood, MIM, FRIN, FNI  
 Greenwood Maritime Solutions Ltd.

23 February 2021

Greenwood Maritime Solutions Ltd  
 4022 Rainbow Hill Lane, Victoria, BC V8X-3A6  
 nsg@greenwoodmaritime.com  
 M 250-507-8442



# Notable Projects for PRPA:

  
LINKING A WORLD OF OPPORTUNITY

22 December 2014

**Prince Rupert Pilots 2025**

An assessment of marine pilotage needs on the BC North Coast out to 2025


Prepared for Prince Rupert Port Authority

This report examines traffic demands and alternate models of marine pilotage service delivery in response to anticipated traffic increases in the next 10 years.

Nigel Greenwood, MM, FRIN, FNI  
Greenwood Maritime Solutions Ltd.

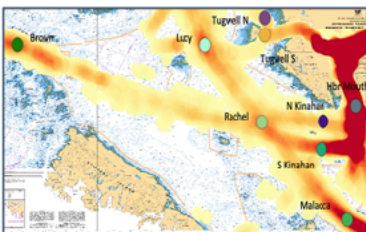
Greenwood Maritime Solutions Ltd.  
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LINKING A WORLD OF OPPORTUNITY

30 September 2015

**Prince Rupert Ship Routing Advisory Study**




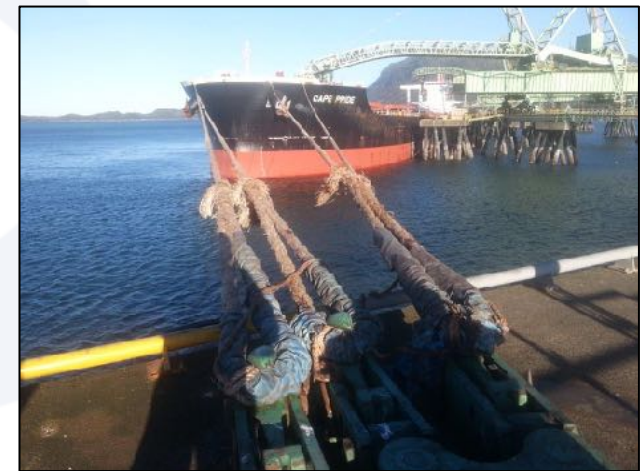
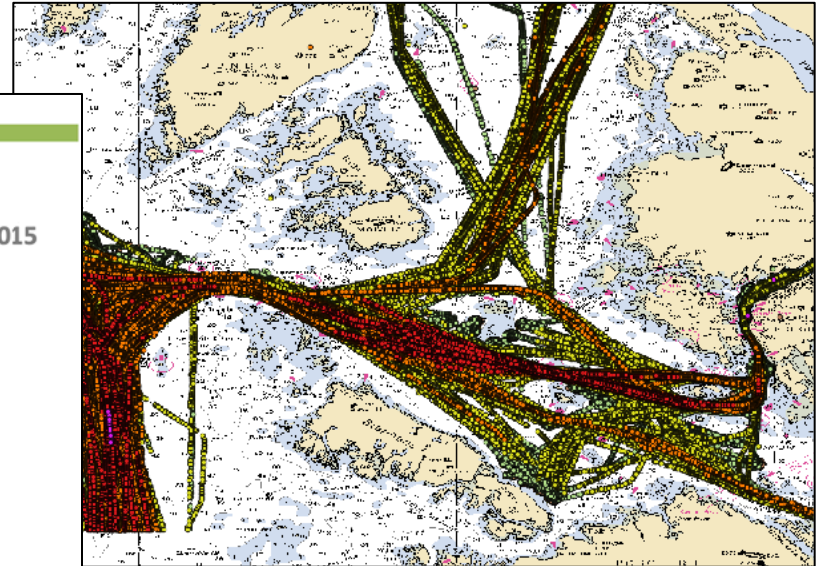
Prepared for Prince Rupert Port Authority

This report looks at current and future marine traffic patterns in the PR area and examines the case for ship routing measures to mitigate any possible traffic-related accidents.

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Greenwood Maritime Solutions Ltd.

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- ❖ Traffic Analysis
- ❖ Risk Appreciation
- ❖ Community Outreach
- ❖ Innovative Solutions (Randomized simulation)

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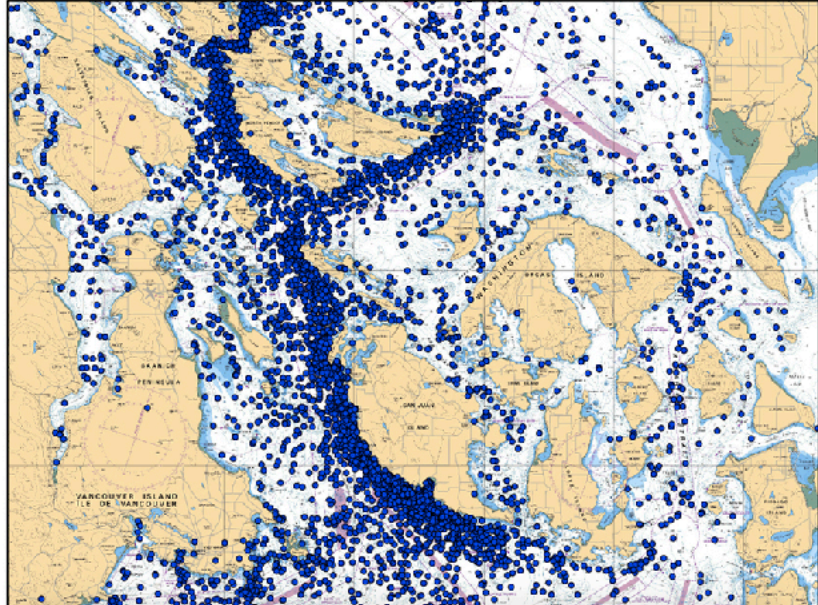


# Notable Projects for Transport Canada:

- ❖ Ship Noise Mitigation Risk Assessment
- ❖ Proactive Vessel Management Risk Assessment
- ❖ Place of Refuge Study
- ❖ Review of TC Place of Refuge Decision Support Tool


Transports Canada / Transport Canada

## Ship Noise Mitigation Risk Assessment

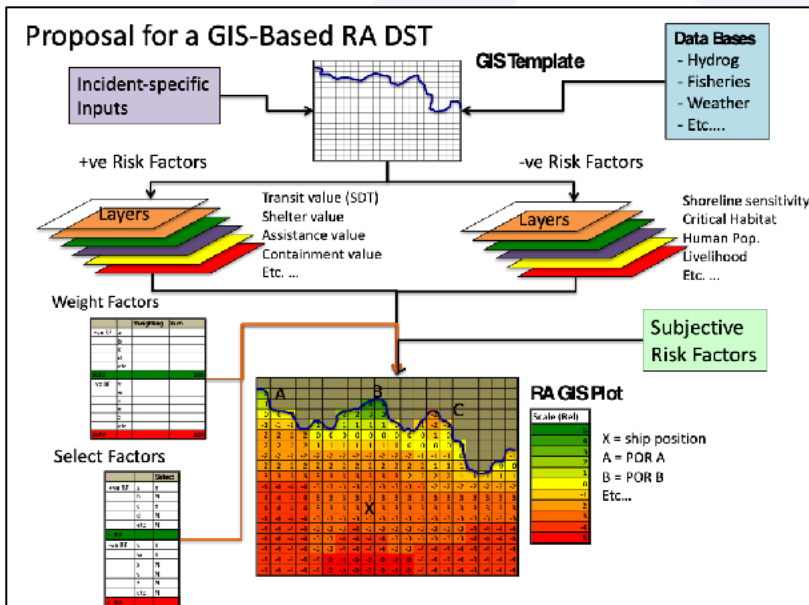


Prepared for the Transport Canada

This report reports on a high-level Risk Assessment of various measures to reduce ship-generated noise in the Salish Sea to reduce impacts on Southern Resident Killer Whale Populations.


Prepared by Nigel Greenwood, MM, FRIN, FNI  
Greenwood Maritime Solutions Ltd.

28 March 2018



# Notable Projects for CHS:

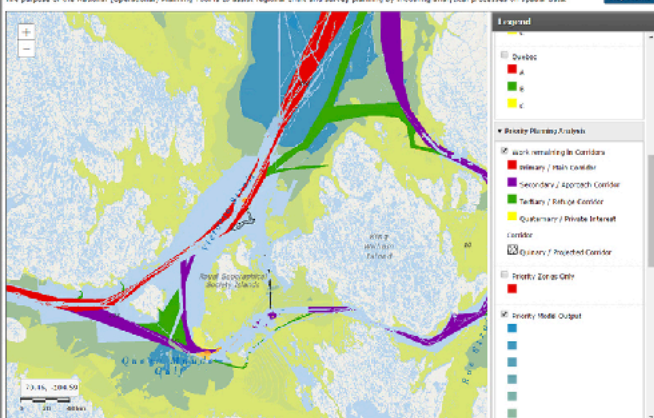
- ❖ Analysis of Priority Planning Tool
- ❖ Study on Future Form of Sailing Directions



## CHS Priority Planning Tool (CPPT) Review

**National Planning Tool**


The purpose of the National (Operational) Planning Tool is to assist regional chart and survey planning by modeling analytical processes on spatial data.

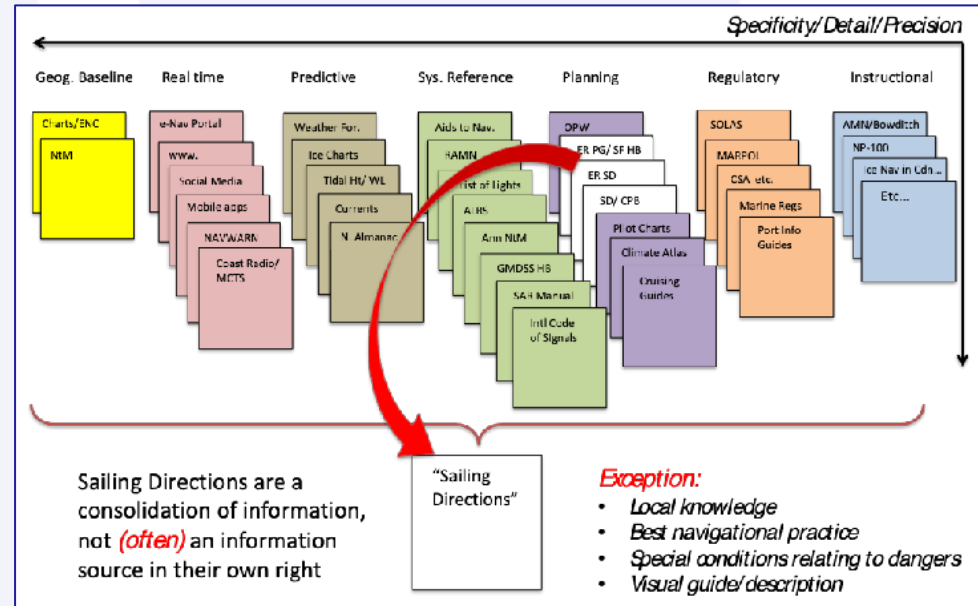


Prepared for the Canadian Hydrographic Service  
This report reviews the function and weighting of factors relating to the CHS's hydrographic risk assessment tool.

Prepared by Nigel Greenwood, MM, FRIN, FNI  
Greenwood Maritime Solutions Ltd. 31 January 2017

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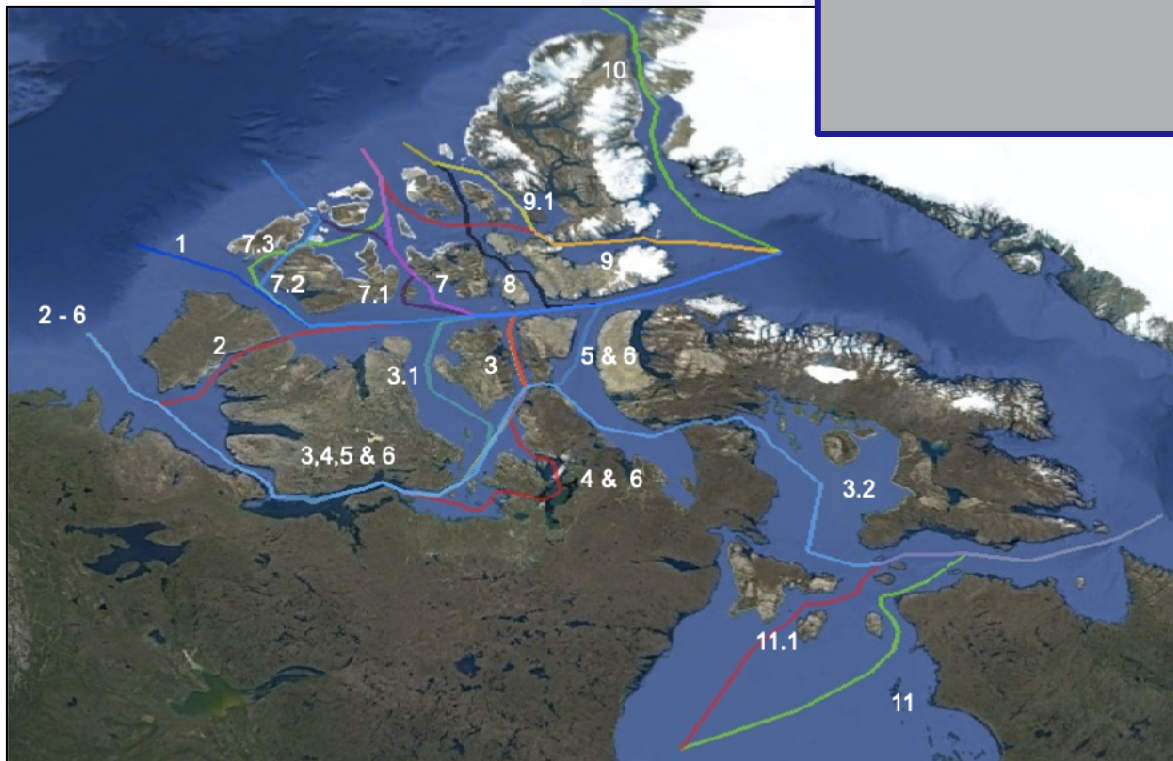
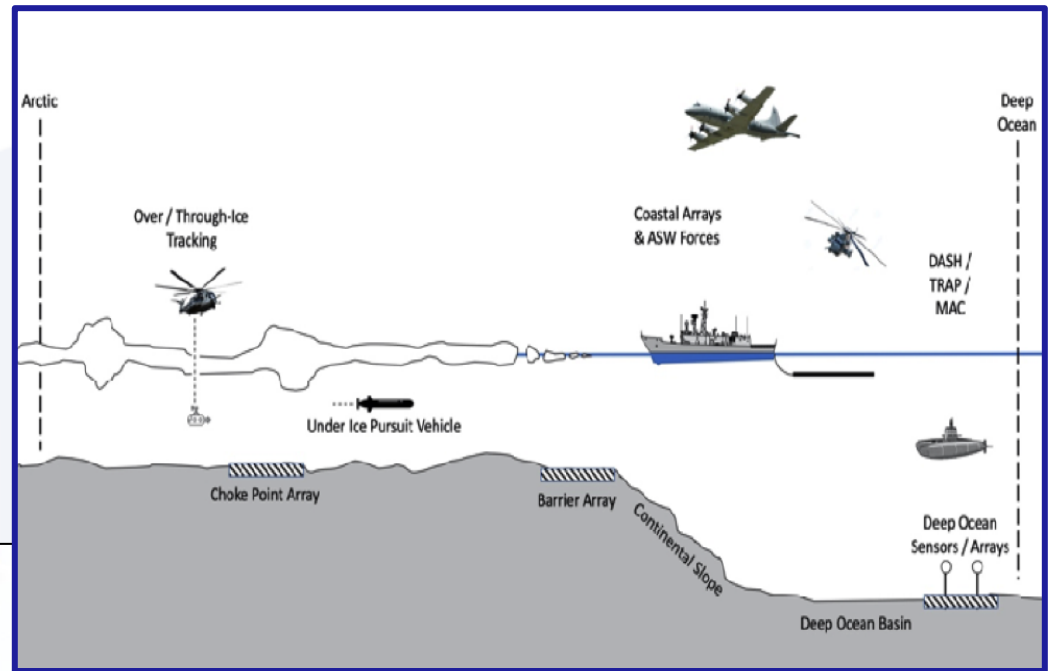




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# Notable Projects:

## Study on Arctic Underwater Surveillance (DRDC)



- ❖ Routes/constraints
- ❖ Vehicles
- ❖ Sensors
- ❖ Chokepoints and Barriers

# Lectures and Presentations



## e-Navigation....

Making e-Navigators out of Traditional Navigators

...or

Making (e-)Captains out of e-Navigators?

Rear-Admiral Nigel S. Greenwood  
Master Mariner



US Naval Post Graduate School  
Regional Security Education Program

Arctic Strategy and  
Sovereignty Issues

RAdm Nigel S. Greenwood, CMM, CD, RCH (Ret'd)  
Master Mariner FRIN, FNI



Pacific Gateway  
... To the Arctic!

CNRS Conference  
10-11 June 2021



Experience of Leadership

University Canada West  
Management 601

Winter 2023

RAdm Nigel S. Greenwood, CMM, CD, RCH (Ret'd)  
Master Mariner FRIN, FNI

- ❖ e-Navigation Conference at CMA
- ❖ USNPGS Regional Security Education Programme (onboard USS Theodore Roosevelt)
- ❖ CNRS Historical Conference
- ❖ RCN Maritime Security Challenges Conference
- ❖ Scenic and Windstar Cruises (onboard)
- ❖ University Canada West
- ❖ Arctic Shipping Forum North America
- ❖ NIBC Conferences





### RISK MANAGEMENT

## The modern Northwest Passage

By Nigel Greenwood  
Greenwood Maritime Solutions Ltd.



The "Doubting Thomas" crossing from the sidelines, however, features the huge, conscientious effort that went into making the Security voyage safe and successful.

One would have to be the most pessimistic and generally aware of and share the current realization that our chosen polar region, the Arctic, is a region that is becoming a hotbed of activity. The Arctic region is being re-examined, not just by the world's major powers, but also by the Arctic nations themselves. The past decade has seen major investments in infrastructure, as well as the gradual removal of some of the most restrictive regulations in the Arctic region. The Arctic is becoming a hotbed of activity, not just by the world's major powers, but also by the Arctic nations themselves. The past decade has seen major investments in infrastructure, as well as the gradual removal of some of the most restrictive regulations in the Arctic region.

I was very pleased to have a single article on this historic route at the 2016 Arctic Summit. While it is an important issue, I was also in a position to observe the reality of three long years of preparation. It was not an easy road to the realization of this voyage.

**Successful strategy – keynotes**  
As with most successful undertakings, this voyage required a mix of boldness, tenacity, and a strong belief in the mission. While the Arctic is a region of great strategic importance, it is also a region of great risk. The Arctic is a region of great strategic importance, it is also a region of great risk. The Arctic is a region of great strategic importance, it is also a region of great risk.

# Publications



Voyage of Xue Long  
in the Northwest  
Passage 2017

Bolstering Community-  
Based Marine  
Capabilities in the  
Canadian Arctic

China's Mahanian  
Arctic Ambitions:  
Second Thoughts

A Surface Presence  
for the US Navy  
in the Arctic?

- ❖ BC Shipping News
- ❖ Canadian Naval Review
- ❖ Starshell (NAC)
- ❖ Seaways (NI)
- ❖ Maritime Technology



Re-engineer  
the Process  
requirements: results

Still on Hold?  
responder's part

Arctic Traffic  
Rival willies

## THE BUSINESS OF MARITIME

Where data, regulations, safety, and  
the bottom line intersect

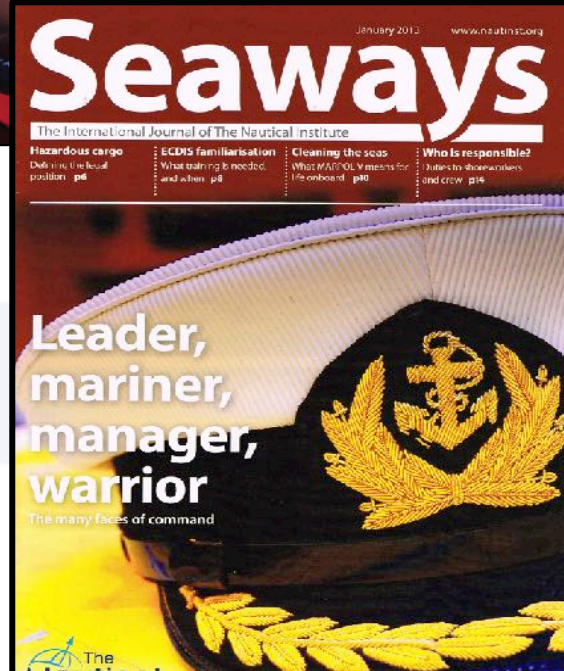


# Starshell

A publication for the Royal Association of Canada • Spring 2016, No. 82

## Navigating Canada's Northern waters

Former Admiral Nigel  
Greenwood realizes  
his dream of becoming  
an Arctic navigator  
Pages 18-24



# Seaways

The International Journal of The Nautical Institute

**Hazardous cargo**  
Delineating the local  
position: p6

**ECDIS familiarisation**  
What training is needed,  
and when: p8

**Cleaning the seas**  
What MARPOL means for  
life onboard: p10

**Who is responsible?**  
Duties to shore authorities  
and crew: p16

## Leader, mariner, manager, warrior

The many faces of command



# Ice Navigation (icw Martech Polar)

- ❖ **MY Equanimity (2015)**
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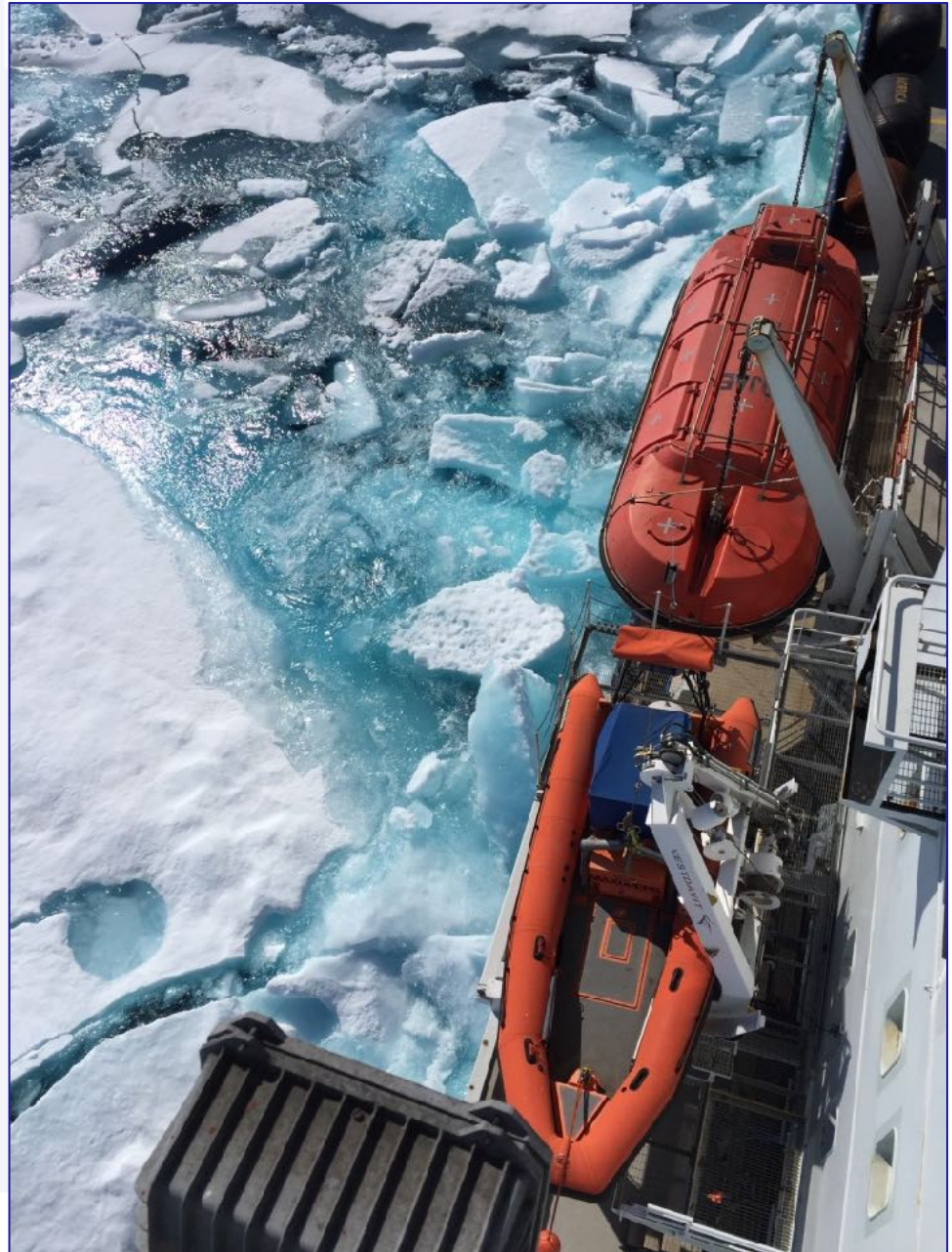
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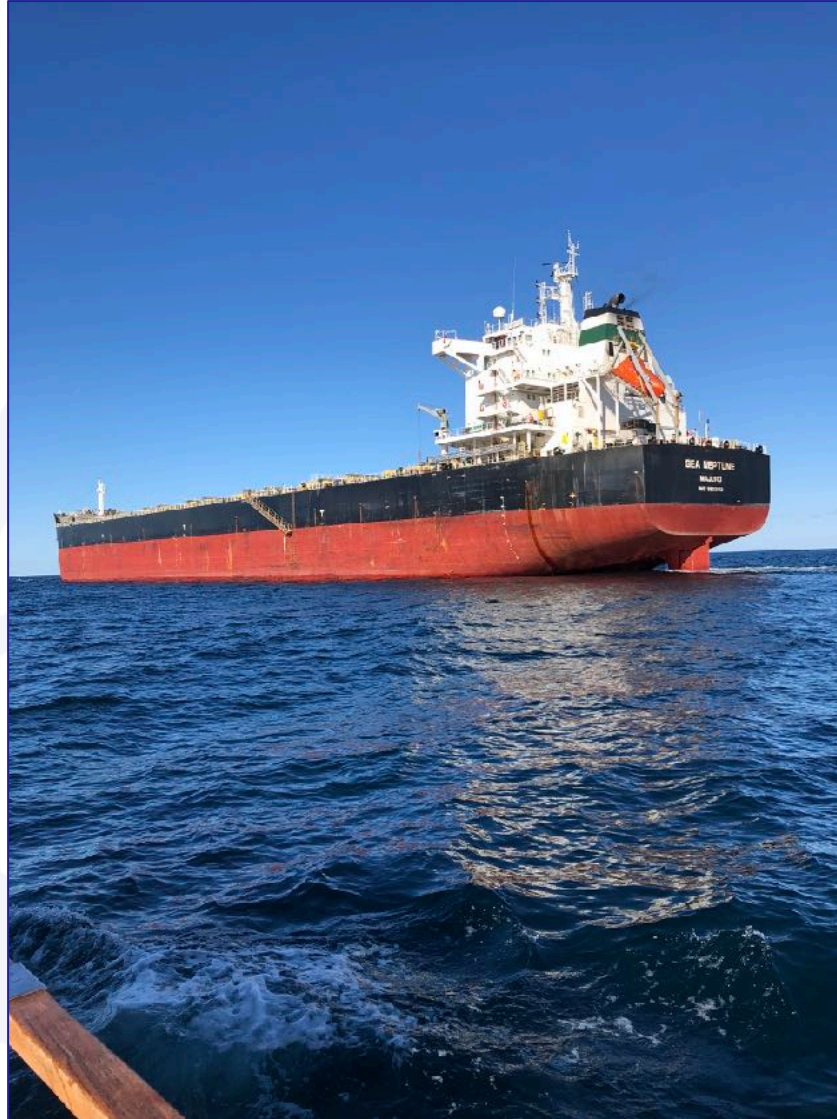
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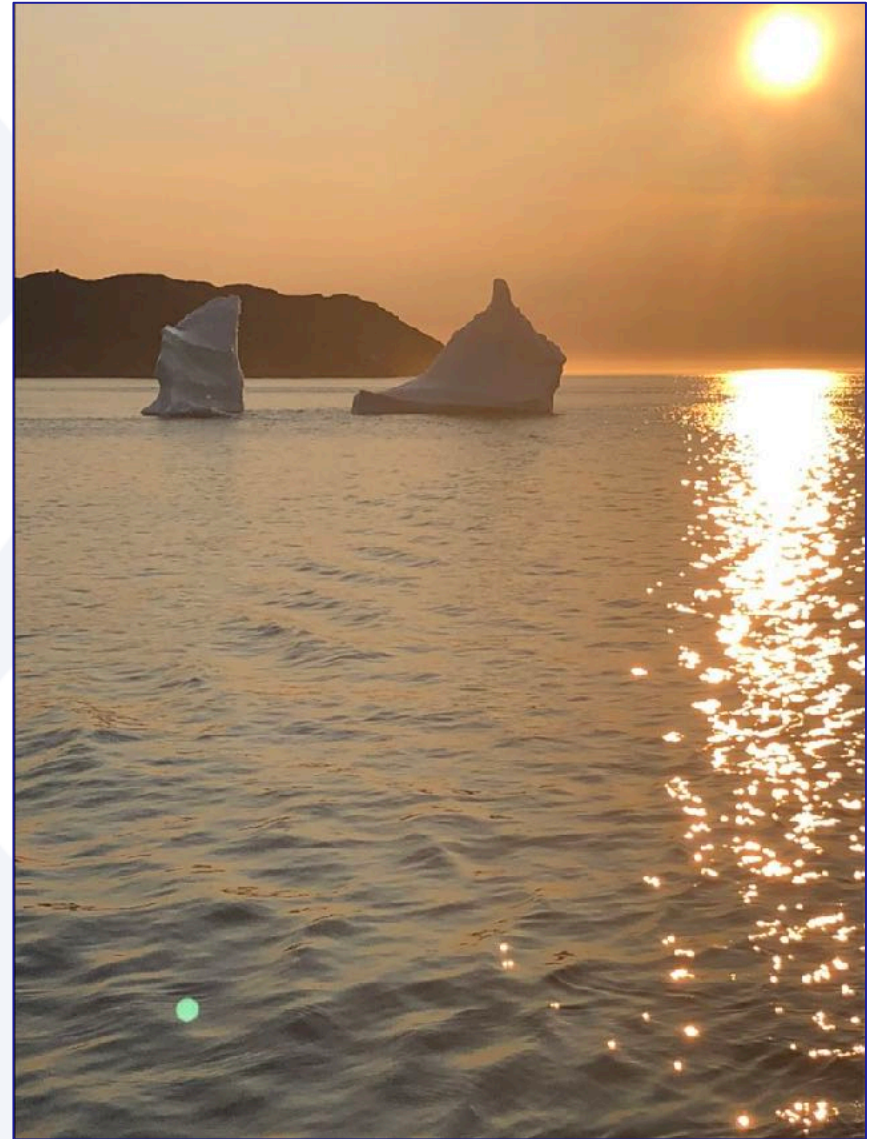
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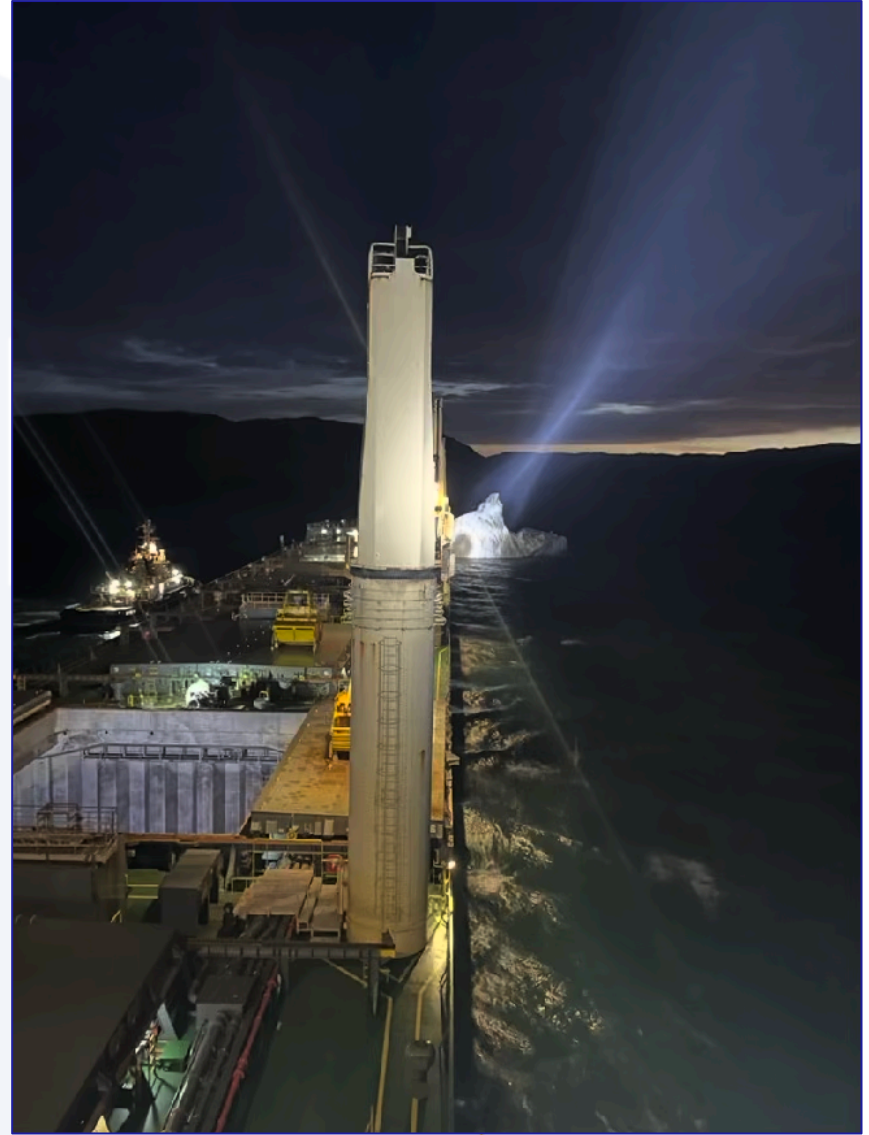
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Not all about ice...



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# GMSL Key Skills:

- ❖ Research
- ❖ Outreach
- ❖ Risk Appreciation
- ❖ Data Analysis
- ❖ Graphical Presentation
- ❖ GIS mapping
- ❖ Computer simulation
- ❖ Documentation
- ❖ Leadership

40 projects for 11 clients  
over the past 10 years

Developing  
innovative  
solutions to  
meet client  
requirements!

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