

# Training for Arctic Navigation

Unique Considerations and Methods

# Training for Arctic Navigation

Unique Marine  
Operations in the Arctic

Key Skills for Navigating  
in the Arctic

Training Standards for  
Arctic Operations

Practical Training for  
Navigating in the Arctic

# Unique Marine Operations in the Arctic

- **Commercial**

- Transit
- Resource Extraction
  - Energy Production Facilities
  - Mining Facilities
  - Transportation



Cargo Transit through NWP by *Amazoneborg* (Baltic 1A ~ PC7).  
Photo by René Stijntjes, 2nd engineer. Posted on [www.wagenborg.com](http://www.wagenborg.com).



*Nunavik* loading cargo in Deception Bay (PC4). Marinetraffic © Oleskiy Kharchenko

# Unique Marine Operations in the Arctic

- **Defence and Government**
  - Sovereignty
  - Enforcement
  - 'Coast Guard' Services

*HMCS Harry DeWolf in Frobisher Bay (PC5).*  
Photo by Corporal David Veldman, Canadian Armed Forces Photo  
20210221HSK0086D143.



Type 1200 "R" Class icebreaker escorting a vessel.  
Photo by Martha de Jong-Lantink

# Unique Marine Operations in the Arctic

- **Domestic Operations**
  - Community Resupply
  - Small Boat Operations
  - Emergency Response

Beach operations during community resupply in the Canadian Arctic. Photo from NEAS website ([www.neas.ca/news](http://www.neas.ca/news))



# Key Navigation Skills for Arctic Operations

- **Enhanced Passage Planning**
  - National Reporting Systems
  - Marine Protected Areas
  - Local Navigation Restrictions



Example of Marine Protected Areas in the Canadian Arctic

# Key Navigation Skills for Arctic Operations

- **Icebreaking**
  - Unescorted Transit
  - Escorting Operations



# Key Navigation Skills for Arctic Operations

- **Ice Management**
  - Emergency Response
  - Critical Infrastructure Protection
  - Wharf Clearing





# Key Navigation Skills for Arctic Operations

- **Community Emergency Response**
  - Search and Rescue
  - Environmental Response



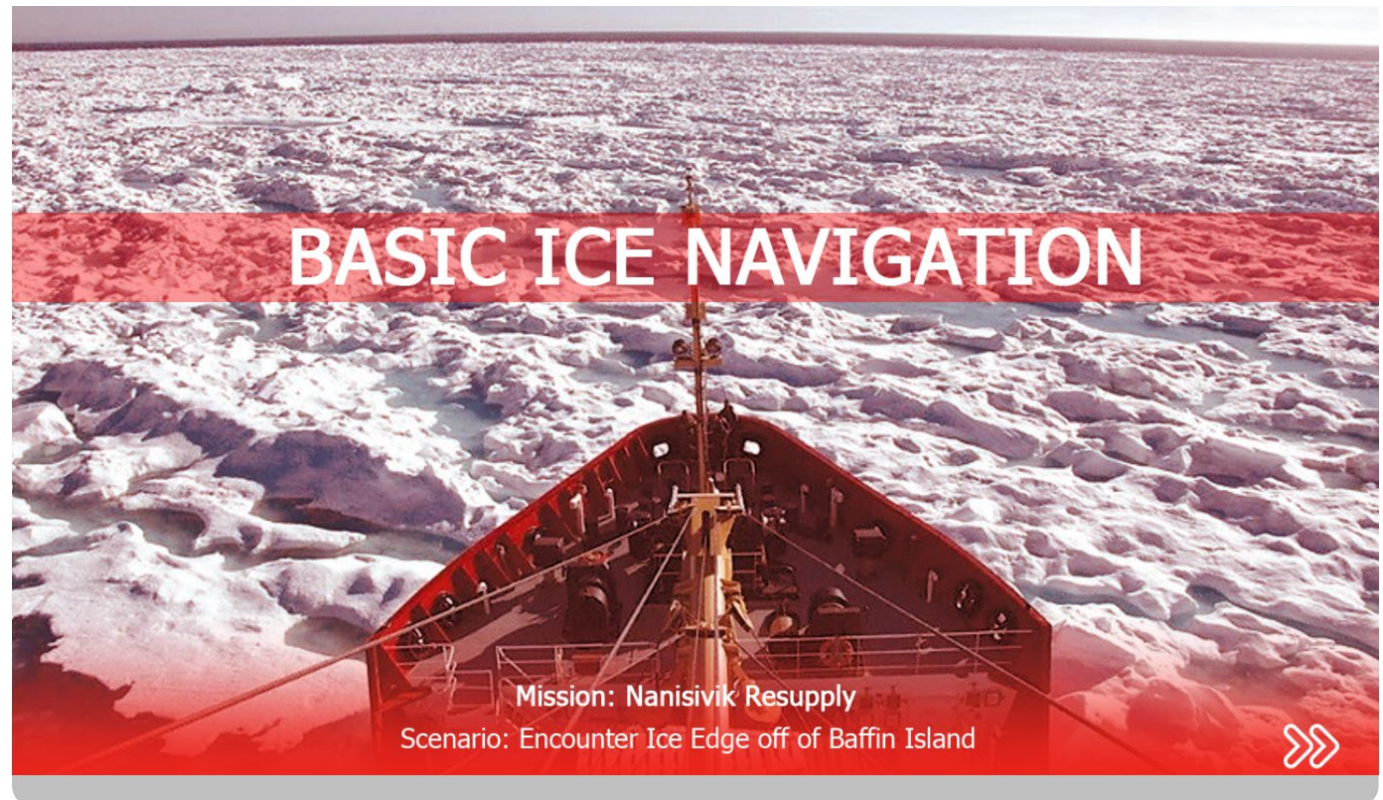
# Arctic Navigation Training Standards

- (IMO) STCW Section A-V/4 *Mandatory minimum requirements for the training and qualification of masters and deck officers on ships operating in polar waters*
- (NI) Ice Navigator Training and Certification Scheme
- (ISO) ISO 35104 *Petroleum and Natural Gas Industries – Arctic Operations – Ice Management*
- Organization specific On-the-Job Training programs



# Artificial Experience for Arctic Operations

- Interactive Desktop Simulations
  - Procedure Familiarization
  - Risk Assessment
  - Passage Planning
  - Local Knowledge



# Artificial Experience for Arctic Operations

- **At-Sea Simulation**

- On-The-Job Training Acceleration
- Mission Planning and Rehearsal
- Refresher Training
- Skills Benchmarking



Photo Courtesy of Virtual Marine

# Artificial Experience for Arctic Operations

- **Portable Simulation**

- Dockside Training
- Community Training
- Competence Verification



# Artificial Experience for Arctic Operations

- **Full Mission Simulation**
  - Team Training
  - Skills Integration
  - Competence Verification



# About Virtual Marine

- Canadian company based in St. John's, NL
- Over 200 simulators deployed world-wide
- Operates 5 training centres (Canada (2), USA, UK & Qatar)
- Certified by Canada, DNV, ABS and several Flag States
- Trains over 1,000 students per year



# Questions

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