

# Logistical challenges for operations in arctic regions

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# Viking Supply Ships in short



4 Ice-classed AHTS	3 Icebreaker/ AHTS	1 North Sea AHTS	6 North Sea PSVs
			

## Kistefos

Christen Sveaas has through his fully owned investment company, Kistefos, been a majority owner of Viking Supply Ships (through Transatlantic) since 1989. Kistefos have a long term investment strategy for the OSV business.



## VSS quick facts

- Viking Supply Ships is owned by the Swedish company Rederi AB Transatlantic
- Rederi AB Transatlantic is listed at the Stockholm Stock Exchange
- Headquarter in Copenhagen, Denmark
- Shore staff is about 60, offshore staff of about 550
- Total fleet value of NOK 4 billion

# Our history

**1946**

The predecessor of Viking Supply Ships, Excelsior is established in Kristiansand, and later changes it's name to Bendt Rasmussens Rederi

**1974**

Excelsior leaves the tanker market, and moves into the fast-growing offshore market for supply vessels. Viking Supply Ships was established as a marketing organization

**1998**

Viking Supply Ships order three combined AHTS/Icebreakers in a joint venture with the Swedish company Rederi AB Transatlantic

**2010-2012**

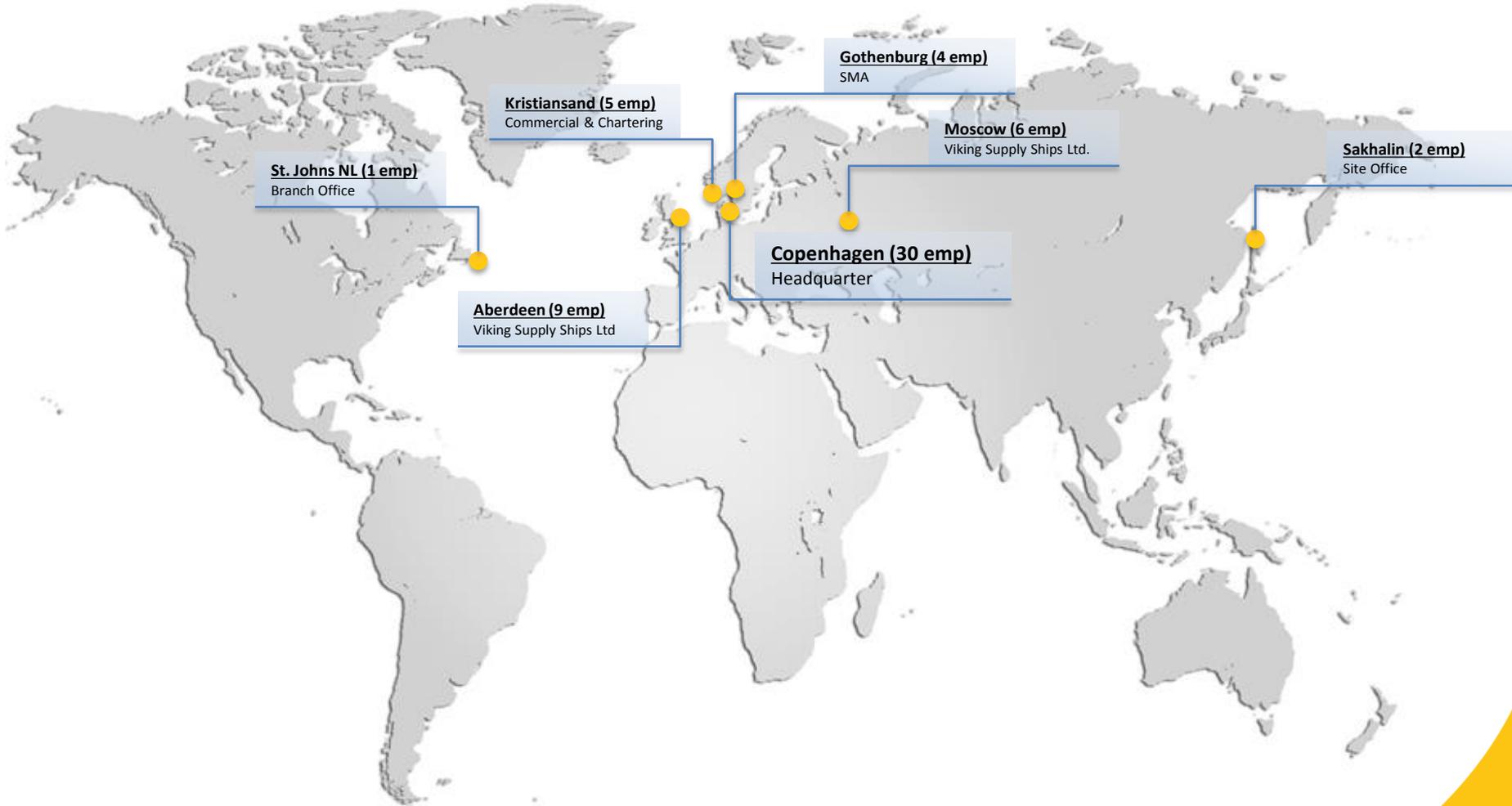
Viking Supply Ships takes delivery of four ice-classed VS-4622CS AHTS vessels from Zamakona ship yard in Spain

**2011**

Viking Supply Ships A/S establish it's headquarters in Copenhagen, Denmark



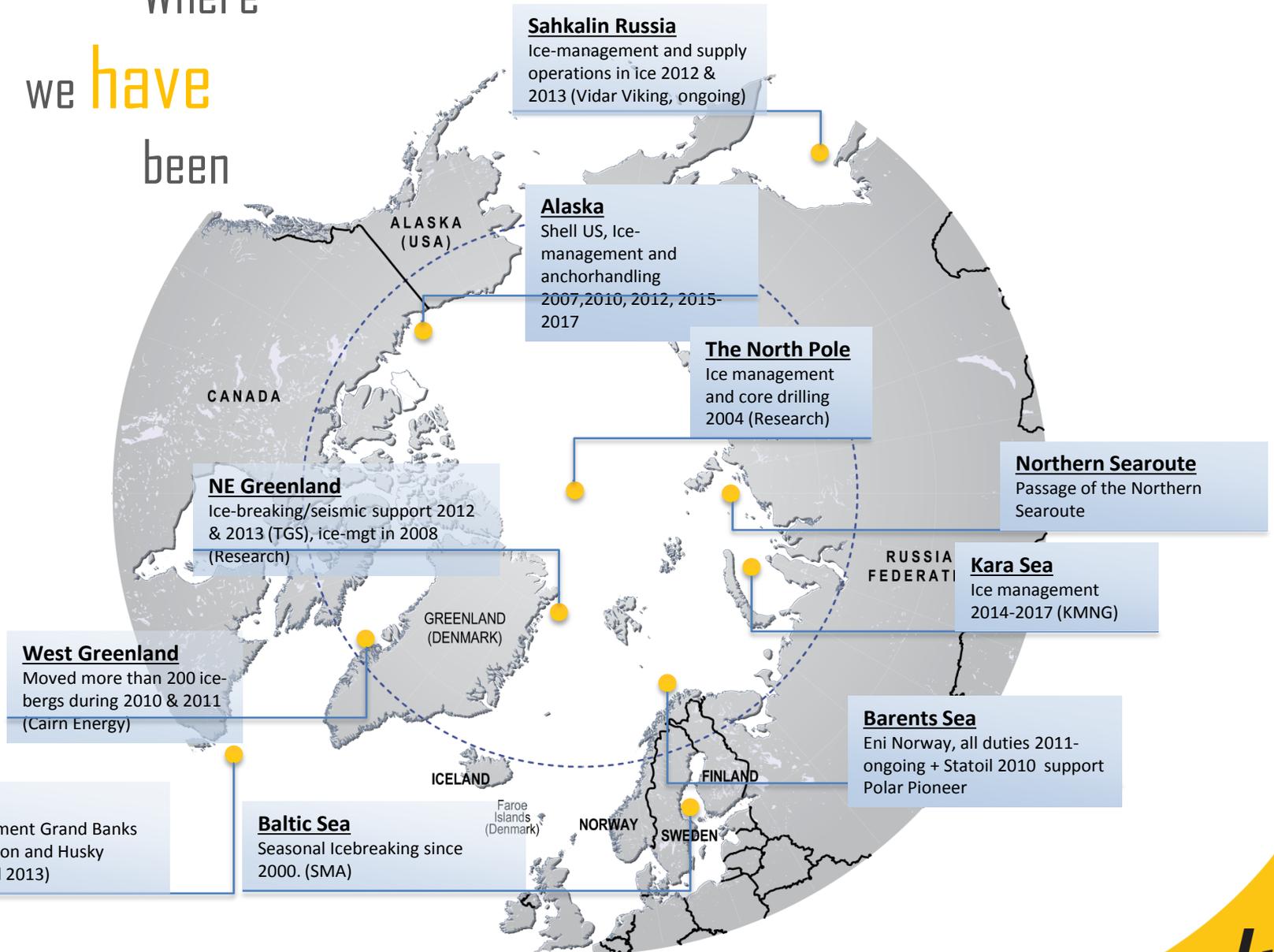
# Where we are



# Current fleet

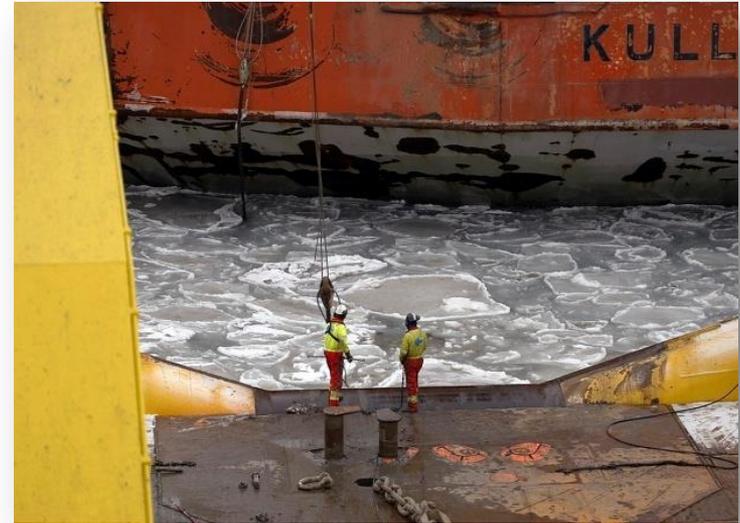
Vessels	Type	Description	BP/Deck	Ice-class
	Ice-breaker/ AHTS	Tor Viking class	200 tonnes	Ice 10
	Ice-classed AHTS	Loke Viking class	221 tonnes	Ice 1A
	PSV	VS 470 Mk II	710 sq. Meter	N/A
	PSV	SBS Cirrus	840 sq. Meter	N/A
	AHTS	Odin Viking	183 tonnes	N/A
	Ice-breaker	Oden (SMA mgt)	250 tonnes	PC-2
	Ice-breaker	Atle class (SMA mgt)	186 tonnes	1A-Super IB
	Ice-breaker	Ale class (SMA mgt)	51 tonnes	1A-Super IB

Where  
we **have**  
been



# Beaufort Sea 2007, 2010 and 2012

- In 2007, 2010 and 2012 Tor Viking was working for Shell for operations North of Alaska in the Beaufort Sea and Chukchi Sea.
- The vessel supported the offshore rigs Kulluk and Northern Discoverer.
- SOW; Anchor handling in ice, towing, ice management and other support duties.



# Beaufort Sea 2007, 2010 and 2012

- Planning is key to success;
  - Important to involve senior officers at an early stage of the process,
  - Charterers expectation of vessel and crew.

## Challenges:

- Base Landskrona Swe, 45 days transit each direction. 8 Months from arrival to return Europe, not alongside any berth.
- Provision; 1 Month of supplies ideal.
- Engine / Spare Parts; unforeseen events.
- Fuel; Low Sulphur, Emissions to air. Hose connection; same line from rig to vessel as to bunker supplier.
- Oil Spill, Sludge, general waste – 2010; all garbage stored onboard from June to October, Environmental and health control, purge garbage. Use of incinerator rules, Seattle.
- Tangled propellers, what to do – 2 Week transit to nearest Dock.
- Local Knowledge; Agents, Logistics, Spare Parts availability.
- Crew Change; 5 days , Helicopter to rig, basket to vessel, Handover need to be well prepared in advance (1hr). Team spirit!
- Illness; Heart attack – Proactive focus; what if...
- Back up crew («3rd shift»); Visa, Work permit take months, needs to be prepared in advance.
- Working cloths for rough and cold weather; -23 degrees + wind, 5/10min
- Other training (Inuit local knowledge, how to behave, what to do)
- Change of plan, Management of change

# Iceberg towing/Ice Management West Greenland 2010/11

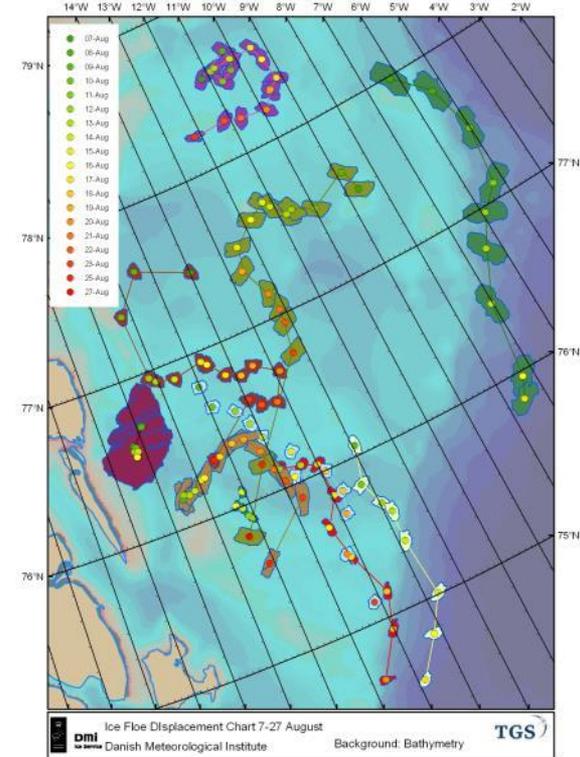
- Chartered by Capricorn Greenland Exploration (Cairn Energy) for iceberg management duties.
- SOW; detect, monitor, tow and deflect numerous of icebergs making a threat to the drilling operations on the various rigs and locations.
- Fiber ropes and iceberg towing gear specially designed for deflecting ice bergs.
- The vessels towed more than 200 icebergs.



# Seismic support NE Greenland 2012/13 for TGS



- Balder Viking chartered by TGS Nopec for 60-80 days NE Greenland
- Campaign by Bureau of Minerals and Petroleum Greenland
- High success with 5000 km seismic lines carried out for the first time in this area
- The Russian Seismic vessel “Akademik Shatskiy” with ice class 1A
- 79-80 degrees North
- Challenging area in terms of ice conditions, weather (fog) and remote from any logistics
- Crew change from Spitsbergen with fishing vessel
- No refueling during the 60 days campaign
- Dual engine helicopter from Fonna Fly AS



# West / NE Greenland – Logistics issues

## ▪ Summary

### West Greenland

- Lack of infrastructure, lack of quays, Draft restrictions, several vessels, Storage barge,
- PSV shuttle traffic to Aberdeen/Peterhead 6-7 days transit.
- Local Knowledge – Agents, Logistics, Spare Parts availability
- Engine / Spare Parts unforeseen events
- Crew Change, at quay side, chartered plane
- Illness, AB broken leg, Greenland personnel, Helicopter
- Other training Ice Net, Ice Berg towage etc, Restricted involvement with local people
- Greenpeace, NGO issues
- Provision, 1 Months supplies ideally,
- Oil Spill, Sludge, general waste –need to be planned ahead
- Change of plan, Management of change
- Tangled propellers, what to do – divers available, due to high risk with fibre ropes

### North East Greenland

- Lack of infrastructure, lack of quay, lack of anything
- Stand alone operation, Logistics via Svalbard, 3.5 days transit with Kvitebjørn,
- Local Knowledge – Agents, Logistics, Spare Parts availability
- Engine / Spare Parts unforeseen events
- Crew Change, at sea with assist vessel
- Illness, Dense Fog, remote to airport, Helicopter not available
- Other training, general ice management, corporation between seismic and ice breaker, how they operate
- Greenpeace, NGO issues
- Provision, 2 Months supplies ideally
- Oil Spill, Sludge, general waste –need to be planned ahead
- Change of plan, Management of change
- Tangled propellers, what to do – towage to Spitsbergen with divers flown in from Norway
- Icing in ice vs open water; end of project due to lack of experience and knowledge onboard Seismic vsI.

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# Kara Sea

- Client KMNG (JV Exxon/Rosneft)
- Balder Viking, Loke Viking, Magne Viking & Brage Viking.
- Mobilisation started 29<sup>th</sup> of May 2014
- Demob expected October/November 2014
- Due to previous experience and track record; large contract, with extended SOW:
  - Rig towage
  - Prelay and Hook-up of Anchor System.
  - VSS / Company Ice Centre (During operation)
  - Ice management Kara Sea
  - Ice Academy; VSS Training facilities for all Marine crew involved in project (incl. other owners.)
  - Ice Advisors (SMA)
  - Satellite
  - Met Ocean Weather Analysis
  - Supply and mobilisation of Ice Towing Equipment.



# VSS/Company Ice Centre

## ONSHORE



SAT Imagery

Met Ocean info.



Ice Map/Ice Forecast



Airplane Surveillance



## OFFSHORE



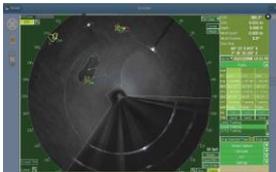
**Tactical Ice Tracking and Communication System**  
Real time/Near real time update  
Eg. Kongsberg, MT, ION

- Vessel/rig Position, speed and heading
- Replication of SAT Imagery
- Replication of Ice charts
- Replication of Met ocean Info
- Replication of Radar images
- Iceberg, floe, ridges position, heading and speed
- Onshore/Offshore Messaging system
- Onshore/Offshore Telecon System
- Logistics Tracking and Planning

Drones



Ice drift beacons



Ice Radar image  
Met Ocean Info  
Ice/Floe/Iceberg Info

Tactical Instructions  
Operation progress

Logistics Tracking



Oilspill Monitoring



Ice Towing equipment

