



# PERSPECTIVES ON EMERGENCY RESPONSE IN THE CANADIAN ARCTIC

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*Sinking of the MS Arctic Sun in  
Cumberland Sound, Nunavut*

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## **PART A: HYPOTHETICAL SCENARIO**

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*Cover image courtesy of David Kilabuk*

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### *CANADA CENTRE FOR GLOBAL SECURITY STUDIES, MUNK SCHOOL OF GLOBAL AFFAIRS, UNIVERSITY OF TORONTO*

The Canada Centre for Global Security Studies was established in spring 2010 with a grant of \$25 million from the Government of Canada. Areas of interdisciplinary study include the intersection between global security and cyber espionage, global health and region-specific concerns, such as the Arctic, post-Soviet Europe, the new Asian powers and the changing face of the Americas. The Centre draws on the expertise of scholars at the faculties of law, engineering and medicine and the Rotman School of Management. ([www.munkschool.utoronto.ca](http://www.munkschool.utoronto.ca))

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### *THE WALTER AND DUNCAN GORDON FOUNDATION*

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## ABOUT THE MUNK-GORDON ARCTIC SECURITY PROGRAM

A partnership between the Canada Centre for Global Security Studies at the Munk School of Global Affairs, University of Toronto, and the Walter and Duncan Gordon Foundation, the Munk-Gordon Arctic Security Program's vision "is for peacefully resolved disputes in the Arctic, global environmental security that supports a healthy Arctic environment, and an Arctic foreign policy that centres on the needs of those who live there." To achieve this vision the Program undertakes original research and hosts interactive gatherings.

### *EMERGENCY PREPAREDNESS IN THE ARCTIC*

This paper is one of a three-part series focused on a hypothetical sinking of the MS Arctic Sun in Cumberland Sound, Nunavut, Canada. The series is part of a larger project on Emergency Management Preparedness in the Arctic being undertaken by the Munk-Gordon Arctic Security Program.

By exploring current emergency management preparedness capacity in the Arctic, including methods of communication, collaboration, resource-sharing, authority and jurisdiction, the question "are we ready?" for emergencies ranging in scope from the local to the international will be answered. A combination of baseline issue research, participatory action research and scenario assessment will inform the development of policy recommendations to prepare for emergency management responsibilities in the 21st-century Arctic.

## THE SINKING OF THE *MS ARCTIC SUN* IN CUMBERLAND SOUND, NUNAVUT: HYPOTHETICAL SCENARIO



On Saturday Aug. 13, 2014, the ship *MS Arctic Sun* is sailing up Cumberland Sound on the west coast of Baffin Island, en route for the community of Pangnirtung, Nunavut, Canada. On board are 114 passengers and 54 crew. The voyage has been jointly sponsored by two philanthropic foundations, one American and one Canadian, and has brought together eminent Arctic policy experts, marine biologists and fisheries officials from the eight circumpolar countries. Designed as a “floating think-tank,” the two-week exercise is intended to kick-start the development of an international policy framework to regulate the growing commercial fishing industry in the Arctic. Shore visits at fishing communities in Greenland and Canada have enabled the forum participants to meet with local fishers, community officials and other industry and community stakeholders to solicit their views on the possible form and direction future international regulation might take. Pangnirtung will be the second-last port-of-call in the program, with the final destination

being Iqaluit, the capital of Nunavut. It is there that final meetings and the drafting of a position paper will take place, after which members of the forum will depart for home. The breakdown of the group by nationality is as follows: 26 Americans, 24 Canadians, 16 Norwegians, 16 Icelanders, 12 Danes/Greenlanders, 12 Finns, and eight Russians. Ages range from 26 to 74, with the average age being 49.

The captain of the ship, a Swedish national, is in his early 40s and was appointed to his current position 18 months earlier upon the retirement of the *Arctic Sun*’s former captain. Although he has served on many Arctic voyages in the capacity of first mate, this is only his fourth voyage as captain and his second time navigating Cumberland Sound. The ship, a 40-year-old, double-hulled, ice-strengthened Danish-built vessel, was refurbished in 2007 with modern cabins and conveniences after being purchased by an American consortium to service the burgeoning Arctic cruise market. The ship is flagged in Liberia.



## MS ARCTIC SUN

<i>Built</i>	Helsingør Skibsværft, Denmark, 1972 (2007)
<i>Ice Class</i>	Swedish/Finnish 1B
<i>Length</i>	105 m (345 ft)
<i>Breadth</i>	18.6 m (61 ft)
<i>Max Draft</i>	4.7 m (15 ft)
<i>Gross Tonnage</i>	6334 GRT
<i>Cruising Speed</i>	14.5 knots
<i>Stabilizers</i>	Fins, Type Brown/AEG
<i>Forward-looking sonar</i>	None
<i>Max Group Size</i>	118
<i>Crew</i>	54
<i>Lifeboats</i>	4 x 50-man, 4 x 12-man

## THE INCIDENT

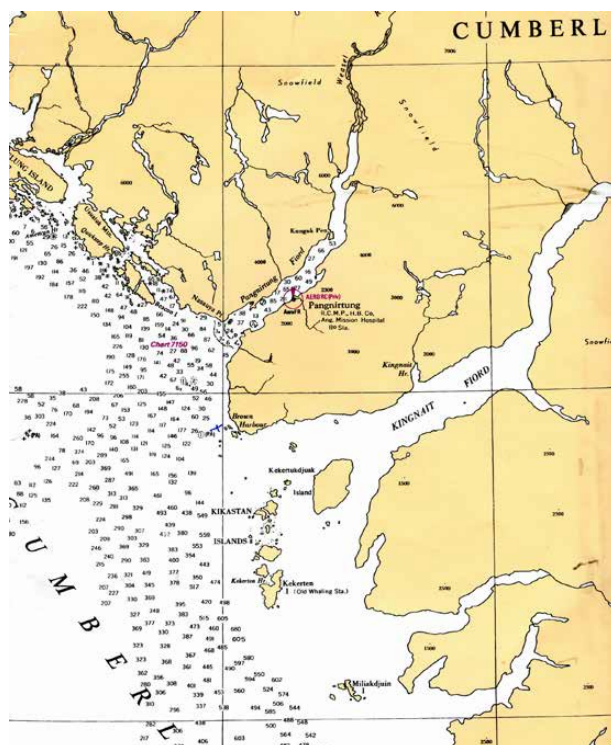
*09:00 Ship's time, Saturday, Aug. 13, 2014*

The skies over Cumberland Sound are heavily overcast. Rain or wet snow is threatening and the temperature is hovering around 5°C. It is roughly an hour past low tide (2.5 m) and the wind is blowing steadily out of the northeast at 14 knots. The Canadian Ice Service (CIS) reports indicate the north end and much of the west side of Cumberland Sound as far south as Kingnait Fiord are solidly blocked with pans of 3/10 to 8/10 ice, forcing the *Arctic Sun* to hug the eastern shoreline of the Sound as it makes its way past the Kikastan Islands. Three large icebergs have also been reported in the vicinity of the ship, with the most significant block tracking west and south out of Pangnirtung Fiord.

*09:13*

Just as the ship makes its approach and rounds the head off Brown Harbour to enter the mouth of the fiord, the radar indicates an iceberg is positioned directly ahead in the ship's path; evasive action will need to be taken quickly to avoid a collision and ensure the safety of the ship and those on board.

The captain immediately consults with his first mate on their navigational options. Taking the ship further to the east past the iceberg could veer them into uncharted waters. The radar shows bergy



bits in that area, but nothing of real significance ahead. However, the ship is not equipped with forward-looking sonar, and without it, submerged hazards would not be evident. The area to the left of the iceberg presents other challenges: CIS reports show that region to be heavily covered with old ice, leaving only the narrowest of channels between the iceberg and the ice pans. To slip the ship safely

through that narrow space would leave little margin for error and again, without forward-looking radar, the extent and shape of the iceberg submerged underwater would be difficult to assess. Also considered is the possibility of reversing course back south and as far west as safely possible given the current ice conditions, to allow the iceberg to pass to the east of the ship. Not only would this option significantly delay the ship's arrival in Pangnirtung, more importantly, there might not be sufficient time to turn the vessel around and clear the iceberg's path before it is upon them.



*Image courtesy of Ansgar Walk*

09:21

With no ideal option available, the captain takes his decision and orders the bridge to alter course to the most easterly line of soundings. This should allow the iceberg to pass at least 500 metres to the west of the ship, but places the vessel at the extreme edge of the charted waters. The ship creeps forward at a cautious two knots, with the iceberg eventually emerging off the port (west) side of the vessel as expected. The captain makes an announcement to inform the passengers of the approaching spectacle in the event any might wish to observe it from the deck.

09:26

Many on board have braved the inclement weather to photograph the impressive ice formation as it passes. Just as they are returning to their cabins to remove their coats and raingear, a deep metallic

groan resounds throughout the ship as it jerks and shudders violently. The lights flicker momentarily and are restored. The captain and officers on the bridge quickly realize their ship has run aground. Their position at the time of impact is 65.944606 N - 65.961609 W. The time is 09:51.

09:52

The captain orders all crew to muster stations and instructs the engineers to sound the fuel tanks and report any damage.

09:54

The captain announces to the passengers that the ship has run aground, that it is likely a temporary situation due to low tide (2.6 m) and that the cause is being investigated. He requests all passengers proceed directly to the main dining room where an officer will call the roll in 10 minutes and specialty coffees and pastries will be served. He instructs the cruise director to arrange appropriate entertainment to follow the rollcall.

09:56

Word comes back to the bridge that a 64-year-old male professor who was descending a ladder between decks at the moment of impact has fallen off the steps and broken his leg. The ship's doctor and nurse are attending to stabilize his injury before removing him to the infirmary.

10:22

All tanks have been sounded. The Engineer has discovered fuel tank number six on the starboard side, carrying 87M<sup>3</sup> of diesel, has been damaged. Of greater concern, water is seeping into the adjacent mechanical room. It is salt water, not fresh, indicating that the source is seawater, not the ship's internal water system. The engineers have secured all watertight doors. The captain orders four seamen to take the bilge pumps to the mechanical room and start pumping out.

10:39

Two crew divers are instructed by the captain to don drysuits and tanks to enter the water and inspect the exterior hull to gain a more precise assessment of the cause and damage.



10:52

Just as the divers are preparing to make the dive, crew members notice a substantial quantity of fuel floating to the rear starboard side of the ship. The dive is suspended.

10:58

The captain instructs that passengers be escorted from the dining room to their cabins in groups of 10 to collect warm clothing, documents and medication. He advises passengers this is merely a precaution, assures them the situation is likely temporary and that everything is being done to address the situation. Over the next 30 minutes, aided by the rising tide (now 3.6 m), the Captain and crew attempt several manoeuvres to dislodge the ship from where it is pinned.

11:31

The bridge finally succeeds in freeing the ship. The captain manoeuvres it slightly west away from the hazardous rocks and sets anchor. With the ship now free, the engineer reports the water coming into the mechanical room below has substantially increased and is barely being kept at bay by the bilge pumps.

11:35

The captain leaves the first mate in charge of the bridge and goes below to assess the situation. The

ship is now beginning to list slightly to starboard. Together the captain and the engineer conclude the water is indeed rising faster than the pumps can eliminate it and that eventually the electrical equipment will be shorted out by water. Several options are discussed, but the situation appears irreversible and the realization dawns that the ship is now at risk of foundering.

11:52

The captain returns to the bridge, contacts the Marine Communications and Traffic Services (MCTS) in Iqaluit to apprise them of the situation, and broadcasts a Mayday call to all ships in the vicinity. MCTS relays the distress message to ships beyond the *Arctic Sun's* radio range. The ship's emergency locator beacon (EPIRB) is activated.

11:58

The captain instructs all passengers and crew, with the exception of the quartermaster, third officer and the engineer and crew manning the pumps, to proceed in an orderly fashion to the lifeboats on the port side, don survival suits and abandon ship. He sends the first mate to take charge of the evacuation. The process of allowing groups of 10 passengers back to their cabins has been almost completed with only one group left to go. Although they protest their lack of opportunity, they are told to proceed directly to the life boats.

12:46

The engineer reports that the situation below decks is near catastrophic and he fears for the safety of the men working the pumps. They are all cold from the frigid water and exhausted by their efforts. The captain instructs them to abandon the pumps and report to the lifeboats.

13:06

The captain releases the remaining officers from the bridge. The third officer volunteers to stay with the Captain. The ship is now listing more heavily to starboard.

13:24

The captain collects the ship's log and black box and, with the third officer, proceeds to the lifeboats to aid with the evacuation.





**13:57**

The evacuation of the ship is completed. Several of the passengers are showing signs of severe stress. The cook, 62, is experiencing chest pain. He has a history of heart disease and had no time to retrieve his medication from his cabin before the order came to abandon ship. The professor with the broken leg has had a difficult time during the evacuation and, despite the doctor's efforts, is showing signs of shock.

**14:15**

The ship is listing 22 degrees to starboard and is partially submerged. All the lifeboats are in the water and in close proximity to each other, a safe distance from the ship. Although many of the passengers are slightly panicked and nauseous from the movement of the smaller craft, the enclosed lifeboats protect them from the elements and are equipped with food, water and other essentials. With the exception of the professor and the cook, there appear to be no further life-threatening medical issues.

*How will they be rescued?*





Image courtesy of Verne Equinox

## FURTHER VARIABLES AFFECTING THE RESPONSE

There are five Coast Guard ships patrolling in the Arctic at present, but only two are located in the eastern Arctic in the general vicinity of the *Arctic Sun*. The CCGS *Hudson*, due to be replaced later in the year, is in Iqaluit on the opposite side of Baffin Island undergoing repairs to its engine. The CCGS *Louis St Laurent* is patrolling in Hudson Bay near Rankin Inlet and is several days' sail away from the location of the sinking. The remaining three Coast Guard ships are located at various positions in the Northwest Passage and Beaufort Sea on the western side of the Arctic.

Several cargo and fuel resupply ships are also traveling in the Arctic at this time of the season.

The NSSI cargo ship departed Montreal on August 4 and is currently off the east coast of Newfoundland. The NEAS freighter departed Valleyfield, Quebec, July 23 and is 90 kilometres east of Cape Dorset. A Woodward Group fuel resupply ship headed for Pangnirtung is just leaving the docks at St John's, Newfoundland.

The weather at the time of the ship's evacuation is holding steady around 9°C but the rain continues. The winds are shifting to the south-west and gusting up to 20 knots, shutting down flights into and out of Pangnirtung. A warm front is moving in from the same direction.

23:00

The winds have died down and the rain has stopped. The warm air mass that has been pushed over the ice fields by the earlier gusts has created a bank of dense fog that now blankets the entire area, including the community of Pangnirtung. The temperature has risen to 14°C. Though wind conditions are now favourable for flight, the fog continues to restrict any aircraft from landing at Pangnirtung airport.

In Iqaluit, the parts required to repair the crippled Coast Guard vessel, the *Hudson*, have been delayed in Montreal and are not expected to arrive until the following Monday at the earliest.

Heavy fog sits over Cumberland Sound for three days, effectively cutting off access to the region. On the evening of Aug. 16, a cold front moves in from the northwest, pushing out the fog and warmer air mass that has been sitting over the region. With it come strong winds gusting up to 30 knots.

*How might these conditions affect the rescue?*



**MAP OF SHIPS  
IN RELATION  
TO SINKING  
MS ARCTIC SUN**

## ABOUT THE AUTHOR

Liane Benoit, B.A., B.Ed, M.P.A., F.R.C.G.S. is founder and President of Benoit & Associates, an Outaouais-based public affairs company which for 25 years has worked with senior clients in government, aboriginal and Arctic communities and the corporate and non-governmental sectors on issues of public policy and accountability, environmental management and social justice. Liane has participated in several royal commissions and legislative reviews, including two studies published by the Royal Commission of Inquiry into the Sponsorship Program and Advertising Activities (“The Gomery Commission”). In 1996, Liane was elected a Fellow of the Royal Canadian Geographical Society in recognition of her expeditionary work in the Far North, and in particular, her role in re-establishing traditional Inuit sled dogs in the Nunavik region of Northern Quebec. A former attaché to the governor general, ministerial aide to the speaker of the House of Commons, writer and teacher, Liane has played a role on numerous national boards, advisory councils and committees, and was instrumental in founding both the Jeanne Sauvé Youth Foundation and the Arctic Children and Youth Foundation. She currently resides with her son and husband on a farm near Wakefield, Quebec.



