Recent Developments in Arctic SAR

Presented by K Joseph Spears
May 31, 2012
London England
Developments in Arctic SAR
Third Polar Shipping Summit
Overview
Impact of the 2011 International SAR Agreement
The Resources of the Coastal State
The Need for Exercises
Recent Examples
How Canada looks from the AOB
Marine SAR and the Arctic Ocean
Arctic Council announces SAR agreement
SAR is made up of a number of components and elements

Ground SAR

Marine SAR

Aviation SAR
Canada’s SAR Regions
They are the Largest in the world
Canada is a Major Coastal Nation

All but two Provinces have ocean access
244,000 kilometres of coastline
9.3 Million Square kilometres of ocean space
Bordered by 3 oceans—Arctic, Atlantic and Pacific
Massive inland sea—Great lakes-St. Lawrence Seaway
Mackenzie River system
SAR is one element of marine and aviation management
Canadian Air Travel Routes
Effective SAR requires an understanding of all the players.
First Air Crash  Jets do go down
Even with SAR it comes back to the paperwork—Information is key
The Traditional View of the Arctic
The Ranger Patrols are mostly coastal around the lengthy Quebec Coast
Canadian Forces SAR Mandate

Coordination and response for aeronautical SAR incidents throughout Canada’s internationally agreed SAR area of responsibility (ICAO)

- Aeronautical response in support of the Canadian Coast Guard for maritime SAR incidents on federal waterways within Canada’s internationally agreed SAR area of responsibility (IMO)
- Overall effective operation of the coordinated aeronautical and maritime SAR system
- Response to requests for humanitarian assistance as permitted by demands of primary mandate
Canadian Forces Primary SAR

What we Have Now (Primary SAR):
- Aircraft and Vessels: 14 CH-149 Cormorant helicopters
- 6 CC-115 Buffalo aircraft
- 9 (nominally) CC-130 Hercules aircraft
- 4 CH-146 Griffon helicopters
- Civil Air Search & Rescue Assn aircraft ~300+

Equipment:
- Air-droppable survival and medical gear
- Air droppable powered pumps and liferafts
- Major Air Disaster (MAJAID) kits: 320 persons
- Air-droppable Arctic clothing kits: 325 persons

- Personnel and Facilities: 3 Joint Rescue Coordination Centres
- 4 deployable search headquarters
- ~600 personnel, including 135 Search and Rescue Technicians
- Civil Air Search & Rescue Assn personnel 3000+
JRCC Trenton Griffon Helicopter
CF Secondary SAR Resources

What We Have Now (Secondary SAR):

- Aircraft and Vessels:
  - 9 CH-146 Griffon helicopters (Combat Support)
  - 4 CH-138 Twin Otter aircraft (Utility Transport)**
  - 24 CH-124 Sea King helicopters (Maritime patrol)
  - 16 CP-140 Aurora aircraft (Maritime patrol)
  - All other CF aircraft/vessels necessary/capable

- Equipment:
  - Deployable IFR airport support (radar/lighting)
  - Deployable medical facilities
  - AnyCF equipment necessary/appropriate

- Personnel and Facilities:
  - Four Forward Operating Locations (facilities)
  - AnyCF personnel/facilities necessary/capable
  - Canadian Ranger Patrols
Capability and Flexibility
SAR is all about Teamwork
Density of SAR Incidents
Marine SAR incidents can get big
Size does not Matter
Ice Free does not mean “No Ice”

One Example

East Coast Icebergs

By 15 March 2008, 249 icebergs had drifted south of 48N.

By 28 March this had increased to 739.

Just one month into the 2008 season there have already had more icebergs threaten mariners (and oil rigs) near the Grand Banks than from 2004-2007 combined.
Looking at the Big and Uncertain Picture in the Arctic Ocean Basin
Canada recently entered into an International Arctic SAR agreement
Predicting a Future Arctic Ocean

Rapidly changing conditions in the Arctic Ocean Basin driven by global warming will impact international shipping and the global economy. The changing and warming Arctic will impact the global trade system. The market responses and governance normally follows.

In a time of change there can be great opportunities and this can have a positive impact on the world community. Canada is working hard to seize the opportunities.
Northwest Passage
The Canadian Rangers are Key
In the Arctic, simple systems work as do hip waders.
Arctic Shipping

Domestic Resupply
Resource Development
Fishing is increasing
Marine Ecotourism
Pioneering Routes—NE and NW passage
Research
Mineral Exploration
Defense and Security Surface and Subsurface
Arctic Shipping Drivers

There are a number of factors driving arctic shipping:

1. Changing Sea-Ice Conditions
2. Increasing Northern populations-resupply
3. International in transit shipping
4. Increased natural resource development
5. Hydrocarbon exploration under an extended Continental shelf
6. Increased governmental marine activity
7. Ecotourism
Existing Port Infrastructure
There are lots of activity in the region.

Off West Greenland during the 2008 season there will be 75 Major Cruise ship visits and 150,000 cruise ship passengers.

Over 300 polar flights cross Canadian Arctic airspace.

The Danish Rear Admiral responsible for Greenland made it clear he had little SAR capability.
Resource development
The bulk carriers will be 8 times larger
Arctic Shipping Routes
SAR and Pollution Incidents are often linked

The Canadian Forces have a long history of assisting with respect to pollution incidents. On the remote coasts, 2 CRPG could have a central and key role.
Canada as a Coastal State-Governance and Pollution Response

Under the Law of the Sea Convention, Canada has international legal obligations to protect the marine environment. This is not new but the Arctic presents special challenges. One of them is a robust salvage response capability.
Maritime Air is Needed Early and Often in the Arctic. A good navigator is always needed.
Heavy Icebreaker
Length: 120 m
Power: 29,400 kw
Speed: 19 knots

Icebreaking in most severe Gulf and Arctic conditions.
Icebreaker Fleet

One Heavy Icebreaker

Five Medium Icebreakers

Ten Light Icebreakers

One Ice Strengthened Vessel

Two Air Cushion Vehicles
Canada’s Polar Icebreaker
CCG John G. Diefenbaker
Polar Icebreaker Project Status

Unique Vessel
Non Nuclear
Design RFP
8 Month Operation
Multi-Roles
International Cruise ship Activity
These are Coming Soon- Maraid will be needed for 2000+
Pleasure Vessels

Various small vessels are starting to enter Canadian waters and these are certain to generate SAR incidents in the coming years.

A small yacht is a relative term
Adventure Travel is occurring in the region and the potential for SAR incidents rises.
The Hot Zone

The oil-rich waters around the Arctic Circle are heating up—and are up for grabs. A look at some of the territorial battles ahead.

1. U.S. Continental Shelf
   If the U.S. ratified the Law of the Sea treaty, it could claim territory here roughly half the size of Alaska.

2. Chukchi Sea
   Shell has plans to explore here. But since Russia is claiming nearly half the Arctic Ocean, it may run into trouble.

3. Beaufort Sea
   A 100-square-mile area in this body of water is said to be rich with oil and gas, but it’s in dispute—so no one has bid on a drilling lease offered by both Canada and the U.S.

4. Lomonosov Ridge
   This giant undersea landmass extends from Russia to Greenland—and the two countries are fighting over it. In June, Russia said its scientists found evidence of a 70-billion-barrel deposit and claimed rights to the whole ridge.

Fortune, August 20, 2007
Transpolar Route

It is possible with ship design to develop ice class cargo vessels that could go over the top and avoid either the North East Passage or the North West Passage.

It has been reported that China is looking at this option. Transshipment ports would be built in Iceland and near the Bering Straits.
Marine Incidents are often used by Human Error
Clipper Adventurer Grounding 2010
Distance (Nautical Miles)
Hamburg to Yokohama

Northern Sea Route ~ 6,920
Suez Canal ~ 11,073
Panama Canal ~ 12,420
Cape of Good Hope ~ 14,542

INSROP (1999)
The Maritime Arctic of Today
Snapshot of Summer 2004 Traffic

Modes of Arctic Marine Transport
- Destinational / Regional
- Trans-Arctic
- Trans-Arctic with Transshipment
- Intra-Arctic

107 Voyages
5 NWP Transits
6 Research Ships
165 Voyages
52 Ships
27 Cruise Ships (53~2005)
0 NSR Transits
3-Ship Drilling
Hundreds of Transits
High Intensity Fishing
Cooperation in the Arctic is Key
Canada works with its Neighbour
Local Knowledge is Key. JRCC will listen
The Mark One Eyeball Works
Training and Teamwork Count
We need to change the Way we look at the Arctic Ocean Basin
Challenges in the SAR System

Dealing With The Challenges

- Priorities of Tasks and who can deliver:
  - Notification of distress to responders
  - Victims; automated systems; family etc

- Search/Location of the incident site
  Company/friends/family; automated systems; CF/CASARA/Rangers/Police

- Incident stabilization: protect survivors in situ
  Victims/company; CF/Rangers/Police

- Provision of assistance in situ: survival/medical
  CF/Rangers/Police

- Rescue: removal of survivors to civilization/care
  CF/Rangers/Police;
New Models for the Arctic

We need to take a comprehensive approach
We need to engage industry
Modern Vessels can and will sink
Yes, even UAVs in your Future
2011 IASAR is a work in progress
The Next Steps

The evolution of the Arctic SAR mission into a bright future

Some thoughts to strengthen capability
-- More training (Marine, CASAR, Medical etc.)
-- More capability
-- More equipment
-- Meeting SAR partners
-- More exercises - actual and tabletop
-- Lessons learned
Conclusion

The story has just begun. It is being written as we speak. The changes in sea-ice are unprecedented and stunning and increase the need for SAR.

International shipping and resource development will be developed driven by global economic factors and will impact SAR.

Industry is going to be at the forefront of these developments with a increased capacity to play a more role in SAR and other areas of government response.
The Future- “Use it or Lose It”

Increasing arctic and marine activity will increase the need for a robust SAR capacity in the Arctic Basin
Thank you for Listening
It has been my privilege
Questions