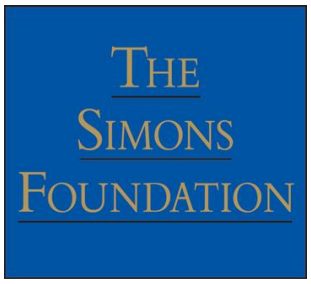


# CIRCUMPOLAR MILITARY FACILITIES OF THE ARCTIC FIVE

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# Circumpolar Military Facilities of the Arctic Five

**Introduction**

"Is the [Arctic] region again becoming militarized?"[1] The question was asked in 2011 by the Canadian Senate Committee on Security and Defence in its interim report on Arctic sovereignty and security, and it is the question that prompts the following compilation of current military facilities in the circumpolar region.[2]

A simple listing of military bases, facilities, and equipment, either based in or available for deployment in the Arctic Region, does not itself answer the question of militarization, but the listing is intended to contribute to the informed consideration of it, as well as to informed assessments of the likely security implications of particular military procurement programs and development. The objectives is to aid efforts towards a better understanding of the extent and nature of current and planned military capacity in the Arctic.

What follows relies on a broad range of media, government, academic, and research centre sources, all of which are indicated in the footnotes.[3]

This is necessarily a "work in progress." All sections of these listings will continue to be updated to accommodate new information and changes in limitary posture and engagement relative to the Arctic.

Comments, corrections, further information, and suggestions for additional sources are all most welcome. Please send any such comments, corrections, and additions to:

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[1] Standing Senate Committee on National Security and Defence, "Sovereignty and Security in Canada's Arctic: Interim Report," The Honourable Pamela Wallin, Chair; The Honourable Romeo Dallaire, Deputy Chair, March 2011. http://www.parl.gc.ca/Content/SEN/Committee/403/defe/rep/rep07mar11-e.pdf

[2] The current list is confined to the five Arctic Ocean states, but the intention is to expand it to include all the states of the Arctic Council.

[3] Of particular initial value have been and remain the following:
Rob Huebert, "The Newly Emerging Arctic Security Environment," March 2010, Canadian Defence and Foreign Affairs Institute. http://www.cdfai.org/PDF/The%20Newly%20Emerging%20Arctic%20Security%20Environment.pdf
Rob Huebert, Heather Exner-Pirot Adam Lajeunesse, Jay Gulledge, "Climate Change and International Security: The Arctic as a Bellwether," Center for Climate and Energy Solutions, 2012. http://www.c2es.org/docUploads/arctic-security-report.pdf
*Defence Watch*, the column/blog of David Pugliese in the *Ottawa Citizen*. http://ottawacitizen.com/category/news/defence-watch
Standing Senate Committee on National Security and Defence, "Sovereignty and Security in Canada's Arctic: Interim Report," The Honourable Pamela Wallin, Chair; The Honourable Romeo Dallaire, Deputy Chair, March 2011. http://www.parl.gc.ca/Content/SEN/Committee/403/defe/rep/rep07mar11-e.pdf
Siemon T. Wezeman, "Military Capabilities in the Arctic," SIPRI Background Paper, March 2012. http://books.sipri.org/product_info?c_product_id=442

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## 1. Security Assets based in the North for Operations in the North

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- 1st Canadian Ranger Patrol Group (under JTFN)[5]
- 440 Transport Squadron (under JTFN)[6]

**Whitehorse, Yukon**

- JTFN detachment[7]

**Alert, Nunavut**

- Canadian Forces Station Alert[8] (since the late 1950s)

**Eureka, Nunavut**

- A link between Alert and Ottawa for the High Arctic Data Communications System II (HADCS II) between Eureka and Alert on Ellesmere Island, which "provides secure data, telephone, fax, DWAN, Internet communications between CFS Alert and Ottawa:
    - A chain of six unmanned line-of-sight microwave repeaters – Grant, Ida, Victor, Whiskey, Yankee, Blacktop – from CFS Alert to Eureka with a satellite link between Eureka and Ottawa.[9]

**Iqaluit, Nunavut**

- JTFN detachment[10]
- Coast Guard MCTS Centre[11] (Maritime Communication and Traffic Services)

**Forward Nanisivik Naval Facility, Nunavut**

- Naval berthing/docking and refuelling facility[12]
    - Location: Baffin Island, Nunavut
    - Facility approved by Nunavut Impact Review Board
    - Intended initially to be fully operational by 2015, with initial operating capacity in 2012, then delayed to 2016,[13] and now anticipating awarding the construction contract for a scaled back facility in 2014 for a fully operational naval facility in 2017.[14]
    - In March 2012 DefenceWatch reported a major scaling back of plans for the facility, which was again confirmed in September 2014.[15]

        Costs:

        - In December 2013, a briefing note to Defence Minister Rob Nicholson approved a $258 million plan to build the docking and refuelling station. The station was first estimated to cost $100 million in 2007. In September 2014, the Defence Department scaled back the

[4] JTFN - http://www.forces.gc.ca/en/operations-regional-jtf-north/jtf-north.page
[5] 1st Canadian Ranger Patrol Group - http://www.army-armee.forces.gc.ca/en/1-crpg/index.page
[6] 440 Transport Squadron - http://www.rcaf-arc.forces.gc.ca/en/17-wing/440-squadron.page
[7] JTFN Detachment Yukon - http://www.forces.gc.ca/en/operations-regional-jtf-north/detachments.page
[8] Canadian Forces Station Alert - http://www.rcaf-arc.forces.gc.ca/en/8-wing/alert.page
[9] Royal Canadian Air Forces - http://www.rcaf-arc.forces.gc.ca/en/8-wing/alert.page
[10] JTFN Detachment Iqaluit - http://www.forces.gc.ca/en/operations-regional-jtf-north/detachments.page
[11] MCTS Centre - http://www.ccg-gcc.gc.ca/eng/MCTS/Centres
[12] "Nunavut regulator approves Arctic naval facility," CBC Online, 25 October 2013, http://www.cbc.ca/news/canada/north/nunavut-regulator-approves-arctic-naval-facility-1.2251695
[13] Col. (Retd) Sylvain Lescoutre (24 April 2012), "Forward Operating Location Nanisivik: Halifax's Gateway to Canada's Arctic," Royal United Services Institute of Nova Scotia, http://www.rusi.ca
[14] Building the North: Project List, Canada's Economic Action Plan, Government of Canada, http://actionplan.gc.ca/en/page/building-north
[15] David Pugliese (22 March 2012), "DND significantly cuts back on Harper's much-ballyhooed plan to build a naval facility at Nanisivik," Defence Watch, Blogs.OttawaCitizen.com, http://blogs.ottawacitizen.com/2012/03/22/dnd-significantly-cuts-back-on-harpers-much-ballyhooed-plan-to-build-a-naval-facility-at-nanisivik/

budget for the project due to the increasing costs. The budget for the base is now $116 million.[16]

Operational Specifications:

- Will now be a part-time, summer-only refuelling station for the Arctic Offshore Patrol Ships (and other govt ships),
- Operational in summer and will be shut-down when not in use,
- No longer planning a jet-capable airstrip, instead a gravel runway at nearby Arctic Bay (built by Government of Nunavut)
- No permanent housing – will use Department of National Defence (DND) trailers

**Resolute Bay, Nunavut**

- Canadian Forces Arctic Training Centre (CAF ATC), which will "allow the [Canadian Army] to generate sufficient forces at an appropriate level of readiness for force employment to help meet the range of objectives and contingencies specified by the Government of Canada". [17]
- The CAF ATC will include:
  - Accommodations for up to 140 DND/CAF personnel
  - Dining and recreation building
  - 1100 square meters of warehouse space, including:
  - Facilities for mechanical work
  - Vehicle storage
  - Classroom
  - Briefing rooms
  - Operations centre

**Forward Operating Locations (FOLs) for CF-18s**

- Inuvik
- Yellowknife
- Iqaluit
- Rankin Inlet

**Forward Transportation Hubs**

There has been some public discussion regarding the development of forward operating bases:

Canadian Military Journal: "Defence must develop a greater capacity to operate in the Arctic for extended periods. This can be done by acquiring the necessary infrastructure in key locations that can be used as either a hub or as temporary forward operating bases. Such a capability would allow the CF to better deal with rapid response operations, including such matters as Search and Rescue. Moreover, it would allow the government to have better situational awareness, and to project key national elements anywhere within the Arctic region on very short notice."[18]

The Toronto Star reports on a study commissioned by the Canadian Forces operational support command exploring the possibility of creating minimal transportation hubs with a landing strip and storage facilities at various locations in the Arctic – including Alert, Inuvik, Whitehorse, Rankin Inlet, Iqaluit, and Nanisivik (Similar to plans for overseas hubs for prepositioning basic equipment and facilities).[19]

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[16] The Prince George Citizen (8 September 2014), "Plans for Arctic Naval Base scaled back after costs soared," http://www.princegeorgecitizen.com/

[17] Department of National Defence (15 August 2013), "Backgrounder - Canadian Armed Forces Arctic Training Centre," BG 13.036 - http://www.forces.gc.ca/en/news/article.page?doc=canadian-armed-forces-arctic-training-centre/hkdons6l

[18] Tony Balasevicius, "Towards A Canadian Forces Arctic Operating Concept," Canadian Military Journal, http://www.journal.forces.gc.ca/vo11/no2/05-balasevicius-eng.asp

[19] Allan Woods (14 July 2011), "Canada looking at building military bases in Arctic," The Star, http://www.thestar.com/news/canada/article/1024675--star-exclusive-canada-looking-at-building-military-bases-in-arctic

"…this new plan would see the force's hulking C-17 transport aircraft be loaded with personnel, supplies and a disassembled military helicopter — likely at CFB Trenton in Ontario — and dispatched to the northern hub. There, the helicopter would be reassembled and the Arctic hub would be used as a base for the mission.

## 1.2 Equipment

### 1.2.1 Air

**CC-138 Twin Otters**[20]

- Location: Yellowknife, Northwest Territories
- 440 Squadron operates four Canadian-designed and –produced
- Approximately 55 aircrew and technicians, who are a mixture of Regular Force and Reserve Force members
- Maintains capability for "off-airport" operations on skis in the winter and on tundra tires in the summer
- *Defence Acquisition Guide 2014*: The CC-138 Twin Otter Life Extension Project will focus on making the aircrafts operational beyond 2018 by replacing the "Wing Boxes, install Cockpit Voice Recorders/Flight Data Recorders" and the aircrafts overall supportability. The project is estimated to cost between $20 and $49 million, with final delivery in 2020.[21]


Photo Credit: CC-138 Twin Otter side views, Stephen Priestley, http://www.casr.ca/101-af-cc138-twin-otter.htm

### 1.2.2 Land

**Canadian Forces Station Alert**[22] (since the late 1950s)

- Location: Qikiqtaaluk Region, Nunavut
- Collects signal intelligence
- High Frequency and Direction Finding (HFDF) facilities to support search and rescue
- Usually about 25 Canadian Forces personnel stationed there, plus 30 civilian support personnel and up to four Environment Canada staff

**North Warning System**[23] (NWS)

- A joint United States and Canadian radar system , including 11 long-range and 36 short-range radars along Arctic coast of Canada
- These are the main part of a "radar buffer zone" 4,800 km long and 320 km wide (from the Alaska border to across Baffin Island to Greenland and down the Labrador Coast)[24]

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"Based on calculations that factor in the time it would take to travel to the Arctic from Trenton and the costs involved (which was then cross-referenced with ship and airline traffic, as well as the probability of space junk hurtling toward Earth), the study found Nunavut's Rankin Inlet — on the western shore of Hudson's Bay — would be the most cost-effective spot for a single hub, reducing transportation costs by 28 per cent.
"The average response time to get anywhere in the Arctic from the Rankin Inlet staging base was still 48 hours, underlining the vast territory to be covered. Resolute, located on Cornwallis Island in Nunavut, offers the quickest average response time at 35 hours, but the runway there would require further development to accommodate a C-17 aircraft, the study said.
"From a cost-avoidance perspective, the optimal number of hubs would be three, corresponding to Iqaluit, Yellowknife and Rankin Inlet," said the report, noting that an average of 49 per cent of transportation costs could be saved.
"Using a three-hub solution, the maximum response time would be 46 hours instead of 64 hours for a single hub. The minimum response time would be 16 to 18 hours for locations around the hubs," said the study.

[20] CC-128 Twin Otters - http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/cc-138.page
[21] National Defence and the Canadian Armed Forces (June 2014). Defence Acquisition Guide 2014, http://www.forces.gc.ca/en/business-defence-acquisition-guide/index.page
[22] Canadian Forces Station Alert - http://www.rcaf-arc.forces.gc.ca/en/8-wing/alert.page
[23] North Warning System - http://www.forces.gc.ca/en/news/article.page?doc=north-warning-system/hgq87x9w
[24] National Defence and the Canadian Armed Forces - http://www.forces.gc.ca/en/news/article.page?doc=the-canada-u-s-defence-relationship/hob7hd8s

        - The bulk of the NWS radars are not at the frontier, but are well within Canadian territory, and thus cannot monitor the air approaches to Canadian territory in the high Arctic
- "The Canadian part of the North Warning System is operated and maintained by Pan Arctic Inuit Logistics" (PAIL).[25]
- PAIL[26] is wholly owned by the Inuit through organizations linked to the four territories delineated by land claims agreements: Inuvialuit (within the NWT), Nunavut, Nunavik (Northern Quebec), and Nunatsiavut (Northern Labrador). The NWS work is done through a joint venture between PAIL and ATCO Structure and Logistics,[27] a manufacturer of modular buildings, remote workforce accommodations, emergency response services, etc.
- The Canadian Senate heard testimony from an Inuk Corporate Executive, Charlie Lyall, endorsing the Canadian military presence: "For Inuit, an active military presence in the Arctic is vital and provides strong partnerships for its major projects." He told the Senate Committee that Inuit participation in clean-up of old Distant Early Warning (DEW) sites had expanded their capacity for Northern contract work, as well as for undertaking contract negotiations. He also spoke about the Inuit role in North Warning System operation and maintenance. "DND can continue to play a vital role in the fiscal and corporate development process for Inuit."[28]

**All-Terrain Vehicles**

David Pugliese:

- "The Army has an Arctic capability project underway called the medium all-terrain vehicle. Canada already operates the Hägglunds Bv206, a tracked armoured vehicle built by a Swedish subsidiary of Britain's BAE Systems.
- "We have a re-life package for that or separately we have the BvS10," said Jim Reid, BAE's business development director for Canada.
- Reid said such vehicles could play more than just a role in the Arctic.
- "It's not just about the snow. It actually gives you a capability to do other things," he said, noting that the BvS10 has been used in Afghanistan and Sierra Leone.
- General Dynamics Land Systems-Canada and ST Kinetics, a Singapore firm, also have their eye on the Army project. They've joined forces to promote the Bronco New-Generation Marginal Terrain Vehicle.
- No cost details or timelines have been released on the Army project."[29]

In April 2014 the Government announced that it would acquire 17 "marginal terrain" vehicles for the Canadian Special Operations Forces, for operating in Arctic and desert conditions, but that the Canadian Army proposal to acquire 100 such vehicles for use in the Arctic and elsewhere to replace the Bv206 would be delayed until after 2023.[30]

**Stealth Snowmobiles**

- "In August 2011, the Department of National Defence informed industry it was interested in the development of a prototype snowmobile for covert military operations in Canada's Arctic. The department's science branch, Defence Research and Development Canada, has reserved 500,000 Canadian dollars to develop a prototype gas-electric hybrid vehicle. The government has told industry that existing gas-powered engines are too noisy for covert operations, and it wants a snowmobile with a silent mode that could be activated when necessary.
- The special operations forces are interested in acquiring such a vehicle, military sources said. It is expected that a prototype can be developed by next March."[31]
    - In 2013 the military was testing a new hybrid-electric snowmobile, to test speed, noise levels, endurance, and acceleration. The Globe and Mail reports the snowmobile, nicknamed Loki, has a $620,000 price tag,

[25] March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, "Sovereignty and Security in Canada's Arctic: Interim Report," The Honourable Pamela Wallin, Chair; The Honourable Romeo Dallaire, Deputy Chair, March 2011. http://www.parl.gc.ca/Content/SEN/Committee/403/defe/rep/rep07mar11-e.pdf
[26] Pan Arctic Inuit - http://www.pail.ca
[27] ATCO Structure and Logistics - http://www.atcosl.com/en-ca/
[28] March 2011 Interim Senate Report - http://www.parl.gc.ca/Content/SEN/Committee/403/defe/rep/rep07mar11-e.pdf
[29] Referred to by David Pugliese (25 January 2012), "Canada Ramps Up Arctic Arsenal," http://www.defensenews.com/apps/pbcs.dll/article?AID=2012306250001
[30] "Canada' Special Forces to get new vehicles for the Arctic but Army left out in the cold," Post Media, 18 April 2014.
[31] Referred to by David Pugliese (25 January 2012), "Canada Ramps Up Arctic Arsenal," http://www.defensenews.com/apps/pbcs.dll/article?AID=2012306250001

the value of the development contract with CrossChasm Technologies of Waterloo, Ontario. The report says "National Defence has made it clear it does not intend to spend any more money on Arctic mobility for eight years, but its research branch says the evaluation of the silent snowmobile, though still in its early states, will continue."[32]

- Meanwhile, the Canadian Press reports on the slow pace of replacing the current inventory of snowmobiles and all-terrain vehicles in the north. While 1980s era vehicles were slated for replacement, Arctic military units have been informed they will have to stay in service much longer. In the last few years 310 snowmobiles have been replace, out of a fleet of 963, and another 310 all-terrain vehicles have been required. However, an Army spokesperson has confirmed that "there are no plans at this time to purchase (additional) Arctic vehicles." New acquisitions are not scheduled until 2021/22 when the "Domestic and Arctic Mobility Enhancement" project is slated to kick in.[33]

#### 1.2.3 Sea

Not available

### 1.3 Organizations and Operational Units (personnel)

**Command Centres: JTFN (including locations of headquarters and detachments)**

- Joint Taskforce North (JTFN)[34]
- Headquartered in Yellowknife
- One of six regional joint task forces under the Canadian Joint Operations Command, the six are: JTF North (headquartered in Yellowknife, Pacific (Victoria), West (Edmonton), Central (Toronto), East (Montreal), Atlantic (Halifax)
- JTFN describes its area of responsibility as covering about four million square kilometres, 40 percent of Canada's land mass, and 75 percent of its coastline which includes 94 major islands and 36,469 minor islands of the Arctic Archipelago
- There has been a permanent military command in Yellowknife since 1970

**440 Transport Squadron[35] (under JTFN)**

- Location: Yellowknife, Northwest Territories
- The only RCAF unit permanently stationed in the Canadian north
- 440 Squadron's tasks include airlift, utility and liaison flights in support of Canadian Forces Northern Area, the Canadian Rangers, other Canadian Forces activities and the Cadets in the North; can assist in search and rescue missions, but it is not a dedicated search and rescue unit

**Reserve Units**

- JTFN also hosts a small army reserve unit (well short of 100) based in Yellowknife

**Training Facilities**

- Canadian Forces Arctic Training Centre[36]
- Location: Resolute Bay, Nunavut
- Opened Aug 16, 2013
- Will be used for training and operations

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[32] Andy Blatchford (18 August 2014), "Canadian Forces test 'Loki,' a stealth snowmobile for covert Arctic ops," Globe and Mail, http://www.theglobeandmail.com/news/national/canadian-forces-test-loki-a-stealth-snowmobile-for-covert-arctic-ops/article13832272/

[33] Murray Brewster (18 August 2013), "Army scrambles to buy snowmobiles for Arctic units amid spending deep freeze," Globe and Mail, http://www.theglobeandmail.com/news/national/army-scrambles-to-buy-snowmobiles-for-arctic-units-amid-spending-deep-freeze/article13831002/

[34] JTFN is one of six regional joint task forces under the Canadian Joint Operations Command, the six are:
JTF North (headquartered in Yellowknife, Pacific (Victoria), West (Edmonton), Central (Toronto), East (Montreal), Atlantic (Halifax). Details of JTFN are at the Department of National Defence Website: http://www.cjoc.forces.gc.ca/cont/regions/jtfn-foin-eng.asp

[35] 440 Transport Squadron - http://www.rcaf-arc.forces.gc.ca/en/17-wing/440-squadron.page

[36] Department of National Defence (15 August 2013), "Backgrounder - Canadian Armed Forces Arctic Training Centre," BG 13.036 - http://www.forces.gc.ca/en/news/article.page?doc=canadian-armed-forces-arctic-training-centre/hkdons6l

- Pre-position equipment and vehicles
- Will also "serve as a command post for emergency operations and disaster response in support of civilian authorities."

- The new Arctic Training Centre facilities include:
  - Accommodations for up to 140 DND/CAF personnel
  - Dining and recreation building
  - 1100 square meters of warehouse space, including:
    - Facilities for mechanical work
    - Vehicle storage
    - Classroom
    - Briefing rooms
    - Operations centre

- Press reports have noted the increased focus on emergency response capacity and disaster assistance to civilian authorities

  Defence Minister Rob Nicholson put it this way:
  *"The Canadian Armed Forces Arctic Training Centre will reinforce the Canadian Armed Forces' presence in this important region of Canada while providing support to civilian authorities."*[37]

- DND had earlier explored a major expansion in Resolute Bay with a paved runway, hangars, fuel installations that would support DND and SAR operations in north,[38] even though it would not have been, as reported by the CBC, the permanent search and rescue base for which northerners have been calling.[39]

- The same CBC report quotes a DND official:

  *"instead of a facility dedicated solely to protecting Canadian Arctic sovereignty, soldiers there will learn how to respond to accidents and disasters in the High Arctic…My focus is mainly building a training facility but to also have a facility where we can conduct operations."*[40] [41]

**CC-138 Twin Otters Aircrew**[42]
- Location: Yellowknife, Northwest Territories
- Approximately 55 aircrew and technicians, who are a mixture of Regular Force and Reserve Force members

**Canadian Forces Station Alert Personnel**[43] (since the late 1950s)
- Location: Qikiqtaaluk Region, Nunavut
- Usually about 25 Canadian Forces personnel stationed there, plus 30 civilian support personnel and up to four Environment Canada staff

[37] "Ottawa opens scaled-back Arctic training facility in Nunavut's Resolute Bay," Nunatsiaq Online, 15 August 2013, http://www.nunatsiaqonline.ca/stories/article/65674ottawa_opens_scaled-back_arctic_training_facility_in_resolute_bay/
[38] David Pugliese (26 December 2011), "Royal Canadian Air Force mulling major Nunavut base expansion, documents show," Postmedia News, http://news.nationalpost.com/2011/12/26/royal-canadian-air-force-mulling-major-nunavut-base-expansion-documents-show/
[39] "Ottawa moves ahead with High Arctic military centre," CBC News, 27 November 2011, http://www.cbc.ca/news/canada/north/story/2011/11/27/north-high-arctic-military-centre.html
[40] "Ottawa moves ahead with High Arctic military centre," CBC News, 27 November 2011, http://www.cbc.ca/news/canada/north/story/2011/11/27/north-high-arctic-military-centre.html
[41] A PostMedia report cites cost estimates for this proposed expansion ranging from $25 million to $200 million for "improving a strategically important airfield at Resolute Bay." The report quotes an internal report from the Defence Science Advisory Board as saying that the Department of National Defence is reluctant to cover the full costs since it will be used by other government departments.
Lee Berthiaume, "Infighting freezes Arctic plan," PostMedia, 30 July 2013. http://www.leaderpost.com/index.html
[42] CC-128 Twin Otters - http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/cc-138.page
[43] Canadian Forces Station Alert - http://www.rcaf-arc.forces.gc.ca/en/8-wing/alert.page

**Rangers**

*1st Canadian Ranger Patrol Group* (under JTFN)[44]

- Headquartered in Yellowknife[45]
- Encompasses Nunavut, Yukon, Northwest Territories, and Northern British Colombia[46]
- The 1CRPG is part of a national ranger force of about 4,000, operating in more than 200 communities, with language capabilities in 26 languages, many of which are Aboriginal[47]
    - "The 1st Canadian Ranger Patrol Group (1 CRPG) encompasses Nunavut, Yukon, Northwest Territories, and Atlin, B.C. which account for about 40 percent of Canada's land mass. 1 CRPG has over 1750 Rangers in 60 patrols and more than 1600 Junior Canadian Rangers (JCR) in 41 communities across the north."[48]
    - an earlier (Feb 2012) report indicated that the 58 hamlets then served by 1CRPG were distributed in the north with 25 patrols in Nunavut, 22 in Northwest Territory, 11 in Yukon Territory and 1 in Atlin, BC.[49] The website of the Canadian Army includes an interactive map showing all locations along with brief descriptions of each unit's activities.[50]
    - DND offers this comment on the demographics and conditions of the areas under Ranger patrols: "With only three medium-sized cities to speak of, it oversees many small communities, some of which are only accessible by air or by ice in the winter. Many of the residents in 1 CRPG speak another language other than French or English as their primary language. And the land covered by CFNA is buried by snow and ice, and covered in darkness for many months each year."[51]
- Ranger tasks include:
    - providing local expertise to army
    - serving as guides and advisors in operations and exercises
    - conducting North Warning System (NWS) patrols
    - assisting in search and rescue
    - "…their presence and vigilance help assert Canadian sovereignty and provide Canada Command with 'eyes and ears' in the country's most remote areas."[52]
- In February 2013 a Ranger died while on an exercise[53]
    - Donald Anguyoak died while taking part in Exercise Polar Passage, which was to run from Feb. 9 to March 3. The cause of death was not immediately known.
- "The Government, as Prime Minister Harper announced in 2007, is enlarging the Canadian Rangers. JTFN will add 300 Rangers, bringing the total up to 1,900 in the North, with numbers nationwide to rise from about 4,000 up to 5,000."[54]
    - 2013, 4,990 Rangers are serving in 178 patrols
    - National Policy Review is to be completed in 2013
    - 2015, the replacement of Lee-Enfield rifles is to begin with new rifles phased in over three years to 2018.[55]
- See Operation NUNALIVUT (annual exercise involving the Rangers)

Photo Credit: Ranger, Canadian Army: http://www.army-armee.forces.gc.ca/en/canadian-rangers/index.page

[44] Canadian Army - http://www.army-armee.forces.gc.ca/en/1-crpg/index.page
[46] Canadian Army - http://www.army-armee.forces.gc.ca/en/1-crpg/index.page
[47] "About the Canadian Rangers," (last modified 6 June 2014), http://www.army-armee.forces.gc.ca/en/canadian-rangers/about.page
[48] "1st Canadian Ranger Patrol Group,"(last modified 12 July 2013), http://www.army-armee.forces.gc.ca/en/1-crpg/index.page
[49] Canadian Army - http://www.army-armee.forces.gc.ca/en/1-crpg/index.page
[50] Map of Canadian Ranger Patrols - http://www.army-armee.forces.gc.ca/en/1-crpg/patrols.page
[51] http://www.army.forces.gc.ca/land-terre/maps-cartes/1CRPG-1GPRC-txt-eng.asp
[52] DND - BG #09.002a - 17 April 2009. The Canadian Forces in the North. http://www.cfna.dnd.ca/nr-sp/09-002a-eng.asp
[53] "Canadian Ranger dies during Arctic military exercise," CTV News, 19 February 2013, http://www.ctvnews.ca/canada/canadian-ranger-dies-during-arctic-military-exercise-1.1162531#ixzz2LTq6utiu
[54] March 2011 Interim Senate Report, p7. - http://www.parl.gc.ca/content/sen/committee/403/anti/rep/rep03mar11-e.pdf
[55] Building the North: Project List, Canada's Economic Action Plan, Government of Canada - http://actionplan.gc.ca/en/page/building-north

P. Whitney Lackenbauer on Rangers:

*"The danger, of course, is to manage expectations so that policy-makers do not try to make the Rangers into something they are not. They are Reservists, but they cannot be expected to possess the same capabilities as southern-based units. Making them more military will neither improve Canada's security nor our sovereignty. … The Rangers are not broken, and I see danger in trying to fix them."*[56]

*Re 2015 replacement of Lee-Enfield rifles*

- The Canadian Army has "acknowledged to the [Ottawa] Citizen that it was having trouble coming up with enough money to buy new rifles to replace the 60-year-old guns used in the Arctic by the Canadian Rangers. The project was supposed to deliver the rifles last year at a cost of $10 million but the army acknowledges the purchase won't happen until 2017-2021."[57]

## 1.4 Policy Units and Regulators

**Northern Canada Vessel Traffic Services (NORDREG)**

- Vessels over 300 tons (or over 500 tons combined of a vessel towing or pushing another vessel) and and/or carrying dangerous materials sailing in northern waters are required to submit a sailing plan, provide position updates, report any deviation from the sailing plan, and send in a final report.[58] The compulsory reporting reinforces Canada's sovereignty claims but, on the other hand, draws attention to the lack of enforcement capacity.[59] The 2011 Senate Committee Report describes NORDREG in this way:

"Canada also maintains situational awareness through law and regulation in the North, particularly through NORDREG—the Northern Canada Vessel Traffic Services Zone. In the summer of 2010, NORDREG was extended from 100 nautical miles to 200 nautical miles offshore.

"Whereas NORDREG compliance was originally voluntary, as of summer 2010 it became mandatory. All vessels of 300 gross tonnes or more, or 500 gross tonnes combined weight if involved in a towing or pushing operation, and any vessel or combination of vessels carrying pollutants or dangerous goods, must submit reports before entering, while in, and upon leaving the NORDREG Zone.

"The Canadian Coast Guard must verify that the vessels are suitably constructed to withstand ice conditions, monitor their location at all times, and provide support services including updated ice condition information. [One witness] recommended that all vessels, not just those over 300 gross tonnes, be subject to NORDREG."[60]

The Maritime Communications and Traffic Services Centre in Iqaluit receive reports from ships during the period of approximately May 15 to December 31 for:

- Arctic waters from the Canada/Greenland border to longitude 141º W, and north to the geographic North Pole;
- Waters of the Mackenzie River watershed;
- Waters of Hudson Bay, Hudson Strait, Foxe Basin, Ungava Bay, and James Bay.[61]

[56] P. Whitney Lackenbauer, St. Jerome's University, University of Waterloo, cited in the March 2011 Interim Senate Report, p. 9.
[57] "Canada' Special Forces to get new vehicles for the Arctic but Army left out in the cold," Post Media, 18 April 2014.
[58] Canadian Coast Guard - http://www.ccg-gcc.gc.ca/eng/MCTS/vtr_Arctic_Canada
[59] Heather Exner-Pirot (12 July 2010), "What's In a Name? NORDREG Becomes Mandatory," Eye on the Arctic, http://eyeonthearctic.rcinet.ca/blog/136-heather-exner-pirot/284-whats-in-a-name-nordreg-becomes-mandatory
[60] March 2011 Interim Senate Report, p. 15 - http://www.parl.gc.ca/content/sen/committee/403/anti/rep/rep03mar11-e.pdf
[61] Canadian Coast Guard - http://www.ccg-gcc.gc.ca/eng/MCTS/Centres#Iqaluit
Peter Varga (26 July 2013), "Iqaluit Coast Guard office maintains pan-Arctic vigil," Nunatsiaq Online, http://www.nunatsiaqonline.ca/stories/articel_print/34289/

**The Arctic Security Working Group**[62]

- The 2011 Senate Committee Report: "The *Arctic Security Working Group* is made up of representatives from the Canadian Forces, Canadian Coast Guard, other federal government departments and agencies, the territorial governments, aboriginal peoples organizations and other Northern stakeholders.

*"It meets twice a year and has dealt with issues such as the possibility of terrorist attack on natural gas facilities, contraband moving through the mail and the increased risk of an air disaster due to increased air traffic. Col (Ret'd) Leblanc said the ASWG was created to improve "practically non-existent communications" between departments, and to improve security. He recommended to the Committee that the ASWG be maintained."*[63]

The most recent meeting of the Working group was in May 2013 in Yellowknife. The Working Group's press release offers additional background:

*"Some 60 representatives of federal and territorial government agencies as well as non-governmental organizations" were involved. The group meets twice a year "to enhance the interaction and working relationships of the ASWG membership. It provides a venue for discussing matters that address security and safety issues in the Arctic in a team environment. 'The Team North approach to addressing the security concerns of the Arctic is imperative because no single department, federal or territorial, works independently in the north; collectively, success will be achieved and the Government of Canada's mandate will be fulfilled,' said Brigadier-General Chris Whitecross, the Commander of Joint Task Force North (JTFN). …The Team North approach is essential for ensuring the safety and security of Canadians now, and into the future."*[64]

**Pan Arctic Inuit Logistics (PAIL)**[65]

- PAIL[66] is wholly owned by the Inuit through organizations linked to the four territories delineated by land claims agreements: Inuvialuit (within the NWT), Nunavut, Nunavik (Northern Quebec), and Nunatsiavut (Northern Labrador). The NWS work is done through a joint venture between PAIL and ATCO Structure and Logistics,[67] a manufacturer of modular buildings, remote workforce accommodations, emergency response services, etc.
- The Canadian Senate heard testimony from an Inuk Corporate Executive, Charlie Lyall, endorsing the Canadian military presence: "For Inuit, an active military presence in the Arctic is vital and provides strong partnerships for its major projects." He told the Senate Committee that Inuit participation in clean-up of old Distant Early Warning (DEW) sites had expanded their capacity for Northern contract work, as well as for undertaking contract negotiations. He also spoke about the Inuit role in North Warning System operation and maintenance. "DND can continue to play a vital role in the fiscal and corporate development process for Inuit."[68]

## 2. Security Assets based in the South for Operations in the North

### 2.1 Bases (including stations, naval facilities, radar sites, etc)

Not available

### 2.2 Equipment

[62] National Defence and the Canadian Forces - http://www.cfna.forces.ca/articles/2013/05/24-eng.asp
[63] March 2011 Interim Senate Report - http://www.parl.gc.ca/content/sen/committee/403/anti/rep/rep03mar11-e.pdf
[64] "16th Meeting of the Arctic Security Working Group, May 16, 2007 – ASWG Staff," Security Innovator. http://securityinnovator.com/index.php?articleID=12234&sectionID=31
[65] March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, "Sovereignty and Security in Canada's Arctic: Interim Report," The Honourable Pamela Wallin, Chair; The Honourable Romeo Dallaire, Deputy Chair, March 2011. http://www.parl.gc.ca/Content/SEN/Committee/403/defe/rep/rep07mar11-e.pdf
[66] Pan Arctic Inuit - http://www.pail.ca
[67] ATCO Structure and Logistics - http://www.atcosl.com/en-ca/
[68] March 2011 Interim Senate Report - http://www.parl.gc.ca/Content/SEN/Committee/403/defe/rep/rep07mar11-e.pdf

### 2.2.1 Air

**Aircraft**[69]

*CP-140 (P-3C) Aurora*

- Capable of 17 hour flights and a range of almost 10,000 km (patrols average 10 hours and 5,000 km) without refuelling.
- 18 in operation
- Monitor for illegal fishing, immigration, drug trafficking, pollution violations, SAR, and deliver survival material in Arctic – Survival Kits Air Droppable, or SKADs (all of these roles are essentially aid to the civil authority)
- Landed at Alert for the first time in 2011
- CP-140 has been modernized,[70] to broaden capabilities beyond its initial anti-submarine warfare role, and to extend the operational life on 10 aircraft,[71] through the Aurora Incremental Modernization Project (AIMP) and the Aurora Structural Life Extension Project (ASLEP);[72]
- They are primary northern surveillance and sovereignty patrol vehicle;
- Initially, the 18 CP-140 patrol aircraft was planned to be replaced by 10-12 new aircraft from 2020.[73] "In February 2014 the Canadian Government announced it would not replace the CP-140 but would instead extend the life of the aircraft to 2030 and refit the aircraft in a $2.13 billion life-extension project. These enhancements and modifications will begin in 2014 and be completed by 2021 through the Aurora Incremental Modernization Project, the Aurora Structural Life Extension Project and the Aurora Extension Proposal (AEP)."[74]


Photo Credit: CP-140 Aurora, Royal Canadian Air Force, http://www.rcaf-arc.forces.gc.ca/en/aircraft.page

*CF-18 Fighter Aircraft*[75]

- Based in Cold Lake, Alberta and Bagotville, Quebec
- Controlled out of Canadian Air Defence Sector (CADS) in North Bay
- In September 2010 two CF-18s flew over Alert, assisted by a CC-150T Polaris air-to-air refuelling tanker
- According to DND, Modernization completed in 2010 extends the operational life to at least 2020[76]
- 77 operational (59 CF-18AM or F/A-18A, and 18 CF-18BM or F/A 18B)[77]
- September 2014: Two CF-18s intercept Russian Tupolev Tu_95 long-range bombers, which were flying "a course in 'the western reaches' of Canada's Air Defence Identification Zone (ADI) over the Beaufort Sea..."[78]

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[69] RCAF aircraft listed at http://www.rcaf-arc.forces.gc.ca/en/aircraft.page
[70] Siemon T. Wezeman, "Military Capabilities in the Arctic," SIPRI Background Paper, March 2012.
[71] "IMP Aerospace rolls out first CP-140 Aurora aircraft with new wings for the Royal Canadian Air Force," Canada Newswire, HALIFAX 9 December 2011 – "IMP Group Limited, Aerospace Division announced today that it will be rolling out the first re-winged CP-140 Aurora aircraft for the Royal Canadian Air Force (RCAF). These aircraft are receiving new wings as part of a mid-life structural upgrade being carried out by IMP Aerospace….IMP has been contracted by the RCAF to refit ten CP-140 Aurora aircraft under the ASLEP program," http://www.newswire.ca/en/story/892979/imp-aerospace-rolls-out-first-cp-140-aurora-aircraft-with-new-wings-for-the-royal-canadian-air-force
[72] "National Defence Minister marks completion of first structural upgrades on Aurora," Government of Canada, Canada News Centre, 9 February 2011. http://news.gc.ca/web/article-eng.do?nid=644179
[73] Siemon T. Wezeman, "Military Capabilities in the Arctic," SIPRI Background Paper, March 2012.
[74] Backgrounder - Expanding the CP-140 Modernized Aurora Fleet, RCAF, 20 March 2014. http://www.rcaf-arc.forces.gc.ca/en/news-template-standard.page?doc=expanding-the-cp-140-modernized-aurora-fleet/hszrx7qw
[75] Canadian Forces - http://www.rcaf-arc.forces.gc.ca
[76] Canadian Forces - http://www.rcaf-arc.forces.gc.ca
[77] According to IISS, The Military Balance, 2012, p. 52.
[78] CBC News(19 September 2014), "Canadian fighter jets intercept Russianbombers in Arctic," http://www.cbc.ca/

Photo Credit: CF-188 Hornet, Royal Canadian Air Force, http://www.rcaf-arc.forces.gc.ca/en/aircraft.page

**Supply and Search and Rescue Aircraft**
(in addition to the 4 CC-138 Twin Otters based in North)

*CC-177 Globemaster III*[79]

- Made its first landing in Resolute Bay in July 2010 (has also landed and taken off in winter conditions)
- Used for first time in Operation Boxtop in August 2010, landing in Alert (first landing there in May 2010)[80]

Photo Credit: C-17 Globemaster III, Royal Canadian Air Force, http://www.rcaf-arc.forces.gc.ca/en/aircraft.page

*CC-115 Buffalo*

- "All six Canadian Forces CC-115s are employed by 442 Transport and Rescue Squadron out of Comox, British Columbia. The squadron is responsible for an SAR zone stretching from the BC–Washington border to the Arctic, and from the Rocky Mountains to 1200 km out over the Pacific Ocean. With a maximum load of 2727 kg—or 41 fully equipped soldiers—the Buffalo has an operational range of 2240 km."[81]

Photo Credit: CC-115 Buffalo, Royal Canadian Air Force, http://www.rcaf-arc.forces.gc.ca/en/aircraft.page

[79] CC-177 Globemaster III - http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/cc-177.page, last modified 23 April 2014
[81] CC-115 Buffalo - http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/cc-115.page, last modified 1 August 2013

*CC-130 Hercules*

- Workhorse of airlifts to north
- "The first CC-130E Hercules entered service in Canada in 1960, and the current CC-130H Hercules was purchased in 1996.

  > "The CC-130 Hercules is a four-engine fixed-wing turboprop aircraft that can carry up to 78 combat troops. It is used for a wide range of missions, including troop transport, tactical airlift (both palletized and vehicular cargo), search and rescue (SAR), air-to-air refuelling (AAR), and aircrew training. It can carry more than 17, 000 kilograms (about 38, 000 pounds) of fuel for tactical AAR."[82]
- The IISS reports 5 operate as tankers, KC-130H[83]
- *Defence Acquisition Guide 2014*: "The objective of this Optimized Weapons System Support (OWSS) contract is to support the Rolls-Royce Allison T56-A15, T56-A15LFE, T56-A14LFE and 501-D22A Turboprop Aero Engines, 54H60 Propellers, CC130 Auxiliary Power Units and associated components. These engines are installed on the CC130 Hercules Transport Aircraft and the CP140 Aurora Maritime Patrol Aircraft." The project will cost between $500 million and $1.5 billion. No anticipated delivery date yet.[84]

Photo Credit: CC-130 Hercules, Royal Canadian Air Force, http://www.rcaf-arc.forces.gc.ca/en/aircraft.page

*CC-130J Hercules*

- 17 new CC-130J Super Hercules
  - All delivered by 2012
  - Made first landing in Alert in Sept 2010[85]
  - "September 2011 marked the first time that the annual resupply mission to Canadian Forces Station Alert in the Arctic (Operation Boxtop) was carried out using solely the CC-130J"[86]
- "The CC-130J Hercules is a four-engine, fixed-wing turboprop aircraft that can carry up to 92 combat troops or 128 non-combat passengers. It is used for a wide range of missions, including troop transport, tactical airlift (both palletized and vehicular cargo) and aircrew training. While on the outside the CC-130J looks almost identical to the older Hercules, internally the J-model Hercules is essentially a completely new aircraft."[87]
- *Defence Acquisition Guide 2014*: Upgrades to the CC-130J "will ensure compatibility with the future European and North American airspace requirement". Project estimated to cost between $100 million and $249 million and to be delivered between 2021 and 2025.[88]

[82] CC-130 Hercules - http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/cc-130.page, last modified 16 August 2013
[83] IISS, The Military Balance, 2012, p. 52.
[84] National Defence and the Canadian Armed Forces (June, 2014). Defence Acquisition Guide 2014, http://www.forces.gc.ca/en/business-defence-acquisition-guide/index.page
[85] CC-130J Hercules (Cargo Aircraft) - http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/cc-130j.page, last modified 23 April 2014
[86] "Canada welcomes final CC-130J Hercules," CC-130J website, 8 June 2012, http://cc-130j.ca/2012/canada-welcomes-final-cc-130j-hercules/
[87] CC-130J Hercules (Cargo Aircraft) - http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/cc-130j.page
[88] National Defence and the Canadian Armed Forces (June, 2014). Defence Acquisition Guide 2014, http://www.forces.gc.ca/en/business-defence-acquisition-guide/index.page

Photo Credit: CC-130J Hercules, Royal Canadian Air Force, http://www.rcaf-arc.forces.gc.ca/en/aircraft.page

*CC-150 Polaris*

- "The CC-150 Polaris [Airbus a-310] is a multi-purpose, twin-engine, long-range jet aircraft that can be converted for passenger, freight or medical transport, or any combination of these configurations. The Polaris can reach a speed of up to Mach 0.84 (1029 km/h) carrying a load of up to 32,000 kilograms (70,560 pounds). Passenger loads range from 28 to 194 people, depending on the particular aircraft tail number and configuration."[89]
    - Canada operates 3 CC-150 (2 are in tanker role)
- *Defence Acquisition Guide 2014*: Prolong the life expectancy of the CC-150 Polaris beyond 2026. Five CC-150 aircrafts will be upgraded, with the final delivery between 2026 and 2035. The project is estimated to cost $100 million to $26 million.[90]

Photo Credit: CC-150 Polaris, Royal Canadian Air Force, http://www.rcaf-arc.forces.gc.ca/en/aircraft.page

*CC-150T* (refuelling tanker)

- "As part of the Air Force Multi-Role Tanker Transport (MRTT) program, two CC-150 Polaris aircraft have been converted to strategic air-to-air refuellers for Canada's fleet of CF-18 Hornet fighter aircraft. The Polaris MRTT is capable of transferring 36,000 kilograms (79,380 pounds) of fuel to receiving aircraft over a journey of 4,630 kilometres (2,875 statute miles). Consequently, one Polaris tanker can ferry a flight of four CF 18 Hornets non-stop across the Atlantic Ocean."[91] Two in this role enable an Arctic role for the F-18.[92]
- According to the *Defence Acquisition Guide 2014*, the Canadian Government plans to replace the aging CF-18 Hornet. While the procurement guide does not specify what the new jets will encompass, they will cost over $1.5 billion and are planned to be implemented between 2026 and 2035.

[89] CC-150 Polaris - http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/cc-150.page, last modified 22 May 2014
[90] National Defence and the Canadian Armed Forces (June, 2014). Defence Acquisition Guide 2014, http://www.forces.gc.ca/en/business-defence-acquisition-guide/index.page
[91] CC-150 Polaris
[92] SIPRI, March 2012, p. 3.

**Fixed-Wing Search and Rescue Aircraft Replacement Project**[93]

- "The new fleet of fixed-wing SAR aircraft will replace an ageing fleet of six CC-115 Buffalo aircraft and 13 CC-130 Hercules aircraft that are currently being used for SAR duties."[94]
- The project is currently in the "project definition" stage, with an estimated final delivery between 2021 and 2025, at a cost of more than $1.5 billion.[95]
- A study by Michael Byers and Stewart Webb makes two key recommendations for an acquisition that they say needs to be much more transparent than it has been:

> "The Canadian government should clearly articulate a Statement of Operational Requirements (SOR) for Fixed-Wing Search and Rescue aircraft that recognizes the different requirements on Canada's West Coast and the necessity of a mixed fleet.
>
> "The Canadian government should ensure the SOR does not preclude consideration of made-in-Canada aircraft.[96]

**Helicopters**

*CH-146 Griffon Helicopter* (Bell 412)

- Part of Operation Nanook in 2010 and 2011
- A utility transport vehicle, it has been in service since 1995 and its "primary role is tactical transportation of troops and material. It is also used at home and abroad for search and rescue (SAR) missions, surveillance and reconnaissance, casualty evacuation and counter-drug operations."[97]
- In May 2013 the three Griffons at Canadian Forces Base Goose Bay were all grounded for repairs and a media report
- The Canadian Government plans to update the aging helicopters by 2020.[98]

Photo Credit: CH-146 Griffon, Royal Canadian Air Force, http://www.rcaf-arc.forces.gc.ca/en/aircraft.page

*CH-149 Cormorant*

- The Air Force's only dedicated search and rescue (SAR) helicopter
- A range of over 1000 km without refuelling
- Equipped with a full ice protection system[99]

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[93] The Senate Committee's 2011 Report said this of the SAR replacement:
"The aging CC-115 Buffalo and CC-130 Hercules fixed wing aircraft need to be replaced. They have been the backbone of Canada's SAR fleet since the 1960s. In 2004, a Statement of Operational Requirements (SOR) was drafted for replacement fixed wing SAR airplanes—but in the fall of 2010, after program delays due to higher priority procurements, comments on the SOR by industry and an SOR review by the National Research Council, the Department of National Defence has gone back almost to square one and is drafting a new SOR. In the meantime, Canada's shrinking fleet of elderly Buffaloes and Hercules keeps flying. Defence Minister Peter MacKay, however, has indicated that the wait will soon be over.

[94] Fixed-Wing Search and Rescue Aircraft Replacement Project - http://www.forces.gc.ca/en/business-equipment/fixed-wing-snr.page, last modified 25 July 2014

[95] National Defence and the Canadian Armed Forces (June, 2014). Defence Acquisition Guide 2014, http://www.forces.gc.ca/en/business-defence-acquisition-guide/index.page

[96] Michael Byers and Stewart Webb, "Search and Replace: The Case for a Made-in-Canada Fixed-Wing Search and Rescue Fleet," Canadian Centre for Policy Alternatives and The Rideau Institute, June 2012.
http://www.policyalternatives.ca/sites/default/files/uploads/publications/National%20Office/2012/06/Search_and_Replace.pdf

[97] CH-149 Cormorant - http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/ch-149.page, last modified 1 August 2013

[98] National Defence and the Canadian Armed Forces (June, 2014). Defence Acquisition Guide 2014, http://www.forces.gc.ca/en/business-defence-acquisition-guide/index.page

- *Defence Acquisition Guide 2014*: "The CH149 In-Service Support contract will provide first to third-line maintenance; engineering activities necessary for life cycle management and continuing airworthiness; aircraft and component repair and overhaul; logistic support including overall management of spares and materiel; equipment and publications; and technical training for pilots and flight engineers." The cost is estimated to be above $1.5 billion and the request for proposal is to be released 2019.[100]

Photo Credit: CH-149 Cormorant, Royal Canadian Air Force, http://www.rcaf-arc.forces.gc.ca/en/aircraft.page

*CH-124 Sea King*

- Operates from destroyers and frigates in anti-submarine roles
- Also contribute to search and rescue, disaster relief, counter-narcotic operations, and fisheries and pollution patrols.
- To be replaced by the CH-148 Cyclone[101]

Photo Credit: CH-124 Sea King, Royal Canadian Air Force, http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/ch-124.page

*CH-248 Cyclone*

- 28 are on order from Sikorsky, but this is a highly troubled program
  - More than 5 years behind schedule
  - Cost over-runs
- Canadian forces now have four interim versions of the Cyclone for pilot training[102]
  - DND says the Cyclone "will conduct Surface and Subsurface Surveillance and Control, utility and search and rescue missions. It will also provide tactical transport for national and international security efforts. …[It] is built with lightning-strike and high-intensity radio frequency pulse protection. …The Cyclone has a day-and-night flight capability, and can fly in most weather conditions in temperatures ranging from -51°C to +49°C. With a maximum cruise speed of 250 km/h, the CH-148 is approximately 10% faster than a Sea King. The Cyclone can also fly 450 km without refuelling."[103]

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[99] CH-149 Cormorant
[100] National Defence and the Canadian Armed Forces (June, 2014). Defence Acquisition Guide 2014, http://www.forces.gc.ca/en/business-defence-acquisition-guide/index.page
[101] CH-124 Sea King - http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/ch-124.page, last modified 1 August 2013
[102] "Feds re-negotiating helicopter contract with Sikorsky Aircraft," Canadian Press, 11 October 2012. http://thechronicleherald.ca/canada/146829-feds-re-negotiating-helicopter-contract-with-sikorsky-aircraft
[103] CH-148 Cyclone - http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/ch-148.page, last modified 18 September 2013

Photo Credit: CH-148 Cyclone, Royal Canadian Air Force, http://www.rcaf-arc.forces.gc.ca/en/aircraft.page

*Medium to Heavy Lift Helicopter*

- "As part of the Government's commitment to strengthen the Canadian Forces, the Department of National Defence is acquiring 15 Medium-to-Heavy Lift Helicopters, Canadian F model Chinook (also known as CH-147F)."[104]
- 15 ordered and to be delivered monthly in 2013-2014
- "Domestic roles for the Chinook helicopters will focus on the provision of logistical or mobility support to CF Land Forces and CANSOFCOM, other Government departments, law enforcement agencies, or other civil authorities. The Chinook helicopter will provide a vital capability to conduct secondary Search and Rescue when required and support major air disaster response across the continent, **particularly in Canada's North** given increasing commercial air activity in that region. The Chinook will also be capable of responding to humanitarian emergencies such as fire, floods and earthquakes. The versatility, impressive capacity and long range of this helicopter make the Chinook ideal for operations in Canada's vast territory and demanding environment.[105]

"With a heavy-lift capability of up to 40 personnel or 11,363 kilograms of cargo, they will be able to deploy independently, including to the **High Arctic**. The operating range is increased to a basic 609 kilometres, with a mission radius of 370.4 kilometres."[106] *Fixed Wing Search and Rescue Aircraft Replacement Project*

- In an unusual twist in the bidding process to supply new SAR aircraft, the Government is asking companies competing for the contract to also indicate where the aircraft they propose will be located (currently fixed wing aircraft are based primarily in Trenton, Ontario, Comox, B.C., and Winnipeg). As a result, the winning commercial firm could "propose closing down one of the military's existing search-and-rescue facilities or requiring a new installation to be constructed elsewhere in the country, such as in the Arctic." The approach, which delegates to private firms decisions that are normally within the purview of governments, has met with considerable criticism.[107]

**Satellite Surveillance**

*RADARSAT*

- RADARSAT-1 is an Earth observation satellite developed by Canada to monitor environmental changes and the planet's natural resources.
  - An operational radar satellite system capable of timely delivery of large amounts of data
  - Equipped with an aperture radar (SAR) instrument, it acquires images of the Earth day or night, in all weather and through cloud cover, smoke and haze.
  - Launched in November 1995[108]
- RADARSAT-2 was launched in December 2007, Canada's next-generation commercial radar satellite, offering technical advancements to enhance marine surveillance, ice monitoring, disaster management, environmental monitoring, resource management and mapping in Canada and around the world. [109] RADARSAT-2 is "one of

[104] The Role And Capabilities of the Chinook F Model - http://www.forces.gc.ca/en/news/article.page?doc=the-role-and-capabilities-of-the-chinook-f-model/hnps1um2
[105] The Role And Capabilities of the Chinook F Model
[106] "Canada's newest generation of Chinook helicopters," Flightglobal/Airspace Forum, 13 January 2013. http://www.flightglobal.com/airspace/forums/canadas-newest-generation-of-chinook-helicopters-91766.aspx
[107] David Pugliese (15 April 2014), "Canada to let private companies decide where search-and-rescue aircraft based," Ottawa Citizen.
[108] Canadian Space Agency - http://www.asc-csa.gc.ca/eng/satellites/radarsat1/
[109] Canadian Space Agency - http://www.asc-csa.gc.ca/eng/satellites/radarsat2/

Canada's most sophisticated satellites". Yet, "there are some recent concerns that the success of RADARSAT-2 is proving to be a headache for the Canadian government. According to a November 2012 admission by the Department of National Defence (DND), estimates by the Canadian Space Agency (CSA) have indicated that the government's "data allocation will expire by August 2017" due to the exponential growth of the demand for information in maritime domain awareness, a statement that has since been contradicted by sources at the CSA".

- "According to the CSA and DND, the RADARSAT Constellation Mission (RCM) remains on target for a 2018 launch".[110]

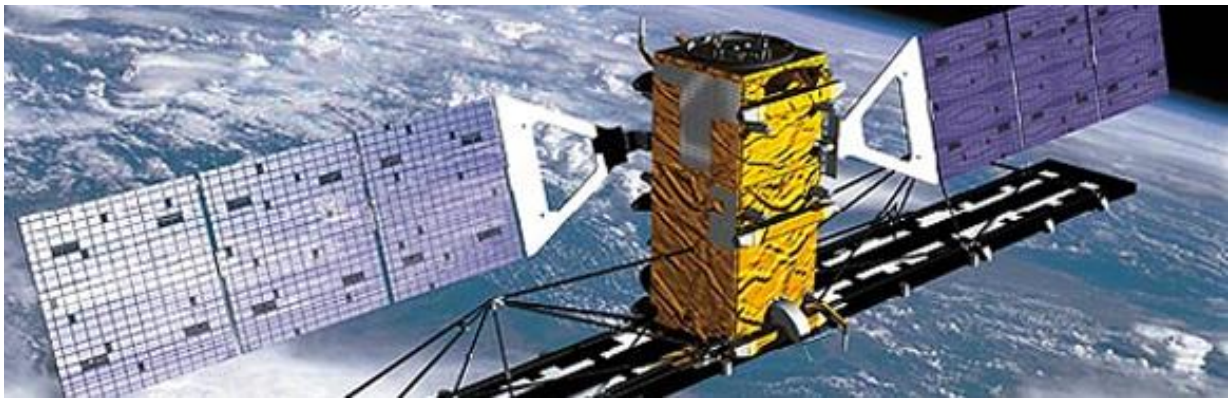

Photo Credit: RADASAT 2, Canadian Space Agency, http://www.asc-csa.gc.ca/eng/satellites/radarsat2/

*RADARSAT Constellation*

- Plans for three new RADARSAT satellites were awarded in Jan 2013[111]
- MacDonald, Dettwiler and Associates Ltd. (MDA) awarded $706-million contract with the Canadian Space Agency
- The company will build, launch and provide initial operations for what is planned to be a constellation of three satellites.
    - Build on technology that MDA has developed through the Radarsat-1 and Radarsat-2 missions.
- To provide complete coverage of Canada's land and oceans with launches earlier planned for 2016 and 2017, but now "launch of the three satellites is targeted for the third quarter of 2018"[112]
- In addition to assisting in disaster management and in monitoring of environmental change, the constellation will make possible the monitoring of marine traffic in the north and beyond, according to MDA, through: "…repeat imaging of the same area at different times of day, dramatically improving the frequency of monitoring coastal zones, northern territories, Arctic waterways and other areas of strategic and defence interest. RCM will also incorporate automated identification system technology, which when combined with the powerful radar images, supports the immediate detection and identification of ships worldwide."[113]

*Maritime Monitoring and Messaging Micro-Satellite (M3MSat)*

- The launch of the M3MSat, a Canadian military satellite for maritime surveillance in conjunction with Radarsat 2, has been delayed as the result of sanctions against Russia. It was to have been launched in Kazakhstan from a Russian facility. The company, Com Dev and the Canadian Government are exploring alternative launch possibilities. DND says M3MSat will be able to track digital signals from ships and thus enhance the capacity to identify marine traffic, and to detect the direction and cruising speed of vessels to ensure that they legally and safely navigate Canadian waters.[114]

[110] Defence (2014). "Canadian satellites 'on target' to revolutionize maritime domain awareness," http://www.defenceiq.com/
[111] "MacDonald, Dettwiler and Associates sign $706M Radarsat deal," CBC. http://www.cbc.ca/news/politics/story/2013/01/09/radarsat-deal.html
[112] Building the North: Project List, Canada's Economic Action Plan, Government of Canada, http://actionplan.gc.ca/en/page/building-north
[113] "MDA awarded $706 million contract to build three radar satellites," 9 January 2013. http://www.mdacorporation.com/corporate/news/
[114] David Pugliese (24 April 2014), "Russian sanctions have killed Canadian satellite launch," Ottawa Citizen, www.ottawacitizen.com

Photo Credit: M3MSat, Canadian Space Agency, http://www.asc-csa.gc.ca/eng/satellites/m3msat/

*Project Polar Epsilon*

- "The Polar Epsilon project uses information from RADARSAT-2 to produce imagery for military commanders to use in order to conduct operations in their areas of responsibility, "including surveillance of Canada's Arctic region and maritime approaches, the detection of vessels, and support to CF operations globally….The Polar Epsilon project enhances CF situational knowledge through its ability to provide all-weather day/night surveillance in areas where other sensors are limited or unable to operate. The project represents an important step toward strengthening Canada's Arctic sovereignty and security…."[115]
    - Current stage of Polar Epsilon went fully operational in August 2011.[116]
    - RadarSat-2 launched in 2007
- *Defence Acquisition Guide 2014*: "Polar Epsilon 2 (PE2) will enhance existing Polar Epsilon (PE) capabilities... increasing the government of Canada's near-real time situational awareness of activities in Canada's three ocean approaches and... increased surveillance persistence of Canada's Arctic." The project will cost between $100 million and $249 million, with the final delivery anticipated 2019.[117]

**Uninhabited Aerial Vehicles**

*5 Heron CU-170*

- Leased for 3 years (no indication they can be used in north)[118]
- SIPRI says acquisition plans for Arctic use include "the second phase of the $1.5 billion ($1.5 Billion – US) Joint Uninhabited Surveillance and Target Acquisition System (JUSTAS) project for 6 unmanned aerial vehicles (UAVs) for maritime and Arctic patrol."[119]

  David Pugliese:

  "Northrop Grumman has made a presentation to the Canadian government about selling a fleet of Global Hawk UAVs capable of patrolling the Arctic.
  Canada has a plan to eventually purchase UAVs, but Northrop's proposal would see the acquisition of Global Hawks outside of that project. Canadian government sources said the purchase is being considered by the Conservative Party government as a way to show it is delivering on its promise to project Canada's sovereignty over its Arctic territories.

[115] "A new step for the Polar Epsilon project," *The Maple Leaf*, 21 July 2010 (Vol. 13, No. 24), Department of National Defence. http://www.forces.gc.ca/site/commun/ml-fe/article-eng.asp?id=6335.
DND says: "Canadian Forces have been using this [Satellite] data for their Polar Epsilon Project—all-weather, day-night surveillance to detect and track foreign vessels, and maintain 'Arctic situational awareness' to respond to natural disasters, environmental crises, and assist with search and rescue."
"The implementation phase of Polar Epsilon began in March 2009 with the design and construction phase of two new RADARSAT-2 ground stations, one on the east coast in Masstown, N.S., and the other on the west coast in Aldergrove, B.C. The ground stations will be wholly owned and operated by the Government of Canada and are expected to be operational by March 2011. Completion of the Polar Epsilon project is expected by late 2011.
"The advantage of Polar Epsilon is that its imagery can be used to accurately determine locations, which allows for a more efficient and cost-effective use of other Canadian military assets, such as patrol aircraft and ships. Polar Epsilon can also be used to survey for oil or water pollution and airplane or satellite crash sites. The project, however, does not have the capability to detect missiles, nor can it track individuals. The data provided by Polar Epsilon is used primarily to support military operations, but will prove invaluable in supporting the regular activities of numerous departments and agencies."
[116] "Polar Epsilon keeps watch over Canada's coastal waters," MDA Information Systems Website. http://is.mdacorporation.com/mdais_canada/News/FeaturedStories/fs012012.aspx
[117] National Defence and the Canadian Armed Forces (June, 2014). Defence Acquisition Guide 2014, http://www.forces.gc.ca/en/business-defence-acquisition-guide/index.page
[118] March 2011 Interim Senate Report
[119] (SIPRI March 2012)

Northrop official Dane Marolt said the company has proposed the purchase of at least three UAVs, dubbed Polar Hawks.

"One Polar Hawk can fly the entire Northwest Passage five or six times in a single mission," said Marolt, director of international business development for the company's Global Hawk program. "With three aircraft, you can do coverage 24 hours a day, seven days a week. That gives you situational awareness of what's going on, so if something's identified, then action can be taken by the government," Marolt said.
The price would be about $150 million to $170 million for each UAV, plus long-term maintenance."[120]

Pugliese, in an April 2013 report for Defense News, reviews the state of the Canadian UAV program, including several variants or options being promoted by industry and considered by the government. He says the Government expects the UAV acquisition to be a $-$1.5 billion program. The program is much delayed. An initial operating capacity was originally planned for 2012, but now that won't happen for another five years at least.[121]

A May 2013 posting in the "Wanderingraven's Blog" describes the current Canadian opposition on UAVs. Canada would like a long range patrol drone to monitor the Arctic and coast lines. The Global Hawk drone is a possible option but comes at a high cost. The American company Northrop Grumman promotes its Global Hawk UAV for Canada, highlighting its long range and extended flying time.[122]

*UAV Acquisition*

- Defense Update reports that companies interested in bidding for the Canadian project include the Israel Aerospace Industries proposing the Heron UAV, General Atomics proposing the Reaper, and Elbit Systems proposing the Hermes 900.[123]

*OTHER*

- SIPRI reports that "Canadian acquisition plans include air assets specifically for Arctic use. This includes the second phase of the 1.5 billion Canadian dollar ($1.5 billion) Joint Uninhabited Surveillance and Target Acquisition System (JUSTAS) project for 6 unmanned aerial vehicles (UAVs) for maritime and Arctic patrol."[124]
- Imagery from Project Epsilon is not frequent enough to allow for real time tracking of ship traffic, so it is argued that aerial surveillance has to augment satellite surveillance, notably through UAVs.[125]

### 2.2.2 Land

Not available

### 2.2.3 Sea

**Ships - Coast Guard**

Canadian Coast Guard icebreakers are the primary naval presence in the Canadian Arctic:

- They are said to "respond to specific sovereignty challenges identified by the Canadian Government"[126]
  - In the summer of 2014, Canada sent two icebreakers to the High Arctic to gather scientific data "to bid for control of the sea floor under and beyond the North Pole".[127]
- Support Canadian Navy ships on Arctic voyages, as well as commercial ships

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[120] Referred to by David Pugliese (25 January 2012), "Canada Ramps Up Arctic Arsenal," http://www.defensenews.com/apps/pbcs.dll/article?AID=2012306250001

[121] David Pugliese (30 April 2013), "Canada eyes UAVs to Supply Arctic Missions," Defense News, http://www.defensenews.com/article/20130430/DEFREG02/304300016/Special-Report-Unmanned-Systems

[122] "Canadian Government favouring Global Hawk drone?" *Wanderignraven's Blog*, 7 April 2013 http://wanderingraven.wordpress.com/2013/03/26/canadian-government-favouring-global-hawk-drone/

[123] "Heron, Reaper and Hermes 900 Compete for Canada`s Arctic mission," 15 May 2013

[124] SIPRI referencing: David Pugliese (25 Jan. 2012), "Canada rethinks intel strategy", *Defense News*; and Huebert, R., *The Newly Emerging Arctic Security Environment* (Canadian Defence and Foreign Affairs Institute: Calgary, Mar. 2010), p. 8.

[125] Levon Bond, "JUSTAS and Project Epsilon: Integrated Intelligence, Surveillance, and Reconnaissance of the Canadian Arctic," *Canadian Military Journal*, Vol. 11, No. 4, Autumn 2011, http://www.journal.forces.gc.ca/vo11/no4/doc/Page%2024%20Bond%20Article%20English.pdf

[126] Icebreaking Levels of Service - http://www.ccg-gcc.gc.ca/Icebreaking-Services, last modified 24 June 2013

[127] Bob Weber (8 August 2014), "Canadian icebreakers head out to map Arctic sea floor," The Canadian Press, http://www.theglobeandmail.com/

- Perform research roles
- The Coast Guard is able to provide Arctic icebreaking service only during the summer months (beginning in late June and going into November)[128]
- The Coast Guard fleet includes:
  - Two heavy icebreakers (CCGS Louis S. St-Laurent; CCGS Terry Fox)
  - Four medium icebreakers (CCGS Amundsen [a research vessel[129]], CCGS Des Groseilliers, CCGS Henry Larsen, CCGS Pierre Radisson)
  - Seven light icebreakers (high-endurance multi-tasked vessels which can operate only in the Western Arctic).[130]
- A new polar icebreaker (CCGS John G. Diefenbaker) is in the works for the Coast Guard
  - A design contract has been issued
  - Construction contract to be awarded in 2015
  - New ship to be delivered in 2017 for sea trials[131]
  - Arctic performance trial and full operational capability to be achieved in 2018[132]
  - Original plan was for 3 armed icebreakers[133]
- It turns out that the polar icebreaker and a new resupply vessel are on schedule to get through the design stage and ready for construction at the same time, and since they are both to be built in a Vancouver shipyard that can handle only one large ship at a time, the Government will be facing a decision on which will go first – if it's the resupply ship the icebreaker will not become operational by 2017.[134]

Photo Credit: CCGS Louis S. St-Laurent, Canadian Coast Guard, http://www.ccg-gcc.gc.ca/Fleet/Vessel?vessel_id=81

**Ships (Navy)**

The Canadian Navy has a fleet of 33 vessels (3 Destroyers, 12 Frigates, 2 Supply Ships, 12 Coastal Defence; 4 submarines)[135]

- While the Destroyers and Frigates are "ice-strengthened" and have the range to sail in the Arctic, they do not have icebreaking capabilities
- The home ports are Maritime Forces Atlantic (MARPLANT) in Halifax, and Maritime Forces Pacific (MARPAC) in Esquimalt, B.C.

**Arctic/Offshore Patrol Ship (AOPS)** procurement

- The AOPS will have ice-breaking capabilities and the ability to provide support to the CH 148 Cyclone
- Initially, the project was announced as a $3.1 billion project in 2012[136], now the *Defence Acquisition Guide 2014* estimates the project to be above $1.5 billion. The number of ships is not specified.[137]

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[128] Icebreaking Levels of Service - http://www.ccg-gcc.gc.ca/Performance-Targets, last modified 2 April 2014
[129] Amundsen - http://www.amundsen.ulaval.ca/index.php?url=1
[130] Icebreaking Levels of Service - http://www.ccg-gcc.gc.ca/CCG-Icebreakers, last modified 23 July 2013
[131] David Pugliese (8 February 2012), "Polar Icebreaker Design Launched with Awarding of Contract to STX Canada," *Defence Watch*, Ottawa Citizen Blog, http://ottawacitizen.com
[132] Building the North: Project List, Canada's Economic Action Plan, Government of Canada, http://actionplan.gc.ca/en/page/building-north
[133] Jordan Press (25 August 2012), "PM talks up need for Arctic military presence," Vancouver Sun, PostMedia News, http://www.vancouversun.com/news/talks+need+Arctic+military+presence/7144484/story.html
[134] Lee Berthiaume (7 May 2013), "Feds face tough choice as naval resupply ships, icebreaker on collision course," Postmedia, http://o.canada.com/2013/05/07/feds-face-tough-choice-as-naval-resupply-ships-icebreaker-on-collision-course/
[135] Royal Canadian Navy, Fleet & Unit - http://www.navy-marine.forces.gc.ca/en/fleet-units/index.page
[136] Jordan Press (25 August 2012), "PM talks up need for Arctic military presence," Vancouver Sun, http://www.vancouversun.com/news/talks+need+Arctic+military+presence/7144484/story.html

- "Between six and eight Arctic/offshore patrol ships are to be built for the Navy, to operate part of the time in the Arctic (capable of in-ice operations in summer months); these are currently at the project definition stage with a design contract announced in March 2013[138], with the first to be delivered in 2018;"
    - Initially the objective was to deliver the project in 2015, but a subsequent DND briefing[139] and the *Defence Acquisition Guide 2014* delayed the delivery to 2021-2025[140]

- The wisdom or utility of the project continues to be actively debated: see the April 2013 report by Michael Byers and Stewart Web for the Rideau Institute and the Canadian Centre for Policy Alternatives – *Titanic Blunder: Arctic/Offshore Patrol Ships on Course for Disaster*[141]

**Submarines**

The Canadian Press reports that the Navy has begun exploring a replacement for the current Victoria class submarines:

- The 2014 procurement guide confirms plans to "extend the service life of the Victoria Class submarine beyond its current mid-2020s end of life," with a delivery of the project is 2026-2035. The Submarine Equipment Life Extension (SELEX) Project is estimated above $1.5 billion.[142]
- The Canadian Press reported in August 2012 that a DND briefing note calls for "bigger, quieter boats that can perform stealth missions, launch undersea robots and fire guided missiles at shore targets." Rather than protecting sea lanes, subs are now sought more for coastline surveillance, intelligence-gathering, and ship to shore firing:
    - Coastline surveillance and intelligence gathering includes Arctic;
    - International missions are also a consideration: as Vice-Admiral Paul Maddison told a Senate Committee in 2012, to lose [a submarine capability] for a G8 nation, a NATO country like Canada, a country that continues to lead internationally, and aspires to lead more, I would consider that a critical loss."[143]

**Under Water Surveillance Systems**

"To improve the situational awareness of the Canadian Forces in the Arctic, a four-year *Northern Watch Technology Demonstration Project* is underway, run by Defence Research and Development Canada. *Northern Watch* researchers are testing both surface and underwater sensors "to collect surveillance data at a navigation chokepoint." They are also running simulations using data from surface and space-based sensors."[144]

- In April 2012 Operation Nunalivut included diving operations off of Devon Island to install "undersea surveillance devices."[145]

**Amphibious Ship to Shore Craft**

- Acquisition a matter of some discussion
- David Pugliese reports that "the country's decision to build a fleet of Arctic and offshore patrol vessels, as well as a new Polar-class icebreaker, has sparked discussions between the Army and Arktos Developments, Surrey, British Columbia. The company builds the Arktos amphibious craft, and company President Bruce Seligman said the government is interested in placing those onboard the patrol vessels and icebreaker. The craft originally was designed to evacuate people from oil rigs, and it can carry 52 in that mode. Arktos has sold 21 amphibious craft so

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[137] National Defence and the Canadian Armed Forces (June 2014). Defence Acquisition Guide 2014, http://www.forces.gc.ca/en/business-defence-acquisition-guide/index.page

[138] "AOPS Design Contract Awarded But MacKay and Ambrose Still Can't Say How Many Ships Will Be Built," Defence Watch, 7 March 2013. http://ottawacitizen.com/

[139] The Department of National Defence and the Canadian Armed Forces - http://www.forces.gc.ca

[140] [140] National Defence and the Canadian Armed Forces (June 2014). Defence Acquisition Guide 2014, http://www.forces.gc.ca/en/business-defence-acquisition-guide/index.page

[141] Michael Byers and Stewart Webb (April 2013), "Titanic Blunder: Arctic/Offshore Patrol Ships on Course for Disaster," *Canadian Centre for Policy Alternatives,* http://www.policyalternatives.ca/sites/default/files/uploads/publications/National%20Office/2013/04/Titanic_Blunder.pdf

[142] National Defence and the Canadian Armed Forces (June 2014). Defence Acquisition Guide 2014, http://www.forces.gc.ca/en/business-defence-acquisition-guide/index.page

[143] Murray Brewster (20 August 2012), "Navy planners trying to sell Ottawa on submarine replacement plan," *Globe and Mail*, http://www.theglobeandmail.com/news/politics/navy-planners-trying-to-sell-ottawa-on-submarine-replacement-plan/article4490900/

[144] March 2011 Interim Senate Report

[145] "It's Arctic spring exercise season for Canada's military: Operation Nunalivut to kick off April 10," Nunatsiaq News, April 9, 2012. http://www.nunatsiaqonline.ca/stories/article/65674its_arctic_spring_exercise_season_for_canadas_military

far, mostly to the oil and gas industry. Seligman said in the Canadian situation, the Arktos could be used as a "connector" to transport people from ship to shore."[146]

### 2.3 Organizations and Operational Units (personnel)

**Army Personnel**

- "A special small battalion-sized (500 troops) regular army unit for Arctic operations is to be set up"[147]
- "Canada also is creating a 500-member Army response capability for the Arctic"[148]
- Canadian reserves unit in Yellowknife to be increased to 100 by 2019[149]
- "Four Arctic Response Company Groups—Canadian Forces reservists from militia regiments in southern Canada—are being trained in Arctic operations in case they need to be deployed there. On that last point, however, the commander of Joint Task Force (North) was asked whether southern troops have the ability to do more than operate at the survival level and with a minimum of tactical capability in the Arctic. 'No, we do not,' BGen Millar told the Committee, 'In years past we did. We had tremendous capability with the Canadian Forces to operate and deploy to the North.' But he added that since the attacks of 9-11, 'We are at the stage of rebuilding that very capability that we used to have.'"[150]

- "However, Major General Alan Howard, assistant chief of the land staff of the Canadian Army, complained that the Canadian Army has lost the 'ability to operate up north in the Arctic' because of the focus on operations in Afghanistan. The army's capabilities for Arctic operations are to be improved after Canada's withdrawal from Afghanistan in 2012. In addition, a special small battalion-sized (500 troops) regular army unit for Arctic operations is to be set up. Since 2008, Canadian reserve forces have included an Arctic company, based in Yellowknife, NWT, which under the Northern Strategy is planned to have a strength of 100 by 2019."[151]

## 3. Recurring Operations and Exercises

*"the Canadian Government had ceased conducting Arctic military exercises at the end of the Cold War in 1989; however, in 2002, the Canadian Government was one of the first Arctic states to recommend these exercises amidst a growing concern led by a succession of Canadian Forces Northern Commanders."*[152]

**Operation Boxtop**

- Usually twice a year to resupply Canadian Forces Station Alert

**Operation Nevus**

- Annual operation to maintain and repair the microwave communication system across Ellesmere Island that links the Canadian Forces Station Alert to Eureka (400 km south of Alert) through the High Arctic Data Communications System (HADCS).[153]

**Operation NANOOK**

The largest of three major sovereignty operations conducted annually in Canada's North, Operation NANOOK takes place in several locations across the Northwest Territories and Nunavut, in the high and eastern arctic. The objectives of Operation NANOOK are:

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[146] Referred to by David Pugliese (25 January 2012), "Canada Ramps Up Arctic Arsenal," http://www.defensenews.com/apps/pbcs.dll/article?AID=2012306250001
[147] Siemon T. Wezeman (March 2012), "Military Capabilities in the Arctic," SIPRI Background Paper.
[148] Referred to by David Pugliese (25 January 2012), "Canada Ramps Up Arctic Arsenal," www.defensenews.com
[149] Siemon T. Wezeman (March 2012), "Military Capabilities in the Arctic," SIPRI Background Paper.
[150] M2ISR = March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, "Sovereignty and Security in Canada's Arctic: Interim Report," The Honourable Pamela Wallin, Chair; The Honourable Romeo Dallaire, Deputy Chair, March 2011. http://www.parl.gc.ca/Content/SEN/Committee/403/defe/rep/rep07mar11-e.pdf
[151] SIPRI, referencing: DeSilva-Ranasinghe, S., Interview (with Major General Alan Howard), *Jane's Defence Weekly*, 12 Jan. 2011, p. 34. DeSilva-Ranasinghe (note 16), p. 34; Prime Minister of Canada (note 14); and Huebert (note 10). O'Dwyer, D. and Pugliese, D., 'Canada, Russia build Arctic forces', *Defence News*, 6 Apr. 2009. Huebert (note 9), p. 9; Huebert (note 10); and 'Canada's Arctic strategy', CBC News, 27 July 2009, http://www.cbc.ca/news/canada/story/2009/07/27/arctic-sovereignty-map.html
[152] Rob Huebert (March 2010), "The Newly Emerging Arctic Security Environment," Canadian Defence and Foreign Affairs Institute, http://www.cdfai.org/PDF/The%20Newly%20Emerging%20Arctic%20Security%20Environment.pdf
[153] Operation NEVUS - http://www.forces.gc.ca/en/operations-canada-north-america-recurring/op-nevus.page

- To assert Canada's sovereignty over its northernmost regions;
- To enhance the Canadian Forces' ability to operate in Arctic conditions;
- To improve coordination in whole-of-government operations; and
- To maintain interoperability with mission partners for maximum effectiveness in response to safety and security issues in the North.

The operation involves personnel and assets from across Canada, and may be drawn from Navy, Army, Air Force, and the Canadian Special Operations Forces Command. The size and make-up of the operation vary, but always include:

- 1st Canadian Ranger Patrol Group, a Reserve formation of the Canadian Army headquartered in Yellowknife, with 60 patrol units distributed in communities across the North, and
- 440 "Vampire" Transport Squadron, an RCAF unit based in Yellowknife, flying the CC-138 Twin Otter, a utility transport aircraft designed for short take-off and landing.

Conducted annually since 2007, the operation has also involved international military partners, Canadian federal government departments and agencies, and provincial, territorial, and municipal governments. It typically involves simultaneous activities at sea, on land and in the air, and the number of personnel has ranged from about 650 to more than 1,250.

In 2010 Operation Nanook the Americans and Danes joined in "conducting disaster response training and patrols in Canada's territorial waters," the first time foreign militaries participated in the operation.[154]

**Operation NUNALIVUT**

One of three major sovereignty operations conducted annually in Canada's North, *Operation NUNALIVUT* takes place in the high Arctic.

The objectives of *Operation NUNALIVUT* are:

- Annual exercise involving the Rangers
- To assert Canada's sovereignty over its northernmost regions;
- To enhance the Canadian Forces' ability to operate in Arctic conditions; and
- To maintain interoperability with mission partners for maximum effectiveness in response to safety and security issues in the North.[155]
- In April 2012 "more than 150 soldiers, divers and Canadian Rangers" participated in Operation Nunalivut out of Resolute Bay.[156]

Conducted annually since 2007, in 2013 Operation NUNALIVUT runs throughout April and is designed to "exercise Canadian sovereignty and to demonstrate the Canadian Armed Forces' capability projection in the High Arctic during winter."[157] It will involve approximately 120 Canadian Armed Forces personnel under Joint Task Force (North) and will take place in the north-western portion of the Arctic Archipelago, including Mould Bay (Northwest Territories) and Isachsen and Resolute Bay (Nunavut). The 2013 operation included observers from Norway.[158]

- Canadian Rangers conducted "sovereignty patrols" supported by Air Force CC-138 Twin Otters which provided tactical airlift and resupply for Rangers on sea ice, and undertook surveillance and reconnaissance missions.[159]

**Operation NUNAKPUT**

A "whole-of-government" operation that emphasizes aid to law enforcement in the north (conducted annually since 2007).[160]

**Exercise STALWART GOOSE 14**[161]

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[154] Marc V. Schanz (December 2010), "Air Sovereignty Never Sleeps," *Air Force Magazine*, pp. 54-56, http://www.airforce-magazine.com/MagazineArchive/Pages/2010/December%202010/1210sovereignty.aspx

[155] Operation NUNALIVUT - http://www.forces.gc.ca/en/operations-canada-north-america-recurring/op-nunalivut.page

[156] "It's Arctic spring exercise season for Canada's military: Operation Nunalivut to kick off April 10," 09 April 2012, *Nunatsiaq News*, http://www.nunatsiaqonline.ca/stories/article/65674its_arctic_spring_exercise_season_for_canadas_military

[157] Operation NUNALIVUT - http://www.forces.gc.ca/en/operations-canada-north-america-recurring/op-nunalivut.page

[158] "Arctic sovereignty patrols start this week," CBC News, Eye on the Arctic, 08 April 2013. http://www.cbc.ca/news/canada/north/story/2013/04/05/north-operation-nunalivut-2013.html

[159] Defence Watch (24 April 2013), "Operation Nunalivut 2013 Concludes," http://ottawacitizen.com

[160] Operation NUNAKPUT - http://www.forces.gc.ca/en/operations-canada-north-america-recurring/op-nunakput.page

More than 150 Reservists from 37 Canadian Brigade Group (37 CBG) participated in Exercise STALWART GOOSE 14 (Ex SG 14). "Prior to Ex SG 14, five years of exercises, training and courses prepared 37 CBG to operate effectively as the 5th Canadian Division's Arctic Response Company Group (ARCG). The capabilities of the ARCG were put to the test. The training value received from this adventure into the Arctic was significant. The exercise consisted of long-range patrols on light over snow vehicles (LOSV) from 5 Wing Goose Bay north to the outlying community of Postville. It was a journey of 480 km, and done in significantly difficult weather that ranged from zero-visibility snow squalls to deep, eyelash-freezing cold. The soldiers of 37 CBG were supported by the invaluable expertise of members of the 5th Canadian Ranger Patrol Group, who are specialists in survival and mobility in these severe environmental conditions. The Rangers, from many different communities within Newfoundland and Labrador, have significant experience in towing supplies, traveling over sea ice, and knowing where to make camp and how to keep warm in this arctic environment."

**Exercise Arctic Bison 2013**[162]

Troops of the Arctic Response Company Group (ARCG) were in training in winter survival, search and rescue, surveillance, and patrolling, in partnership with Canadian Rangers, near Prince Albert, Saskatchewan in February. The group has been on winter exercises annually since 2008.[163] The ARCG is made up of reservists and the Arctic Bison 2013 exercise involved 113 Reservists, 3 regular force soldiers, and 10 Canadian Rangers (and 65 snowmobiles).

**Exercise Polar Sound**[164]

This 2012 operation involved a team of Canadian Rangers on patrol from Gjoa to Cambridge Bay in the Northwest Territories, a distance of 200 km. Billed as a "whole of government" approach, the Rangers worked with government and non-governmental agencies while carrying out a routine sovereignty patrol.

[161] Exercise STALWART GOOSE 14 - http://www.army-armee.forces.gc.ca/en/news-publications/national-news-details-no-menu.page?doc=37-canadian-brigade-group-proves-arctic-response-capability/ht6x4r3q

[162] Exercise Arctic Bison 2013 - http://www.army.gc.ca/lfwa/ex_arctic_bison13-eng.asp

[163] David Pugliese (24 February 2013), "Photos From Exercise Arctic Bison 13: Arctic Response Company Group In Action," Defence Watch, http://blogs.ottawacitizen.com/2013/02/23/photos-from-exercise-arctic-bison-13-arctic-response-company-group-in-action/

[164] Jennifer Wright (March 2012), "Canadian Rangers assist other government and civilian agencies during Exercise Polar Sound 12," Public Affairs, Joint Task Force (North). http://www.jtfn-foin.forces.gc.ca/articles/2012/03/03-eng.asp

# USA

**General Information**

"Construction in the Arctic costs, as a rule of thumb, three to five times more than comparable infrastructure in lower latitudes. Another challenge to bear in mind is the risk to existing infrastructure posed by thawing permafrost. As the permafrost thaws, it loses strength and volume, leading to failure of foundations and piling. The warming climate will also accelerate the erosion of shorelines and riverbanks, threatening infrastructure located on eroding shorelines." Nevertheless, the report still concludes that "significant uncertainty remains about the rate and extent of climate change in the Arctic and the pace at which human activity will increase. The challenge is to balance the risk of being late-to-need with the opportunity cost of making investments in the Arctic before they are needed…."

"Since 2007, the U.S. Coast Guard has deployed cutters, aircraft, boats, and special detachments to northern Alaska during the summer season to increase competencies and develop Arctic partnerships. One area for future assessment might be the need for a co-located airport and port facility suitable for deployment of undersea search and rescue assets. Given the paucity of suitable sites and existing infrastructure, it is likely that any future infrastructure, at least initially, will consist of dual-use military-civilian facilities.

"In summary, with the low potential for armed conflict in the region in the foreseeable future, the existing defense infrastructure (e.g., bases, ports, and airfields) is adequate to meet near- to mid-term U.S. national security needs. Therefore, DoD does not currently anticipate a need for the construction of additional bases or a deep draft port in Alaska between now and 2020. Given the long lead times for basing infrastructure in the region, DoD will periodically re-evaluate this assessment as activity in the region gradually increases and the CCDRs review and update their regional plans as the security environment evolves."[165]

**1. Security Assets available for Operations in the North**

**1.1 Bases (including stations, naval facilities, radar sites, etc)**

**1.1.1 Air**

**Eielson Air Force Base** (near Fairbanks)[166]

- 354th Fighter Wing
- 354thOperations Group
- Includes airborne early warning
- Hosts National Guard Air Refuelling Wing
- Air Force Technical Applications Center
- Arctic Survival School
- Rescue Squadron
- Training Squadron
- DOD Report, May 2011:

  "Eielson Air Force Base serves as home to a fighter wing and an Air National Guard air refuelling wing. The base provides significant aerial throughput capacity and can support SAR missions that extend north of the Alaska Range."[167]

**Elmendorf Air Force Base**[168]

- Shares the base with the Fort Richardson Army Base
- Hosts the Alaskan NORAD Region
- Aerospace warning
- Hosts the 11th Air Force

[165] Department of Defense (May 2011), "Report to Congress on Arctic Operations and the Northwest Passage."
[166] US Air Force - http://www.eielson.af.mil/units/index.asp
[167] Department of Defense (May 2011), "Report to Congress on Arctic Operations and the Northwest Passage."
[168] US Air Force - http://www.jber.af.mil/units/index.asp

- Mission: “Provide ready warriors and infrastructure for homeland defense, decisive force projection, and aerospace command and control.”
- The joint Elmendorf-Richardson base maintains “three wings (22 aircraft each) of fighters for air defence. The older F-15s that equipped these wings are gradually being replaced with new F-22 raptors. Ultimately, the Americans plan to deploy up to 1/5 of their fleet of new F-22s in Alaska.”[169]
- From May 2011 DOD Report to Congress:

  “In the Anchorage area, Joint Base Elmendorf-Richardson contains a combined military population of more than 12,000 and serves as home to a U.S. Air Force fighter wing, a C-17-equipped air transport unit, an Army Brigade Combat Team, and support units. Additionally, an active duty C-130 squadron will be established in Fiscal Year 2011, with expected initial operational capability in August 2011. The base provides significant capacity such as runways, ramp space, air space command and control, and fuel infrastructure to support throughput for aircraft, mid-air refuelling operations, aerial command and control, ISR operations, and weather forecasting. The move of the 176th Wing (Alaska Air National Guard), with its C-130s and helicopters, from Kulis Air National Guard Base in 2011 added significant search and rescue capabilities as well. The resident Air Force and Army support units provide extensive capabilities in communications, logistics, engineering, ground transportation, and medical support, including a 60-bed hospital.[170]

**Eareckson Air Station**[171]

- Oriented toward supporting Pacific operations
- Located on the Island of Shemya
- North Warning System
- Alaska’s northern coast is lined with 4 long-range and 3 short-range radars of the North Warning System (the main portion of the systems spans the north of Canada).

**Air Station, Kodiak**[172]

- US Coast Guard Station
- Helicopters and HC-130J Herculese aircraft based on Kodiak Island operate over the Bering Sea and into the Arctic, and northern Alaska

**Air Station, Sitka**

- US Coast Guard, south Alaska
- The unit maintains a 24-hour search and rescue alert crew which utilizes three Sikorsky MH-60T Jayhawk helicopters
- Also environmental response capabilities[173]

**Thule Air Base in Greenland**

- US uses it now for a BMD radar
- US Air Force: “Thule Air Base is home to the 21st Space Wing's global network of sensors providing missile warning, space surveillance and space control to North American Aerospace Defense Command and Air Force Space Command.”[174]
- No aircraft currently based there
- From May 2011 DOD Report to Congress

  “In the vicinity of Baffin Bay, Thule Air Base, Greenland, is home to a BMEWS radar and Air Force satellite control network ground site. The base provides significant basing capacity such as a deep water port, a 10,000-foot runway, ramp space, radar approach control, and 20-million gallon fuel infrastructure to support throughput for aircraft, mid-air refuelling operations, aerial command and control, SAR operations, and weather forecasting. The resident Air Force support units provide capabilities in communications, logistics,

[169] Rob Huebert, Heather Exner-Pirot Adam Lajeunesse, Jay Gulledge (2012), “Climate Change and International Security: The Arctic as a Bellwether,” Center for Climate and Energy Solutions, http://www.c2es.org/docUploads/arctic-security-report.pdf
[170] Department of Defense (May 2011), “Report to Congress on Arctic Operations and the Northwest Passage.”
[171] GlobalSecurity.Org - http://www.globalsecurity.org/space/facility/shemya.htm
[172] US Coast Guard - http://www.uscg.mil/bsukodiak/general_info.asp
[173] US Coast Guard - http://www.uscg.mil/d17/airstasitka/Mission.asp
[174] US Air Force - http://www.peterson.af.mil/units/821stairbase/index.asp

engineering, ground transportation, and medical support, including an 8-bed hospital. Thule Air Base supports military, government, and Allied missions in the eastern Arctic."[175]

### 1.1.2 Land

**Fort Greely**[176]

- Hosts US BMD mid-course interceptors[177]
- DOD May 2011 Report to Congress:

  "Fort Greely is the site of the 49th Missile Defense Battalion (ARNG), which operates the BMDS ground-based interceptors at both Fort Greely and Vandenberg AFB, California…. Fort Greely also houses the support for the contractor logistics that sustains the missile system."[178]
- A July 2013 test of the interceptor failed. The last successful intercept was in 2008 for an overall record of eight intercepts in 16 attempts.[179]

**Fort Wainwright**[180]

- Infantry combat team
- Combat aviation brigade
- While the US Army is in the process of cutting 80,000 troops from its ranks (gong from 570,000 to 490,000), Fort Wainwright's troop strength will increase slightly from 6,300 to 6,852, although the focus of that force, is the Asia-Pacific region.[181]
- DOD Report to Congress 2011:

  "Fort Wainwright is home to an Army Brigade Combat Team and aviation task force, and can provide services such as air support operations and emergency medical care. Together with Fort Greely, Fort Wainwright also serves as a cold weather test and training center."[182]

**Cold Regions Test Center** (in Fort Wainright)

**Fort Richardson** (joint base with Elmendorf AFB)[183]

- Alaskan Command centre for 21,000 Alaskan military personnel
- US Army Alaska (USARAK)[184]
- Not specifically earmarked for Arctic operations
- Fort Richardson's troop strength is expected to drop by 16 percent as part of the US Army's cutbacks.[185]

**Northern Warfare Training Centre**[186]

- Black Rapids
- Conducts "relevant training to the leaders of USARAK units so that they can fight and win in demanding cold weather and mountain environments"[187]

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[175] Department of Defense (May 2011), "Report to Congress on Arctic Operations and the Northwest Passage."
[176] Fort Greely, Alaska - http://usmilitary.about.com/od/armybaseprofiles/ss/greely.htm
[177] Currently Fort Greely hosts 26 of 30 interceptors based there and in California. In March the US announced plans to increase the combined total of interceptors in California and Alaska to 44 from 30, as a response to DPRK declarations. Thom Shanker, David E. Sanger, and Martin Fackler, "U.S. Is Bolstering Missile Defense to Deter North Korea," New York Times, 15 March 2013. http://www.nytimes.com/2013/03/16/world/asia/us-to-bolster-missile-defense-against-north-korea.html?pagewanted=all&_r=0
[178] Department of Defense (May 2011), "Report to Congress on Arctic Operations and the Northwest Passage."
[179] W.J. Hennigan, "Problem-plagued missile defense system fails in $214-million test," 5 July, *Los Angeles Times*. http://www.latimes.com/business/money/la-fi-mo-missile-defense-test-20130705,0,4740544.story
[180] US Army - http://www.wainwright.army.mil/sites/tenants/unitsTenants.asp
[181] Sam Friedman (25 June 2013), "Fort Wainwright to grow as Army shrinks," Newsminer.com, http://www.newsminer.com/news/local_news/fort-wainwright-to-grow-as-army-shrinks/article_4b8b1f6e-ddca-11e2-af7b-0019bb30f31a.html
[182] Department of Defense (May 2011), "Report to Congress on Arctic Operations and the Northwest Passage."
[183] US Air Force, Joint Base - http://www.jber.af.mil/units/index.asp
[184] USARK Organizations - http://www.usarak.army.mil/main/units.asp
[185] Sam Friedman (25 June 2013), "Fort Wainwright to grow as Army shrinks," Newsminer.com, http://www.newsminer.com/news/local_news/fort-wainwright-to-grow-as-army-shrinks/article_4b8b1f6e-ddca-11e2-af7b-0019bb30f31a.html
[186] US Army - http://www.wainwright.army.mil/nwtc/
[187] Northern Warfare Training Centre - http://www.wainwright.army.mil/nwtc/

- A March 2013 "Cold Weather Orientation Course" for command leaders to "better understand their equipment, themselves, and really what it takes to prepare their units to conduct arctic training over the next several years."[188]

**Dutch Harbor**

- "Dutch Harbor, in the Aleutian Island chain, is strategically located on the North Pacific shipping lanes between North America, East Asia, and the Bering Sea. With its 40-foot deep harbor, the Unalaska Marine Center, and U.S. Coast Guard dock, Dutch Harbor provides vessel berthing, containerized cargo loading, warehousing, and passenger and port services. The seaport is primarily oriented toward supporting the fishing industry, but is ice-free year round and can provide limited berthing and support for larger, deep draft vessels. However, with a runway less than 4,000 feet in length and harsh weather conditions, the Unalaska airport provides only limited multimodal port capabilities.
- The Coast Guard's "National Security Cutters" – it is in the process of acquiring eight of these 418 foot armed vessels – are capable of operating in open Arctic waters and are refuelled primarily at Dutch Harbor.[189]

**Adak facility closed**

- "Adak lies near the southern tip of the Aleutian Islands, about 450 miles west of Dutch Harbor. Although Adak was an important operations and supply location for the U.S. military during the Cold War, it was closed in 2000 as a result of the Base Realignment and Closure (BRAC) Act of 1995."[190]

### 1.1.3 Sea

**Not applicable**

- The United States has no naval bases in Alaska (although naval forces use other port facilities)
- The US has no deep water port in Alaska, although the need for such a port is repeatedly raised[191] and the Alaskan Department of Transport and the Army Corps of Engineers are currently engaged in a three-year Alaska Deep Draft Arctic Ports Study to evaluate potential locations for such a port.[192] In January 2013 a draft report from the Army Corps of Engineers identified the Nome/Port Clarence region as the best location for a deep water port.[193]
- In July 2013 the US Naval War College launched an "Arctic Regional Studies Group" in order "to help the Navy prepare for future operational and strategic challenges in the Arctic."[194]

*Update on Alaska Deep Draft Arctic Ports Studies*

- In February 2014 the study group pulled back from that recommendation, pointing out that "no one port was likely going to be sufficient." Multiple possibilities are now under consideration and the recommendation will be delayed, with the Alaska US Army Corps of Engineers, the technical lead on the project, suggesting that a useable port is unlikely to be ready before 2030.[195]

[188] Staff Sgt. Jeffrey Smith, "Developing Arctic leaders in the last frontier," US Army, http://www.dvidshub.net/news/104725/developing-arctic-leaders-deep-last-frontier#.UfgcNbJzZdg
[189] "United States Coast Guard Arctic Strategy," May 2013. http://www.uscg.mil/seniorleadership/DOCS/CG_Arctic_Strategy.pdf
[190] Department of Defense (May 2011), "Report to Congress on Arctic Operations and the Northwest Passage."
[191] Ronald O'Rourke, Specialist in Naval Affairs (December 10, 2012), "Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress," US Congresional Research Service, http://www.fas.org/sgp/crs/weapons/RL34391.pdf
[192] "Alaska Department of Transportation and Public Facilities/Statewide Design and Engineering Services: Arctic Port Study," http://www.dot.state.ak.us/stwddes/desports/arctic.shtml
[193] Ellen Lockyer, "Study Names Nome, Port Clarence as Best Region For Deep Water Arctic Port," Alaskapublic.org, KSKA, Anchorage. http://www.alaskapublic.org/2013/01/31/study-names-nome-port-clarence-as-best-region-for-deep-water-arctic-port/
[194] Trude Pettersen (1 August 2013), "US Navy to study the Arctic," *Barents Observer*, http://barentsobserver.com/en/security/2013/08/us-navy-study-arctic-01-08
[195] "Caryey Restino, Àrctic port study delayed past March," The Arctic Sounder, 14 February 2014, http://www.thearcticsounder.com/article/1407arctic_port_study_delayed_past_march

## 1.2 Equipment

### 1.2.1 Air

**Aircraft Carriers**

- "While not specifically adapted to ice conditions, the many US aircraft carriers, other major combat ships and amphibious warfare ships are generally capable of operating in northern weather conditions."[196]

### 1.2.2 Land

As of May 2014, the U.S. Army's Ground Combat Vehicle programme has been terminated. Alternative options are being considered.

### 1.2.3 Sea

**Submarines**

- "Most of the approximately 53 US nuclear attack submarines [which do not now carry nuclear weapons since the September 1991 Bush-Gorbachev agreement [197]] (but not the SSBNs [which do carry strategic range nuclear weapons]) are known to be able to operate under the Arctic ice and break through the ice from below; they regularly transit under the Arctic ice or break through the ice and surface near the North Pole."[198]
- A research note on US SSNs in Canadian Arctic Waters from 1960-1986 confirms that SSNs did traverse Canadian Arctic waters, but also indicates that these were not secret voyages but taken "with the full knowledge and support of the Canadian government"[199]
- "In April 2011 two US nuclear attack submarines participated in Ice Exercise (ICEX) 2011, operating under the Arctic ice. In the same exercise a camp was established 150 nautical miles (278 kilometres) north of Prudhoe Bay, Alaska."[200]
- "In 2009 the United States deployed at least three submarines to the Arctic, including for the first time one of its newest Virginia class SSN submarines—the USS *Texas*."[201]
- US SSBNs[202] are assumed not to be specifically designed for Arctic deployment, according to analysts, and are not known to be deployed there,[203] but firm confirmation is not available.
- Starting in 2031, 12 new SSBN(X) submarines will be introduced. "Each of these nuclear-powered vessels, the largest submarines the Navy has ever built, will carry up to 16 Trident ballistic missiles fitted with multiple nuclear warheads. All in all, this new submarine fleet is expected to deploy about 1,000 nuclear warheads — 70 percent of the U.S. government's strategic nuclear weapons."[204] It is not specified whether these submarines will be deployable in the arctic.

**Offshore Patrol Vessels**

- "The US Coast Guard regularly deploys OPVs [offshore patrol vessels] in or near the Arctic."[205]

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[196] SIPRI, p. 13
[197] Arms Control Association, "The Presidential Nuclear Initiatives (PNIs) on Tactical Nuclear Weapons at a Glance," http://www.armscontrol.org/factsheets/pniglance
[198] SIPRI, p. 13
[199] Adam Lajeunesse, "Research Note: American SSNs in Canadian Arctic Waters, 1960-1988," Laurier Centre for Military Strategic and Disarmament Studies. http://www.canadianmilitaryhistory.ca/research-note-american-ssns-in-canadas-arctic-waters-1960-1986-by-adam-lajeunesse/
[200] SIPRI, p. 13
[201] Climate Change and Arctic Security Report
[202] "The U.S. fleet of ballistic missile submarines consists of 14 Trident (Ohio-class) submarines, each equipped to carry 24 Trident missiles. With two submarines in overhaul, the operational fleet of
12 submarines currently carry around 1,100 warheads," They operate from two bases, King's Bay on the Atlantic and Bangor on the Pacific. Amy F. Woolf, "U.S. Strategic Nuclear Forces: Background, Developments, and Issues," US Congressional Research Service, 14 January 2013. http://www.fas.org/sgp/crs/nuke/RL33640.pdf
[203] Michael Wallace and Steve Stables (March 2010), "Ridding the World of Nuclear Weapons: A Task Long Overdue," Canadian Pugwash Group and the Rideau Institute, http://www.arcticsecurity.org/docs/arctic-nuclear-report-web.pdf
[204] Lawrence S. Winter (12 August 2014), "Opinion: New nuclear submarine arms race poses great danger," http://www.nj.com/opinion/index.ssf/2014/08/opinion_new_us_trident_submarine_fleet_is_unnecessary_dangerous_expense.html
[205] SIPRI, p. 13

- "The new Legend (also known as National Security Cutter, NSC) class large OPVs have been designed partly to be able to operate in Arctic weather conditions better than the previous Hamilton class, but they are not ice-strengthened. Eight are planned, the first two of which were commissioned in 2010–11."[206]

**Icebreakers**

- The US has limited icebreaking capability, according to the Congressional Research Service (one heavy and one medium polar icebreaker):
  - "The reactivation of *Polar Star* will result in an operational U.S. polar icebreaking fleet consisting for the next 7 to 10 years of one heavy polar icebreaker (*Polar Star*) and one medium polar icebreaker (*Healy*). The Polar Sea, another heavy icebreaker and well-known to Canadians as the one that sailed through the Northwest Passage in 1985 without receiving explicit Canadian permission, has been out of service since 2010 and was slated for destruction – although its future remains uncertain.[207] The new polar icebreaker for which initial acquisition funding is requested in the FY2013 budget would replace *Polar Star* at about the time *Polar Star's* 7- to 10-year reactivation period ends."[208]

*Polar Star*

- The refurbished *Polar Star* was in the Arctic for sea trials and crew training in July 2013. At a length of 399 feet, with a crew of 134, it can break six feet of ice at three knots, and can break 21 feet of ice by backing and ramming.
  - Mission is break ice and maintain waterways
  - Home-ported in Seattle
  - Available for service in Antarctic as well as Arctic, indeed one report suggests that it will spend most of its time in Antarctica clearing waterways to resupply the McMurdo Research Station in a yearly mission, Operation Deep Freeze.[209]
  - Likely to be used as scientific platform as well.[210]


Photo Credit: Polar Star, United States Coast Guard, http://commons.wikimedia.org/wiki/File:Uscgc_polar_star.jpg

[206] SIPRI, p. 13.
[207] "At a June 26, 2013, hearing before the Coast Guard and Maritime Transportation subcommittee of the House Transportation and Infrastructure Committee, Vice Admiral John P. Currier, the Vice Commandant of the Coast Guard, testified that repairing and reactivating *Polar Sea* for an additional 7 to 10 years of service would require about 3 years of repair work at a cost of about $100 million." Ronald O'Rourke, "Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress," Congressional Research Service, 24 July 2013. http://www.fas.org/sgp/crs/weapons/RL34391.pdf
[208] Ronald O'Rourke, Specialist in Naval Affairs (10 December 2012), "Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress," US Congressional Research Service.
http://www.fas.org/sgp/crs/weapons/RL34391.pdf
[209] Audrey Carlsen (23 June 2013), "Polar Star Headed for Arctic Ice Trials," Unalaska Community Broadcasting, http://kucb.org/news/article/polar-star-headed-for-arctic-ice-trials/
[210] Carey Restino (6 July 2013), "Coast Guard: Refurbished icebreaker heads north," *AlaskaDispatch,* http://www.alaskadispatch.com/article/20130706/coast-guard-refurbished-icebreaker-heads-north

*Healy*

- A 420 foot vessel capable of breaking 4.5 feet of ice at three knots, and eight feet by backing a ramming.[211]
- "The Coast Guard's third polar icebreaker—*Healy*—entered service in 2000. Compared to *Polar Star* and *Polar Sea*, *Healy* has less icebreaking capability (it is considered a medium polar icebreaker), but more capability for supporting scientific research. The ship is used primarily for supporting scientific research in the Arctic.[212]


Photo Credit: Healy, United States Coast Guard, http://commons.wikimedia.org/wiki/File:USCGC_Healy_(WAGB-20)_north_of_Alaska.jpg

SIPRI summarizes US icebreaking capacity as follows:

> "The US Coast Guard operates three large, unarmed icebreakers capable of breaking Arctic ice; two have reached the North Pole in summer periods. These ships have a mainly scientific role in both the Arctic and Antarctic region. One of the ships is being modernized in the period 2009–13 and one has been out of service since 2010 and is scheduled for decommissioning due to budget constraints. Ideas for new vessels are under consideration, and the Coast Guard's budget for 2013–17 is to include $860 million for one large icebreaker.[213]

The Congressional Research Service on future icebreaking plans:

- "The Coast Guard's proposed FY2013 budget includes $8 million in acquisition funding to initiate survey and design activities for a new polar icebreaker. The Coast Guard's Five Year Capital Investment Plan includes an additional $852 million in FY2014-FY2017 for acquiring the ship.
- "The Coast Guard's two existing heavy polar icebreakers—*Polar Star* and *Polar Sea*— have exceeded their intended 30-year service lives, and neither is currently operational. *Polar Star* was placed in caretaker status on July 1, 2006. Congress in FY2009 and FY2010 provided funding to repair it and return it to service for 7 to 10 years; the Coast Guard expects the reactivation project to be completed in December 2012.
- "On June 25, 2010, the Coast Guard announced that *Polar Sea* had suffered an unexpected engine casualty; the ship was unavailable for operation after that. The Coast Guard placed *Polar Sea* in commissioned, inactive status on October 14, 2011.

**Forward Polar Icebreaker – Funding Declined by Congress**

The US Coast Guard requires $1 billion to build a new polar icebreaker. Although the importance of a new icebreaker for the Arctic is recognized by various officials from federal agencies, Congress will not fund the project. "As navigable waters in the Arctic continue to expand, pressure is being put on U.S. forces - especially the Coast Guard - to increase presence in the region and keep the homeland safe, said Chairman Rep. Duncan Hunter, R-Calif. He was pessimistic about the current state of U.S. icebreakers to carry out this mission and feared that rival nations had more determination to develop polar vessels.... Russia maintains a fleet of nearly 40 icebreakers and even China, a non-Arctic nation, has one currently under development, Hunter said.... The agencies argued that the development of modem icebreakers was a key component to achieving the goals set out in the National Strategy for the Arctic Region, which was released by President Obama in May."[214]

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[211] Carey Restino (6 July 2013), "Coast Guard: Refurbished icebreaker heads north," *AlaskaDispatch,* http://www.alaskadispatch.com/article/20130706/coast-guard-refurbished-icebreaker-heads-north

[212] Ronald O'Rourke, Specialist in Naval Affairs (10 December 2012), "Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress," US Congresional Research Service, http://www.fas.org/sgp/crs/weapons/RL34391.pdf

[213] SIPRI, p. 13.

[214] Chelsea Todaro (17 September 2014), Congress Declines to Help Coast Guard Fund New Polar Icebreaker," Military News – National Defense, http://www.military.com/

### 1.3 Organizations and Operational Units (personnel)

**US Coast Guard**

- In May 2013 the Coast Guard released a new "Arctic Strategy"[215] report:

    - Perhaps one of the more striking features of the report is that it does not call for major or near-term moves towards building up an Arctic infrastructure. Rather than building up a year-round infrastructure, the focus will continue to be on seasonal deployments.[216]The report[217] identifies improvements in domain awareness as a key priority: "Coast Guard operations require precise and ongoing awareness of activities in the maritime domain. Maritime awareness in the Arctic is currently restricted due to limited surveillance, monitoring, and information system capabilities. Persistent awareness enables identification of threats, information-sharing with front-line partners, and improved risk management."

- In discussing its Arctic "presence," The Coast Guard identifies "strategic priorities to achieve effective presence," including:
    - The development of "an adaptable mix of cutters, boats, aircraft (including unmanned aerial systems), and shore infrastructure to enable effective seasonal operations";
    - "Expanding capacity to respond to emergency and other time critical events";
    - "Maintain a scalable presence commensurate with risks posed by increasing activity";
    - "Develop the appropriate capabilities and competencies, with sufficient capacity, to execute missions at an acceptable level of risk, and in a manner that is adaptive to changes in environmental conditions"; and
    - "Proceed with a risk-based, phased approach to resourcing to address the highest operational needs, including the establishment of infrastructure and communications systems to support operations".

    - The report also includes a useful appendix on "U.S. Coast Guard Forces and Assets" (elements, such as Dutch Harbor and Adak Facility).

    - June 12, 2014 – Admiral Tom Ostebo is joining Coast Guard District 17 as a new commander, bringing with him Arctic experience. "During Ostebo's tenure, the Coast Guard launched seasonal operations in the Arctic, where shipping traffic is on the rise. When a winter storm prevented a fuel delivery to Nome in 2012, he sent the icebreaker Healy to clear a path for a Russian tanker. He also supervised the Coast Guard's response to the grounding of the Shell drill rig Kulluk near Kodiak in early 2013." Ostebo says that there is still a lot of work that needs to be done in the Arctic.[218]

    - August 1, 2014 – The U.S. Coast Guard Research and Development Centre "is leading a multiagency team to support Arctic Shield 2014, a 17th Coast Guard District initiative. The purpose of their month-long evaluation is to improve USCG capabilities in the Arctic region, specifically in the areas of boat operations, communications, navigational safety and oil spill response."[219]

**Coast Guard Arctic Craft Project**

Part of the Coast Guard's Arctic Strategy is to ensure that it is ready to respond. Part of the projects includes broadening "the Coast Guard's understanding of Arctic waters and how best to prepare for the challenges the region presents." Part of the project is to evaluate each piece of equipment the Coast Guard uses, deciding what equipment is most often used and whether the equipment is up to par with leading technologies.[220]

**2009 Navy Arctic Roadmap**[221]

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[215] "United States Coast Guard Arctic Strategy," May 2013. http://www.uscg.mil/seniorleadership/DOCS/CG_Arctic_Strategy.pdf
[216] Jennifer McDermott (21 May 2013), "Arctic to remain part-time pursuit of Coast Guard," http://theday.com/article/20130521/NWS09/130529935/1017
[217] "United States Coast Guard Arctic Strategy," May 2013. http://www.uscg.mil/seniorleadership/DOCS/CG_Arctic_Strategy.pdf
[218] Casey Kelly, "New Coast Guard District 17commander brings Arctic Experience," KTOO. http://www.ktoo.org/2014/06/12/new-coast-guard-district-17-commander-brings-arctic-experience/
[219] Eric Haun (1 August 2014), "Coast Guard Preps for Arctic Research," MarineLink, http://www.marinelink.com/news/research-arctic-preps374141.aspx
[220] Petty Officer 1st Class Shawn Eggert, "Coast Guard Arctic Craft Project looks to older technologies to tackle new challenges in Arctic," DVIDS. http://www.dvidshub.net/news/139746/coast-guard-arctic-craft-project-looks-older-technologies-tackle-new-challenges-arctic#.U_QYNE3lrGg12
[221] U,S, Navy Arctic Roadmap 2014-2030, http://www.navy.mil/navydata/documents/USN_artic_roadmap.pdf

- In 2009 the US Navy established a Task Force on Climate Change (TFCC) in order to develop Navy roadmaps, first for the Arctic and later for more general responses to global climate change. The October 2009 Arctic Roadmap is for the period FY2010-FY2014. Rather than setting out Arctic plans and policies, it sets out a schedule for the development and implementation of such plans and policies. As such it calls for things like the development strategic objectives and command structure requirements, and assessments of current Navy Arctic capabilities.[222]

## 2. Recurring Operations and Exercises

### Ice Exercise 2014

- It has been reported that "the Connecticut-based Virginia-class attack submarine, and the San Diego-based Los Angeles-class attack submarine Hampton are in the northern waters."[223]
- "The overall exercise has been planned and will be coordinated by the Navy's Arctic Submarine Laboratory (ASL) located at Naval Base Point Loma in San Diego. A temporary ice camp and tracking range will be built into the ice flow North of Prudhoe Bay, Alaska. The U.S. Navy Ice Camp NAUTILUS consists of a small village, constructed and operated especially for the ICEX by members of the U.S., Canadian, and British navies."[224]

### Northern Edge

- The annual exercise is a training event involving US Air Force, Navy, Army and National Guard.[225]
- "It is Alaska's premier joint training exercise designed to practice operations, techniques and procedures, and enhance interoperability among the services. Over 6,000 participants from all the services, Airman, Soldiers, Sailors, Marines and Coast Guardsmen from active duty, reserve and national guard units are involved [in the 2011 exercise]."[226]
- Northern Edge 2013 is to run from June 17-28.

### Arctic Edge

- U.S. Northern Command conducts this exercise in cooperation with the State of Alaska Division of Homeland Security and Emergency Management and other federal, state and local agencies. It provides training in interagency disaster response and DOD responses to requests for assistance from U.S. civil authorities.[227]

### Alaska Shield

- A series of exercises for developing responses of catastrophic events (e.g. earthquake) in Alaska, involving military and civilian agencies.[228]

### NOAA and U.S. Coast Guard: Simulation Based Research Exercise

- The National Oceanic and Atmospheric Administration (NOAA) and the U.S. Coast Guard (USCG) are carrying out a simulation-based research exercise. The aim is to strengthen security and environmental protection in the Arctic. "USCG researchers aboard the Healy cutter are set to simulate an oil spill and test unmanned airborne and underwater sensing technologies..."[229]

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[222] Ronald O'Rourke, Specialist in Naval Affairs (10 December 2012), "Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress," US Congresional Research Service, pp. 63-65, http://www.fas.org/sgp/crs/weapons/RL34391.pdf
[223] David Pugliese (22 March 2014), "U.S. Navy Submarines Conduct Exercise In Arctic," http://ottawacitizen.com
[224] America's Navy - http://www.navy.mil/submit/display.asp?story_id=79747
[225] Northern Edge 2011 - http://www.jber.af.mil/alcom/northernedge/northernedge2011.asp
[226] Northern Edge 2011 - http://www.jber.af.mil/alcom/northernedge/northernedge2011.asp
[227] Arctic Edge - http://www.jber.af.mil/alcom/arcticedge/
[228] Alaska Shield 2012 focused on winter storm response: http://ready.alaska.gov/press/Statewide%20Exercise%20Prepares%20Alaska%20for%20Big%20Winter%20Storm.pdf
[229] Jay Clemens (15 Aug. 2014). "NOAA, Coast Guard test systems for Arctic Response Missions," *ExecutiveGov*. http://www.executivegov.com/2014/08/noaa-coast-guard-test-systems-for-arctic-response-missions/

# RUSSIA

**General Information**

According to Russian President Putin, the Arctic is "a concentration of practically all aspects of national security – military, political, economic, technological, environmental and that of resources."[230] President Putin has proposed the development of a "united system of naval bases" as part of a strengthened military infrastructure in the Arctic. Oil and gas production facilities have to be protected from terrorist and other threats, he said, to make shipping through the Russian sea route profitable and convenient, and to support claims related to the continental shelf.[231]

**UPDATED: Russia's Military Doctrine**

- The updated doctrine was introduced December 26, 2014 and is described as purely defensive in nature.
- NATO's military expansion towards Russia's borders is seen as one of the main external threats to national security
- Other external threats include the "development and deployment of strategic missile defense systems, the implementation of the "global strike" doctrine, plans to place weapons in space, as well as the deployment of high-precision conventional weapons systems."[232]

## 1. Security Assets available for Operations in the North

### 1.1 Bases (including stations, naval facilities, radar sites, etc)

**Northern Fleet Naval Bases**

*Severomorsk* (Northern Fleet Headquarters)

- "As of 1996 the fleet provided home ports for thirty-seven nuclear submarines, twenty-two other submarines, forty-seven principal surface combatants, and ten coastal and smaller ships. The naval aviation contingent included a complement of twenty Su-39 fixed-wing aircraft and ten antisubmarine warfare helicopters on board the Admiral Kuznetsov , which heads the air defense of the Barents Sea. Shore-based naval aviation included 200 combat aircraft and sixty-four helicopters. The Northern Fleet has two naval infantry brigades, one coastal defense regiment, and an air defense missile regiment."[233]

*Kola*
*Motovsky*
*Gremikha*
*Ura Guba*
*Severdoninsk*[234]

- The largest of Russia's five naval fleets is the Northern Fleet, stationed on the Kola Peninsula and along the coasts of the Barents and White Seas

[230] Ekaterina Klimenko (September 2014), "Russia's Evolving Arctic Strategy: Drivers, challenges and Opportunities," Stockholm International Peace Research Institute, SIPRI Policy Paper 42, http://books.sipri.org/files/PP/SIPRIPP42.pdf
[231] RT News (22 April 2014). "Russia to create united naval base system for ships, subs in Arctic – Putin". http://rt.com/news/154028-arctic-russia-ships-subs/
[232] SputnikNews (26 December 2014), "Russia Revises Military Doctrine, Lists NATO Buildup As Major Threat," http://sputniknews.com/
[233] Global Security (2014). "Northern Fleet", http://www.globalsecurity.org/military/world/russia/mf-north.htm
[234] GlobalSecurity.Org: http://www.globalsecurity.org/military/world/russia/mf-north.htm

**Wrangle Island**[235]

**Cape Schmidt**[236]

- Located in Cape Schmidt in the eastern Chukotka region
- The autonomous base is shaped like a five-point star and built in environmentally protected territories
- According to Lt. Col. Sergei Surovikin, construction on the base will continue with a "drone detachment to be deployed by the year's end, and an airport on the cape set to be built in 2015."[237]
- Alexandra Land IslandConstruction was completed in December 2014
- According to a press release issued last week by Russia's Federal Ministry of Special Construction, the facility includes the following: a "sauna, psychological evaluation room and sports facilities, as well as eating, sleeping and medical quarters."[238]

**Forward Military Base – Kotelny Island 2015**

- A federal nature reserve[239]

**Forward Military Base – Alakurtti Village 2015**

- Potentially host a motorized infantry brigade[240]

**Reactivation of Cold War Bases**

- Russia is "reactivating Cold War bases and deploying some 6,000 military personnel along the length of the arctic frontier." In addition, the number of federal border guards deployed along the northern border is increasing. [241]

**Dual use Naval Facilities**

- The US Naval Institute reports that Russia is planning a series of "dual use" naval facilities across the entire Arctic coast that will be available to commercial craft, the border service, and the navy's Northern Fleet.[242] From West to East, the possible sites are: Murmansk, Archangelsk, Naryan-Mar, Vorkuta, Nadym, Dudink, Tiksi, Pevek, Provideniya, Anadyr. These may be co-located with a string of "emergency rescue centres" which had earlier been announced.

**Barneo (temporary ice base)**

- "For the first time in modern Russian history, paratroopers have landed on a drifting floe in the Arctic Ocean." In early April "more than 90 paratroopers from the Ivanovo-based 98th Airborne Division jumped from an Ilyushin Il-76 to the drifting research station Barneo close to the North Pole. On Barneo the soldiers have set up a camp and will be conducting drills on operations in extreme climatic conditions. The ground temperature on Bareno is around 30 degrees below zero. Load-carrying platforms with materials, supplies, fuel and lubricants were also dropped on the polar base. The plane took off from the Olenya military airfield in Olenegorsk on the Kola Peninsula, where the paratroopers had been training for transfer to the Arctic. The drop on Barneo comes only three week after Russia dropped 350 paratroopers from the 98th Airborne Division over the far northern New Siberian Islands. The ice station Barneo is set up every spring on 89°N – 100 kilometers from the North Pole. The station, which is operational for about one month, is used as base by scientists and tourists from all over the world."[243]

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[235] Matthew Bodner and Alexey Eremenko (8 September 2014), "Russia Starts Building Military Bases in the Arctic," The Moscow Times, http://www.themoscowtimes.com/
[236] Matthew Bodner and Alexey Eremenko (8 September 2014), "Russia Starts Building Military Bases in the Arctic," The Moscow Times, http://www.themoscowtimes.com/
[237] The Moscow Times (27 November 2014), "Russian Military Opens 2nd Arctic Base," http://www.themoscowtimes.com/
[238] The Moscow Times (8 December 2014), "Russia Builds New Arctic Military Base," http://www.themoscowtimes.com/
[239] The Moscow Times (27 November 2014), "Russian Military Opens 2nd Arctic Base," http://www.themoscowtimes.com/
[240] The Moscow Times (27 November 2014), "Russian Military Opens 2nd Arctic Base," http://www.themoscowtimes.com/
[241] Tyler Rogoway (22 October 2014), "Russia Annexes and Deploys Forces to Tiny but Strategic Arctic Island," Foxtrot Alpha blog, http://foxtrotalpha.jalopnik.com/
[242] Mark Adomanis (9 August 2012), "Russia Plans Massive Arctic Expansion," USNI, http://news.usni.org/news-analysis/news/russia-plans-massive-arctic-expansion
[243] Trude Pettersen (10 April 2014), "Russian paratroopers conquer North Pole," *Barents Observer*, http://barentsobserver.com/en/security/2014/04/russian-paratroopers-conquer-north-pole-10-04

**Forward Arctic Sea Defence Base**

- March 2014: The Ministry of Defence of the Russian Federation has commissioned the setting up of "another Arctic Sea Defence Base" on the islands of the Severnaya Zemlya archipelago. [244]

**Forward Military Infrastructure**[245]

- According to Russian Northern Fleet command spokesman Andrey Korablev, "We [the Russian Northern Fleet] plan to create a military infrastructure on virtually all of the archipelagos and islands of the Arctic Ocean in order to create a unified system of monitoring above-water and underwater environments"
- Putin said, "Moscow must safeguard every part of Russian Arctic shelf." Further, Putin urged the strengthening of military infrastructure, saying "we should strengthen the military infrastructure. Specifically, I'm referring to the creation of a united system of naval bases for ships and next-generation submarines in our part of the Arctic."[246]

**Forward Arctic Aerdrome Upgrade**

- According to Commander-in-Chief of the Russian Air Force, Col.-General Viktor Bondarev upgrades are planned for a Russian Arctic aerdrome "to receive Ilyushin Il-76 heavy military transport planes. Plans are afoot to make the Temp aerdrome on the Kotelny Island of the New Siberian Islands archipelago off Yakutia suitable for Il-76 aircraft."[247]

**New Arctic Territory - Yaya Island**

- Located in the Laptev Sea, a tiny island named Yaya Island was discovered. The island is approximately 500 square meters in size and now part of Russian territory. The claim of Yaya Island is another step towards Russia's presence and resurgence on the arctic.[248] Russian pilots discovered the location of the island early in October, and the location has been confirmed by the Admiral Vladimirsky research ship. [249]

## 1.2 Equipment

### 1.2.1 Air

The Russian governmental military-industrial commission proposes to deploy, beginning in 2016, a series of airships in Arctic regions, designed for surveillance of oil installations and military objects. The airships would be equipped with thermal cameras, laser devices, radio locators and video cameras. The commission promotes the idea as a highly cost-efficient means of monitoring Arctic developments.[250]

In late 2013 the Russian Northern Fleet late opened the airfield at Kotelny, one of the main islands at the archipelago, which had housed a research station and military base from 1933-1993. The new base will protect offshore oil and gas resources in the area and keep an eye on the growing number of ships sailing along the Northern Sea Route. In March 2014, 350 Paratroopers were dropped on the island of Kotelny to demonstrate Russian capacity to operate in Arctic conditions.[251]

Russia's new Northern Fleet battalion has been launched and unmanned aerial vehicles are flying over Russian Arctic waters. They have ranges of 10 to 150 km. "Thanks to advanced video and photo equipment, the drones can give their operators accurate information about the movements of enemy forces both at daytime and night time", the Northern Fleet reports.[252]

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[244] MarineLink (2014), "Russia Setting Up Another Arctic Sea Defence Base," http://www.marinelink.com/news/setting-another-defence365218.aspx
[245] Arctic Info (2014), "A military infrastructure will be created in the Arctic archipelagos of Russia," http://www.arctic-info.com/
[246] RT (2014), "Russia to create united naval base system for ships. Subs in Arctic-Putin," http://rt.com/news/154028-arctic-russia-ships-subs/
[247] ITAR TASS Russia News Agency (2014). "Russian Arctic island to serve as base for military transport planes," http://en.itar-tass.com/russia/744479
[248] Tyler Rogoway (22 October 2014), "Russia Annexes and Deploys Forces to Tiny but Strategic Arctic Island," Foxtrot Alpha blog, http://foxtrotalpha.jalopnik.com/
[249] Reissa Su (22 October 2014), "Russia to Reactivate Former Soviet Union Bases in Arctic Border in Response to NATO," International Business Times, http://www.ibtimes.com/
[250] Atle Staalesen (12 March 2014), "Airships for Russian Arctic patrol," *Barents Observer*, http://barentsobserver.com/en/security/2014/03/airships-russian-arctic-patrol-12-03
[251] Atle Staalesen (17 March 2014_, "Arctic here we come! Russia drops 350 paratroopers over the far northern New Siberian Islands in one of the country's biggest airdrop operations in the Arctic ever," Barents Observer, http://barentsobserver.com/en/security/2014/03/arctic-here-we-come-17-03
[252] Atle Staalesen (4 April 2014), "First Northern Fleet drones taking off," *Barents Observer*, http://barentsobserver.com/en/security/2014/04/first-northern-fleet-drones-taking-04-04

**Northern Fleet Aircraft**[253]

*Su-33 Fighter* (18)

Photo Credit: Su-33 Fighter, http://commons.wikimedia.org/wiki/File:Russian_Navy_Sukhoi_Su-33.jpg

*Su-25 Ground Attack Fighters* (5)

Photo Credit: Su-25 UB, used for combat and training, http://commons.wikimedia.org/wiki/File:Russian_Air_Force_Su-25.jpg

*Tu-142 Anti-Submarine Warfare* (13)

Photo Credit: Sergey Krivchikov, Tu-142 Anti-Submarine Warfare, http://www.airliners.net/photo/India---Navy/Tupolev-Tu-142/1184007/L/

*Il-38 Maritime Patrol* (14)

*Il-20 Electronic Warfare and Electronic Intelligence*

[253] The Military Balance, 2012, IISS, p. 198.

*Tu-134 Transport*

Photo Credit: Gennady Misko, Tu-134 Transport, http://commons.wikimedia.org/wiki/File:MAGAS_Kosmos_Tupolev_Tu-134_Misko.jpg

*Ka-27 Anti-Submarine Warfare Helicopters*

Photo Credit: US Navy, Ka-27 Anti-Submarine Warfare Helicopter, http://commons.wikimedia.org/wiki/File:Kamov_Ka-27PS.JPEG

*Ka-29 Transport Helicopters*

- Aircraft in the Russian Arctic support the Northern Fleet or northern Russia
- Many do not have the range to operate in the Arctic area beyond Russian territory

*Tu-142 and Il-38 maritime Reconnaissance Aircraft resumed* regular missions near or over the Arctic in 2007[254]

- Long-range Tu-22 bombers resumed patrols beyond Russia in 2007,[255]
- In 2012 Russia announced its intention to return to Arctic airfields that were closed after the end of the Cold War
- Novaya Zemlya
- Naryan-Mar
- Graham Bell Island.[256]
- These plans were later modified:
- Earlier plans to base MiG-31 aircraft in Novaya Zemlya were reversed in February 2013[257]
- A squadron of Mig-31 long-range fighter interceptors are to be stationed on the Novaya Zemlya archipelago in the Arctic.[258]

*Forward Deployment of MiG-31 Interceptors*

- Russia is deploying its fastest interceptors, the MiG-31, to a Northern air base. According to RIA Novosti: "Starting from 2017, the Russian Air Force will base MiG-31 interceptor jets and tactical aircraft at a Russian Arctic airfield

[254] SIPRI, p. 9
[255] Rob Huebert, Heather Exner-Pirot Adam Lajeunesse, Jay Gulledge (2012), "Climate Change and International Security: The Arctic as a Bellwether," Center for Climate and Energy Solutions, http://www.c2es.org/docUploads/arctic-security-report.pdf
[256] "Russia to Reopen Arctic Airbases," RIANOVOST, 30 May 2012. http://en.rian.ru/military_news/20120530/173757083.html
[257] Trudy Pettersen (4 February 2013), "Russia drops Arctic air force plans," Barents Observer, http://barentsobserver.com/en/security/2013/02/russia-drops-arctic-air-force-plans-04-02
[258] Andrei Kislyakov (2 November 2012), "Russia deploys Arctic troops," http://rbth.ru/articles/2012/11/02/russia_deploys_arctic_troops_19711.html

in the urban settlement of Tiksi in northernmost Sakha Republic, Commander Col. Gen. Viktor Bondarev said Wednesday." [259]

Photo Credit: Dimitry Pichugin Russian Air Force MiG-31 BM, http://www.airliners.net/photo/Russia---Air/Mikoyan-Gurevich-MiG-31BM/2126525/L/

### 1.2.2 Land

**Possible new Russian Tanks stationed in the Arctic**

- The Armata tank is "equipped with a special blend of steel to extremely low temperatures." The tank is equipped with 44S-SV-SH armor. "The Russian Defense Ministry has not openly declared to locate the tanks in the Arctic, though with competition for the area's mineral resources heating up, Russia has a clear interest in developing a military presence there.[260]

**Forward Radar and Ground Guidance Systems**

- Russia plans to "establish radar and ground guidance systems for Cape Schmidt's Wrangel Island and Franz Josef Land."[261]

**Forward Drone Squadron**

- November 2014 – "A squadron of unmanned aerial vehicles will be deployed in Russia's Arctic region within a month. The drone grouping will be stationed in the Chukotka autonomous area to serve the control zone in Russia's Eastern Military District..."[262] The first trial flights of the Orlan-10 drones is planned for early 2015. "The drones will ensure sea navigation security and conduct coastal air reconnaissance over Russian territorial waters."[263]

**Forward 13 Airfields and Air-Ground Firing Range**

- October 2014 - The head of the National Defense Management Centre, Lt. Gen. Mikhail Mizintsev, said: ""We are planning to build 13 airfields, an air-ground firing range, as well as ten radar and vectoring posts.." According to the Russian news Izvestia, construction for military facilities has already started.[264]

### 1.2.3 Sea

Russian President Putin, in warning of growing threats of terrorism in the Arctic, has signed into law a new measure to permit oil companies to establish their own armed security forces.

[259] Michael Ballaban (16 October 2014), "Russia is Deploying Its Fastest Interceptors To The Arctic Full-Time," Foxtrot Alpha blog, http://foxtrotalpha.jalopnik.com/
[260] Denis Kungurov (14 November 2014), "Secret new Russian tank could be deployed to Arctic zones," Russia Beyond the Headlines, http://rbth.com/
[261] Reissa Su (22 October 2014), "Russia to Reactivate Former Soviet Union Bases in Arctic Border in Response to NATO," International Business Times, http://www.ibtimes.com/
[262] TASS (27 November 2014), "Russia to deploy drone grouping in Arctic region by yearend," http://itar-tass.com/
[263] TASS (29 December 2014), "Russia's Arctic group to get Orlan-10 drones by year end," http://itar-tass.com/en/russia/769901
[264] Thomas Nilsen (29 October 2014), "Arms the Arctic with 13 new airfields," Barents Observer, http://barentsobserver.com/

"According to the new legislation, the Russian oil companies will from now on be entitled to establish their own protection units. Newspaper Rossiiskaya Gazeta believes the companies will end up hiring not "one hundred security guards", but rather "thousands of well-armed people, equipped with automatic weapons, vehicles, vessels and aircrafts". Most of the people are likely to be former military personnel, police officers and special forces agents, the newspaper writes. President Putin said Russia "will continue to invest significant means in the Arctic, strengthen security and resolve problems connected with the social and economic development of the region."[265]

**Naval vessels assigned to the Northern Fleet**[266]

**Submarines**

*SSBN* (nuclear powered and nuclear armed ballistic missile subs – 9)

- The Federation of Scientists obtained information from the US Navy indicating that its SSBN made only five "deterrent patrols" in 2012 – what FAS called an "extremely low" rate of patrol.[267]

*SSGN* (cruise missile) attack submarines

*SSN* (nuclear powered attack subs, not nuclear armed – 13)

Photo Credit: US Navy, Russian Northern Fleet Victor III, http://commons.wikimedia.org/wiki/File:Victor_III_class_submarine_1997.jpg

*SSK* (attack submarines with anti-submarine warfare capability – not nuclear powered – 7)

*SSAN* (submersible auxiliary support vessel – nuclear powered – 7)

*SSA* (submersible auxiliary support vessel – not nuclear powered)

- Much of Russia's naval redevelopment is focused on capabilities for operations in the north, but not necessarily focused on Arctic patrols.

Russia has announced plans to increase the operational radius of its northern submarine fleet.[268]

*Potential Nuclear-Capable Submarines*

- Former unarmed Russian submarines are now believed to possess nuclear capabilities, and people are alarmed that US and Russia rivalry is on the rise because of that. Overall the "strategic nuclear warheads deployed by the US and Russia actually increased last year," and both countries are involved in upgrading their equipment.

[265] Atle Staalesen (23 April 2014), "Putin arms Arctic drillers," *Barents Observer*, http://barentsobserver.com/en/security/2014/04/putin-arms-arctic-drillers-23-04

[266] The Military Balance, 2012, IISS, p. 198.

[267] Defence Watch, "Capability of Russia's Ballistic Missile Submarine Force Questioned," http://ottawacitizen.com/

[268] Roderick Kefferputz (February 2010), "On Thin Ice? (Mis)interpreting Russian Policy in the High North," CEPS Policy Brief, http://www.ceps.eu/book/thin-ice-misinterpreting-russian-policy-high-north

Notably, "the new version of the Russian military doctrine... left its policy on nuclear weapons unchanged from four years earlier. They are to be used only in the event of an attack using weapons of mass destruction or a conventional weapon onslaught which... However, the new aggressive tone coincides with an extensive upgrading of Russia's nuclear weapons, reflecting Moscow's renewed determination to keep pace with the US arsenal."[269]

**192 strategic nuclear warheads based in the Arctic**

In March 2012, reporting under the New START agreement, Russia indicated that there are 6 Delta IV SSBNs deployed with the Northern Fleet

- Each is capable of carrying 16 missiles for a total of 96 missiles
- Each missile is capable of carrying 4 nuclear warheads for a total of 384
- Because 3 of the Delta IV subs were then undergoing overhauls, a total of 192 nuclear warheads were deployed in Russia's Arctic at the time.[270]

Photo Credit: US Navy, Submarine Delta IV class, http://commons.wikimedia.org/wiki/File:Submarine_Delta_IV_class.jpg

Russia's strategic interests are global and its key ports are in the north (Kola Peninsula) owing to its geography and its need for access to the North Atlantic and beyond.

SSBNs, or nuclear armed ballistic missile submarine developments:

- More active since 2009 (when one broke up through ice and launched a ballistic missile)[271]
- Some SSBNs are being modernized, while major new construction is underway
    - In December 2013 a second Borey-class sub entered service. Both operated out of the Northern Fleet's main nuclear submarine base in Gadzhiyevo.[272]
    - In January 2013 a new Borey-class SSBN was put into operational service (with a capacity for 16 strategic missiles, each capable of carrying up to 10 independently targeted nuclear warheads)
        - Another new SSBN was set afloat, and a third is said to be due soon
        - Borey Class subs are to replace Typhoon and Delta subs
        - Plan eight Borey subs by 2020, capable of carrying 148 missiles[273]
        - Each to carry 16 to 20 missiles[274]

SSNs, or nuclear powered attack submarines

- September 2014: Russia is building new Yasen-class submarines. The first Yasen joined the Northern Fleet in June and is called the Severodvinsk. Three additional vessels are supposed to follow, which will phase out the Soviet-era Akula and Alfa-class attack submarines[275]

[269] Julian Borger (4 January 2015), "US and Russia in danger of returning to era of nuclear rivalry," The Guardian, http://www.theguardian.com/
[270] "Russian strategic nuclear forces," Current Status, March 2012. http://russianforces.org/navy/
[271] Climate Change and International Security, p. 18
[272] Trude Pettersen, (3 January 2013), "Two new nuclear-powered submarines to Northern Fleet, *Barents Observer*, http://barentsobserver.com/en/security/2014/01/two-new-nuclear-powered-submarines-northern-fleet-03-01
[273] Viktor Litovkin (14 January 2013), "Russian Navy plans further expansion," Russia and India Report, http://indrus.in/articles/2013/01/14/russian_navy_plans_further_expansion_21601.html
[274] Charles Digges (14 January 2013), "Launch of new Russia sub class to put more nuclear missiles at sea, The Bellona Foundation, http://www.democraticunderground.com/10022227359
[275] Matthew Bodner and Alexey Eremenko (8 September 2014), "Russia Starts Building Military Bases in the Arctic," The Moscow Times, http://www.themoscowtimes.com/

- The operational radius of the northern submarine fleet has been expanded to include much of the Arctic Ocean[276]
- In December 2012 the first of its new Yasen Class cruise missile SSN's undertook a new round of sea trials
  - Can potentially carry nuclear armed missiles
- Sea trials to date have disclosed extensive flaws in a ship experiencing missed deadlines and cost over-runs[277]

"Russia plans to resume testing of the submarine-launched ballistic missile Bulava this summer. The country's two newest strategic nuclear-powered submarines will start trials as soon as the ice conditions in the White Sea will allow." The *Vladimir Monomakh* and *Alexander Nevsky* "will conduct four single launches of the Bulava missiles this summer. The test will be conducted from the usual exercise area in the White Sea to the Kura test site in Russia's far-eastern Kamchatka territory, ITAR-TASS reports." A September 2013 launch failed and further trials were then halted. "Test launches of the Bulava have been experiencing significant problems. Of the 19 or 20 test launches that have been done since 2004 eight have been officially declared unsuccessful. However, some analysts suggest that in reality the number of failures is considerably higher."[278]

Russia has announced plans to increase the operational radius of its *Northern Submarine Fleet*.[279]

- Russia is re-establishing its Northern Fleet base in Alakurtti, the small town located about 50 km from the border to Finland. The base will be home to about 3000 radioelectronics experts. Since 2009 the base has hosted only a border guard unit. A key objective for the new base personnel will be to keep track of international air activities in the Arctic, according to a report in Izvestia.[280]

**Surface Ships**

*Aircraft Carriers*

- There are plans for "five or six carrier battle groups," most of which would be based in northern waters[281]
- These new carriers are to be smaller than Russia's current ship, a more versatile combat ship, say some reports, that could include drones[282]

*Amphibious Assault Ships*

- Russia ordered Mistral class amphibious assault/helicopter carriers from France in 2010 and 2011 ("the first will be based with the Pacific Fleet and the second with the Northern Fleet")
- Russia has however cancelled or postponed plans to build two more under licence from France[283]
- Designated Vladivostok Class by the Russians, each of the ships is to carry:
  - 30 helicopters
  - Anti-missile cannons
  - Anti-aircraft missiles
  - Grenade launchers
  - 450 marines[284]
    - The two ships are expected to be delivered in October 2013 and October 2014.[285]
- September 2014 – In the wake of the Ukraine crisis, France halted the delivery of a Vladivostok warship to Russia. Following France's decision, Russia's Deputy Defence Minister Yury Borisov said, "Although of course it is

[276] Climate Change and International Security, p. 32
[277] Charles Digges (5 November 2012), "Shaky Severodvinsk nuclear sub sets to sea for trials – again," The Bellona Foundation, http://www.bellona.org/articles/articles_2012/severodvinsk_more_delays
[278] Trude Pettersen (15 April 2014), "Russia to resume Bulava tests," *Barents Observer*, http://barentsobserver.com/en/security/2014/04/russia-resume-bulava-tests-15-04
[279] Roderick Kefferputz (February 2010), "On Thin Ice? (Mis)interpreting Russian Policy in the High North," CEPS Policy Brief, http://www.ceps.eu/book/thin-ice-misinterpreting-russian-policy-high-north
[280] Atle Staalesen (14 March 2014), "Moving 3000 intelligence officers to Finnish border," *Barents Observer*, http://barentsobserver.com/en/security/2014/03/moving-3000-intelligence-officers-finnish-border-14-03
[281] Climate Change and International Security, p. 18
[282] Viktor Litovkin (14 January 2013), "Russian Navy plans further expansion," Russia and India Report, http://indrus.in/articles/2013/01/14/russian_navy_plans_further_expansion_21601.html
[283] "Russia postpones building 2 Mistral class amphibious assault ships locally," Defense Update Blog, 26 December 2012. http://defenseupdates.blogspot.ca/2012/12/russia-postpones-building-2-mistral.html
[284] The Strategy Page, The Vladivostock Class, 2 April 2013. http://www.strategypage.com/htmw/htamph/articles/20130402.aspx
[285] "Russia's first Mistral-class ship stern launched," RT.Com, 26 June 2013. http://rt.com/news/mistral-ship-stern-russia-261/

unpleasant and adds to certain tensions in relations with our French partners, the cancelling of this contract will not be a tragedy for our modernisation."[286]

Photo Credit: BPS Dixmude, http://commons.wikimedia.org/wiki/File:BPC_Dixmude.jpg

**Kirov-Class Battlecruiser**

**Kirov Class (1144.2)**[287]

- Ship has capacity for three Kamov Ka-27PL or Ka-25RT helicopters

Photo Credit: US Navy, Kirov-class battlecruiser, http://commons.wikimedia.org/wiki/File:Kirov-class_battlecruiser.jpg

**Pyotr Velikiy (Yuri Andropov)** [288]

- Heavy missile cruiser and flag ship of Russians Northern Fleet
- Ship part of naval patrols to monitor shipping routes in Russian territory

Photo Credit: Russian International News Agency, Russian battlecruiser Pyotr Velikiy, http://en.wikipedia.org/wiki/File:RIAN_archive_669522_Long-distance_voyage_of_Pyotr_Veliky_nuclear-powered_cruiser.jpg

[286] BBC News,, "Ukraine crisis: France halted warship delivery to Russia," September 3, 2014, http://www.bbc.com/news/world-europe-29052599
[287] Naval Technology. "Kirov Class (Tye 1144.2) (Peter the Great), Russia," http://www.naval-technology.com
[288] New York Times. "Russia Preparing Patrols of Arctic Shipping Lanes," http://www.nytimes.com/

**Admiral Nakhimov**[289]

Photo Credit: US Navy, Kalinin 1991 now known as Admiral Nakhimov cruiser, http://commons.wikimedia.org/wiki/File:BCGN_Kalinin_1991.jpg

**Icebreakers**

- Russia "has a fleet of about half a dozen [nuclear powered icebreakers] in operation, along with a larger fleet of less powerful, diesel-powered icebreakers."[290]
- Russia has begun the process for the construction of what promises to be the world's largest icebreaker:
  - 170 meters long and 34 meters wide.
  - To be "powered by two "RITM-200" compact pressurized water reactors generating 60MWe
  - "Designed to blast through ice more than 4 meters thick and tow tankers of up to 70,000 tons displacement through Arctic ice fields."[291]
  - Other reports say it will go through 3 meters of ice and will be able to escort vessels through the Northern Sea Route year-round[292]

Other existing icebreakers include:

- One large "50 Let Pobidy" icebreaker (thick ice-breaking capacity)
- Four small "Project 97" icebreakers on (thin ice-breaking capability) serve
- More than 20 civilian icebreakers operate in Arctic

**Forward Nuclear Icebreakers**

- May 2014 – Russia is underway to build its first three "new generation of 'super modern' universal-use icebreakers" at a tender of $2.3 billion, which was won by St. Petersburg's Baltic Shipyard. The Baltic Shipyard has already started the construction of a prototype, which is estimated to be in service by 2017. The project is referred to as "Project 22220."[293]

Photo Credit: Atomflot, "A mock up of the Arktika," http://bellona.org/news/arctic/russian-nuclear-icebreakers-fleet/2014-05-russia-trumpets-victory-new-super-modern-nuclear-icebreaker-project#bio-9

[289] RiaNovosti (2014), "Russia Begins Nuclear Powered Missile Cruiser Overhaul," http://en.ria.ru/military_news/
[290] Eve Conan (September 8, 2012), "Breaking the Ice: Russian Nuclear-Powered Ice-Breakers," Scientific American Blog, http://blogs.scientificamerican.com/guest-blog/2012/09/08/breaking-the-ice/
[291] Eve Conan (September 8, 2012), "Breaking the Ice: Russian Nuclear-Powered Ice-Breakers," Scientific American Blog, http://blogs.scientificamerican.com/guest-blog/2012/09/08/breaking-the-ice/
[292] Trude Pettersen (4 November 2012), "Three new nuclear icebreakers in the pipeline," *Barents Observer*, http://barentsobserver.com/en/arctic/three-new-nuclear-icebreakers-pipeline-14-11
[293] Charled Digges (9 May 2014), "Russia trumpets victory in new 'super modern' nuclear icebreaker project," http://bellona.org/

**Forward Coast Guard Ships**

- The coast guard division of Russia's Federal Security Service plans to "deploy four new warships" in the Arctic by 2020
- These will complement the 11 border protection facilities designated for the Arctic
- The official goal is to "protect its political and economic interests in the Arctic, including military, border, and coast guard units," according to RIA Novosti.[294]

**1.3 Organizations and Operational Units (personnel)**

"Russia's ground forces in the Arctic region include naval infantry and an army brigade on the Kola Peninsula"

- "winter-trained but are organized and equipped for operations in the north of Russia, not in the more inhospitable regions of the Arctic".
- "in March 2009 Russia announced a plan for a special military force to protect Arctic interests".

**Arctic Brigade**

- In 2011 Russia announced the establishment of an Arctic Brigade at Pechenga, about 10 kilometers from the Russian-Norwegian border and 50 kilometers from the Norwegian town of Kirkenes. "This brigade will be specially equipped for military warfare in Arctic conditions. It will be set up with DT-30P Vityaz tracked vehicles, in addition to multi-service army equipment, other armored vehicles and tanks." The *Barents Observer* reported that the *Nezavisimaya Gazeta* commented that "the U.S. and Canada are already establishing similar brigades, and the new Russian Polar Brigade will be located close to the border of Norway and Finland 'to balance the situation'."[295]
- The Pechenga motorized infantry brigade "would be re-organized to become an Arctic brigade specially equipped for military warfare in Arctic conditions." It was anticipated that it would be operational by 2015, and later it was announced that the brigade would become part of the Northern Fleet.[296]
- "According to the Russian Minister of Defence, Anatoly Serdyukov, plans for two Arctic brigades, including their size, armament and location, were still being worked out in July 2011."[297]
- "Russian military has begun to assemble two Army brigades and Special Forces units that will specialize in Arctic warfare and guard oil and gas infrastructure and Russian interests in the region."[298]
- In 2012 the Brigade became part of the Northern Fleet.[299]
- In 2013 the *Barents Observer* reported on equipment testing by the Brigade at Pechenga: "The brigade in Pechenga is now being used as a testing field for new snow and swamp-going vehicles GAZ-3351, TTM-3P and DT-3P, the Ministry of Defense's web site reads.

  "GAZ-3351 is a two-tiered belted vehicle capable of driving in snow and swamp. It can carry 16 persons or 2500 kilos of cargo. TTM-3P is a light amphibious personnel vehicle.

  "DT-3P is an amphibious armored vehicle capable of going "where there are no roads, only directions", as Rossiskaya Gazeta puts it. It can run for 700 kilometers without stopping and reach a speed of 60 kilometers per hour."[300]

**Forward Military Group/ Motor Rifle Brigade**

- Russia is deploying 6,000 military personnel to Murmansk "and the autonomous region of Yamal-Nenets". It is speculated that the new military group will consist of two brigades.[301] It is speculated that "these forces will very likely be capable anti-ship, ballistic missile and air defense units that work more as an area denial force than a

[294] Defence Watch (28 May 2013), "Russia to Deploy Four New Warships By 2020 to Protect Nation's Arctic Zone," RIA Novosti, http://en.ria.ru/military_news/20130527/181371368.html
[295] Trude Pettersen (16 March 2011), "Russia to establish Polar Spetsnaz on border to Norway," *Barents Observer*, http://barentsobserver.com/en/sections/topics/russia-establish-polar-spetsnaz-border-norway
[296] Trude Pettersen (19 March 2013), "Testing equipment for Arctic Brigade," Barents Observer, http://barentsobserver.com/en/security/2013/03/testing-equipment-arctic-brigade-19-03
[297] (SIPRI, p. 9)
[298] Climate Change and International Security, p. 32
[299] Trude Pettersen (26 November 2012), "Motorized infantry brigade to Northern Fleet," *Barents Observer*, http://barentsobserver.com/en/security/2012/11/motorized-infantry-brigade-northern-fleet-26-11
[300] Trude Pettersen (19 March 2013), "Testing equipment for Arctic Brigade," *Barents Observer*, http://barentsobserver.com/en/security/2013/03/testing-equipment-arctic-brigade-19-03
[301] Reissa Su (22 October 2014), "Russia to Reactivate Former Soviet Union Bases in Arctic Border in Response to NATO," International Business Times, http://www.ibtimes.com/

ground combat one."[302] According to Colonel General Oleg Salyukoy, two motor rifle brigades will be set up in the Murmansk region and Yamal-Nenets Autonomous Area.[303]

**Forward Arctic Military Command 2017**

- With the aim to defend national interests in the Arctic, Russia "will establish a military command structure with two brigades of mechanized infantry supported by snowmobiles and hovercraft by 2017..." According to Colonel General Oleg Salyukov, "The new specially trained and outfitted military brigades will patrol Russia's Arctic coastline, protect current and future military installations along the shore and in the Russian Arctic, ensure free passage of the Northern Sea Route and — perhaps most important of all — demonstrate to other Arctic nations Russia's military presence in the increasingly contested region..."[304]

## 2. Recurring Operations and Exercises

**Nuclear Triad Test 2014**

- November 2014: Russia carried out a nuclear triad test including strategic bombers, strategic submarines, and the launch of a Topol-M ballistic missile. Four Tu-95 strategic bombers, accompanied by four Il-78 tankers, were approaching Norway from the Northeast. A few days later another group of four strategic bombers and four tanker aircrafts were flying south along Norway's northern coast. "After scrambling fighter jets from Norway and Great Britain, NATO said in a statement that the Russian bombers pose a risk to civilian air traffic," especially since the bomber and tanker aircrafts from Russia did not "maintain radio contact with civilian air traffic control authorities." Russia also tested its submarine based ballistic missiles (SLBMO) "when 'Yury Dolgoruky' launched a Bulava missile from submerged position in the Barents Sea." This was the first operational test launch of Bulava in relation to combat training as well as the first time a Borey-class submarine carried a full set of missiles on board.[305]

**Airborne Military Drills 2014**

- "The Russian Airborne Troops on Thursday paradropped a 350-strong battalion at a landing site on the New Siberian Islands in the Arctic as part of ongoing military drills." The drills included the battalion from the 98th Guards Airborne Division. "The 98th division started large-scale exercises involving 4,000 troops, 36 military transport aircraft and an unspecified number of combat vehicles on March 11."[306]

**Naval Exercises**

- September 2014 – The Russian Northern Fleet is conducting a variety of rigorous drills to tests the capabilities of the fleet in the Arctic. "RT's Murad Gazdiev joined the destroyer Admiral Levchenko on a mission to re-equip a key naval base in the White Sea." Northern Fleet commander, Admiral Vladimir Korolyov, says that the major goal of the latest expedition "is to deliver personnel, equipment and property of the Northern Fleet's tactical group, which starting this year is going to fulfill military service at the New Siberian Islands on a permanent basis."[307]

Photo Credit: US Navy, Russian Destroyer Admiral Levchenko
http://commons.wikimedia.org/wiki/File:RFNS_Admiral_Levchenko_DDG-605.jpg

[302] Tyler Rogoway (22 October 2014), "Russia Annexes and Deploys Forces to Tiny but Strategic Arctic Island," Foxtrot Alpha blog, http://foxtrotalpha.jalopnik.com/
[303] TASS (1 October 2014), "Russia forms two motor rifle brigades for Arctic army grouping," http://itar-tass.com/en/russia/752208
[304] The Moscow Times (1 October 2014), "Russia to Form Arctic Military Command by 2017," http://www.themoscowtimes.com/
[305] Thomas Nilsen (1 November 2014), "Russia plays nuclear war-games in Barents Region," Barents Observer, http://barentsobserver.com/en
[306] Russia Paradrops Airborne Battalion in Arctic - http://en.ria.ru/russia/20140314/188427809/Russia-Paradrops-Airborne-Battalion-in-Arctic.html
[307] "Ice voyage challenge: RT joins Russian Navy fleet in Arctic base build-up mission," RT, September 2014, http://rt.com/news/187488-russia-arctic-drills-submarine/

- 2013 - Russia's Northern Fleet will undertake international exercises in cooperation with other states in the Barents and Norwegian Seas and the Atlantic Ocean
    - Barents – promotes interoperability between Russian and Norwegian search and rescue,
    - Pomor – Russian antisubmarine ship joins Norwegian Navy and aircraft from both countries in "joint air defense exercises…coming to the assistance of a vessel in distress, rescuing people in the water, and joint manoeuvres during day and night", and
    - FRUKUS – four Russian vessels join French, Norwegian and US navies in exercise linked to Partnership for Peace[308]
- In October Russia's Command Post Exercise troops were landed on an uninhabited Island, Kotelny in the Novosibirsk Archipelago, on a training and equipment testing exercise focused on protecting civilian infrastructure. More than 7,000 personnel involved. [309]

**The Ladoga 2013 Exercise**

In March 2013 Russian forces undertook two major air force drills in its northwest region. The Ladoga 2013 Exercise took place below the Arctic Circle at Lake Ladoga near the border with Finland. The exercise involved about 2,000 personnel, 500 weapons systems, and 50 front-line aircraft.[310] Aircraft used in the exercise were to include "MiG-31 Foxhound and Su-27 Flanker fighters, MiG-25RB Foxbat interceptors, Su-24M Fencer attack aircraft, Su24MR reconnaissance aircraft and Mi-8 Hip multirole helicopters and Mi-24 Hind attack helicopters."[311]

- The Russian Defence Minister visited Finland in May 2013 to promote greater military cooperation between the two countries and to urge Finland to buy Russian military equipment, including jet fighters.[312]
- Additional tactical drills took place in the Karelia[313] region involving 1,000 personnel and 70 aircraft in exercises in mid-air refuelling, reconnaissance, air protection.[314]

In April 2013 the newspaper *Svenska Dagblat* reported on Russian Air Force maneuvers in the Baltic focused on simulated actions against Sweden's two most important military bases.[315]

- Russia notified Sweden in advance of the March 2013 simulation of air attacks on Sweden.[316]
- It was a routine training exercise that took place entirely in international air space, but with flights routed between the Swedish Baltic Sea Islands of Oland and Gotland,[317]
- when Sweden was not able to respond, NATO scrambled fighter aircraft out of Lithuania, though also not in time to monitor the Russian exercise.[318]
- the Swedish Foreign Minister downplayed the incident, saying Russia's security threats are not in Sweden and that "the Russian military has neither the will nor the capacity to attack Swedish territory"[319]

**Ongoing Military Exercises**

- "Four thousand troops, 36 military transport aircraft and an unspecified number of combat vehicles are taking part in the exercises, which will run until March 14-2014. The drills will include a massive simultaneous paradrop involving 3,500 servicemen, the ministry said."[320]

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[308] "Russia's Northern Fleet Looks Ahead to International Drills," RIANOVOSTI, 4 January 2013. http://en.rian.ru/military_news/20130104/178576971.html
[309] Andrei Kislyakov (2 November 2012), "Russia deploys Arctic troops," http://rbth.ru/articles/2012/11/02/russia_deploys_arctic_troops_19711.html
[310] "Russian Air Force conducts air defence exercises," Airforce-Technology.Com, 22 March 2013. http://www.airforce-technology.com/news/newsrussian-air-force-conducts-defence-exercises
[311] "Russian Air Force Readies for Massive Drills," RiaNovost, 19 March 2013. http://en.rian.ru/military_news/20130319/180118617.html
[312] Atle Staalsen (29 May 2013), "Arctic on Russian-Finnish military agenda," *Barents Observer*, http://barentsobserver.com/en/security/2013/05/arctic-russian-finnish-military-agenda-29-05
[313] Trude Pettersen (20 March 2013), "Russia starts air force drills in Karelia," http://barentsobserver.com/en/security/2013/03/russia-starts-air-force-drills-karelia-20-03
[314] "Russian Air Force conducts air defence exercises," Airforce-Technology.Com, 22 March 2013. http://www.airforce-technology.com/news/newsrussian-air-force-conducts-defence-exercises
[315] "Russians practiced attack on Sweden, but no Swedish response" Radio Sweden, 22 April 2013. http://sverigesradio.se/sida/artikel.aspx?programid=2054&artikel=5511980
[316] Gerard O'Dwyer (29 May 2013), "NATO Rejects Direct Arctic Presence," http://www.defensenews.com/article/20130529/DEFREG/305290022/NATO-Rejects-Direct-Arctic-Presence
[317] Mia Bennett (6 June 2013), "Why NATO isn't establishing an Arctic presence," AlaskaDispatch, http://www.alaskadispatch.com/article/20130606/why-nato-isnt-establishing-arctic-presence
[318] "Swedish Air Force fails to counter mock Russian attack," AlaskaDispatch, 22 April 2013, http://www.alaskadispatch.com/article/20130422/swedish-air-force-fails-counter-mock-russian-attack
[319] Gerard O'Dwyer (29 May 2013), "NATO Rejects Direct Arctic Presence," http://www.defensenews.com/article/20130529/DEFREG/305290022/NATO-Rejects-Direct-Arctic-Presence

**Expedition: High North Geophysical Surveys**

- Nuclear icebreakers "nuclear icebreakers 'Akademik Fedorov' and 'Yamal' have conducted an entire complex of geophysical research at the North Pole…. The main purpose of the expedition is assessment of the hydrocarbon potential of the Russian shelf outside the 200-mile zone. Also, the objective remains to collect data to establish the continental nature of the Mendeleev and Lomonosov Ridges, which will form the basis of Russia's claims to the UN Commission about the borders of the continental shelf."[321]

**Forward Arctic Expedition 2015**

- December 2014: According to the Russian Defense Minister, a major Arctic expedition is planned for 2015. The expedition will target Russia's island formations, including Wrangel Island, Kotelny Island on the New Siberian Islands, Sredny Island, Novaya Zemlya, Franz Josef Land and Schmidt Cape. Members of the Public Council under the defense agency as well as cultural personalities will participate.[322]

**Forward Expeditions: Russian Navy**

- A number of expeditions are planned by the Russian Navy to the Arctic, exploring the region and Russia's place in it. According to Northern Fleet Admiral Andrei Korablev, ships will be sent to Franz Josef Land, Severnaya Zemlya, the Novosibirsk Islands archipelago and Wrangel Island. Russia also plans "to install military infrastructure on almost all of the islands and archipelagos of the Arctic Ocean to create a unified system of monitoring air, surface and subsurface conditions, Korablev said, RIA Novosti reported".[323]

[320] RiaNovosti (2014), "Russian Paratroopers Hold Massive Drills as Crimea Vote Nears," http://en.ria.ru/military_news/20140311/188317224.html
[321] George Backwell (2014), "Russia Conducts High North Geophysical Surveys," MarineLink, http://www.marinelink.com/news/geophysical-conducts375351.aspx
[322] TASS (24 December 2014), "Russia Defense Ministry plans to send major expedition to Arctic in 2015," http://itar-tass.com/en/russia/769044
[323] Bodner, Matthew (2014), "Russian Navy is Planning Summer Expeditions to Contested Arctic Region," The Moscow Times, http://www.themoscowtimes.com

# NORWAY

## 1. Security Assets available for Operations in the North

### 1.1 Bases (including stations, naval facilities, radar sites, etc)

- Norwegian Armed Forces headquarters are now in Reitan, near Bodo, just north of the Arctic Circle.[324]
- Army headquarters further north, in Bardufoss.
- Navy headquarters are in Bergen
- Coast Guard headquarters are in the north, in Sortland

In August 2009, Norway became the first Arctic state to headquarter its operations in the High Arctic when it moved its centre of military operations from Jatta in Southern Norway approximately 1,000 miles North to Reitan, outside Bodo. Bodo is also home to Norway's main air force base. Norway has 13 military bases above the Arctic Circle. [325]

**Bodo**[326]

- National Joint Headquarters
- Norway's largest military airport
- Fighter aircraft at 24/7 readiness for NATO

**Harstad**[327]

- Hosts the Navy's Task Force
- Allied Training Centre North

**Evenes (ved Harstad)**

- Army garrison

**Bjerkvik**[328]

- Technical workshop
- Maintenance on Armed Forces Vehicles and Weapons

**Sortland**[329]

- Navy's Coast Guard Squadron

**Andoya/Andenes**[330]

- Andoya Air Station
- The only base for the P-3 Orion maritime patrol aircraft
- Approximately 300 people work here every day in the department 133 Air Wing

**Setermoen**[331]

- Armoured battalion
- Artillery battalion
- Medical battalion
- Intelligence battalion
- Training centre

[324] http://mil.no/organisation/about/norwegianjointheadquarters/Pages/default.aspx
[325] Following taken from the Norwegian Armed Forces website:http://mil.no/organisation/about/norwegianmilitarybases/Pages/default.aspx
[326] Bodo - http://mil.no/organisation/about/norwegianmilitarybases/Pages/Bod%C3%B8.aspx
[327] Harstad - http://mil.no/organisation/about/norwegianmilitarybases/Pages/Harstad.aspx
[328] Bjerkvik - http://mil.no/organisation/about/norwegianmilitarybases/Pages/Bjerkvik.aspx
[329] Sortland - http://mil.no/organisation/about/norwegianmilitarybases/Pages/Sortland.aspx
[330] Andoya/Andenes - http://mil.no/organisation/about/norwegianmilitarybases/Pages/Andoya.aspx
[331] Setermoen - http://mil.no/organisation/about/norwegianmilitarybases/Pages/Setermoen.aspx

**Skjold**[332]

- Army 2nd battalion
- Army Engineer battalion

**Bardufoss**[333]

- 139 Air Wing stationed at air field
- Norway's main helicopter base since 2012

**Sorreisa**[334]

- Surveillance of north Norway air space, 24 hours a day, 365 days a year
- Includes localising and identifying all air activity over and close to national airspace and NATO territory

**Banak**

- Air field, operated by Royal Norwegian Air Force
- Serves detachment of the 330 Squadron
- Search and rescue helicopter squadron (linked to Porsanger)

**Porsanger**[335]

- Porsanger "hunter squadron"
- "World's northernmost army department"

**Sor-Varanger/Kirkenes**[336]

- Guards the 196 km border with Russia
- Employs boats, snowmobiles, skies, and foot patrols

## 1.2 Equipment

### 1.2.1 Air[337]

**F-16 Fighters**

- Based at Bodo, on 24/7 alert
- Without tankers for air-to-air refuelling the F-16 (and the coming F-35s) have little capacity beyond Norway's northern air space boundaries

Photo Credit: Forsvaret/Lars Magne Hovtun, F-16, http://www.newsinenglish.no/2011/10/27/new-fighter-jets-lack-arctic-abilities/

[332] Skjold - http://mil.no/organisation/about/norwegianmilitarybases/Pages/Skjold.aspx
[333] Bardufoss - http://mil.no/organisation/about/norwegianmilitarybases/Pages/Bardufoss.aspx
[334] Sorreisa - http://mil.no/organisation/about/norwegianmilitarybases/Pages/S%C3%B8rreisa.aspx
[335] Porsanger - http://mil.no/organisation/about/norwegianmilitarybases/Pages/Porsanger.aspx
[336] Sor-Varanger/Kirkenes - http://mil.no/organisation/about/norwegianmilitarybases/Pages/SorVarangerKirkenes.aspx
[337] Norwegian Armed Forces: http://mil.no/organisation/about/airforce/Pages/default.aspx and The Military Balance, 2012, IISS, p. 142.

**F-35Fighters**

- Plans to buy 56, to be based mainly at Ørland Main Air Station in central Norway, but with a Forward Operating base at Evenes in northern Norway.[338]
    - Norway is seeking delivery of the first six F-35s in 2017, and then six per year through 2024 (four aircraft are to be delivered in 2015 and 2016)
    - The total has been reduced to 52[339]
- SIPRI reports that without air refuelling they will have no capability beyond Norwegian airspace[340]
- No plans for air-to-air refuelling

Photo Credit: Tom Bech, F-35, http://commons.wikimedia.org/wiki/File:F-35_and_Boats.jpg

**P-3C and P-3N Anti-Submarine Warfare and Long-Range Patrol**[341](6)

- 20 years old and due for modernizing
- No word on a replacement[342]
- Peacetime surveillance and intelligence gathering
- Wartime anti-submarine warfare and anti-surface ship warfare


Photo Credit: P-3N Orion from the Royal Norwegian Air Force, http://commons.wikimedia.org/wiki/File:Bergen_Air_Show_009.jpg

[338] Defense Industry Daily (17 June 2012), "F-35 Lightning II Wins Norway's (Fake) Competition,"http://www.defenseindustrydaily.com/f35-lightning-ii-faces-continued-dogfights-in-norway-03034/
[339] Defence Watch (26 April 2013), "Norway to Buy Six F-35s in 2017 and then sex More Every Year Following Until 2024," http://blogs.ottawacitizen.com/2013/04/26/norway-to-buy-six-f-35s-in-2017-and-then-six-more-every-year-following-until-2024/
[340] SIPRI, p. 7.
[341] Smol, Robert (4 April 2014), "The Norwegian juggernaut," National Post, http://www.nationalpost.com/index.html
[342] (SIPRI, p. 7)

**Falcon 20C electronic warfare** (3)

**C-130J Herculese Transport** (4)

Photo Credit: Richard Ellis/MOD, C-130J Hercules Transport, http://commons.wikimedia.org/wiki/File:Hercules_C130J_MOD_45150996.jpg

**MFI-15 Safari Training**


Photo Credit: Tom Strom, Norway Airforce - Saab MFI-15 Safari, http://www.airliners.net/search/photo.search?id=0591096

**Lynx MK86 Anti-Submarine Warfare Helicopters** (6)

**Bell-412SP Helicopters** (18)

**Sea King Search and Rescue Helicopters** (12)

**NASAMS II**

**Land-Based Surface to Air Anti-Aircraft System**

### 1.2.2 Land

**Army**[343]

*CV9030 Tank*

*Leopard 2A4 Heavy Tank*

*Archer Self-Propelled Artillery*

*M-113 Family of Light Tanks*

*BV 206 Tracked Vehicle*

### 1.2.3 Sea

**Frigates or destroyers**[344] (last of which was delivered in Jan 2011)[345]

- Five new Frigates or destroyers
- Fridjof Nansen class
- New Arctic capability
- Have the US Aegis combat system
- Will host NH90 helicopters[346]

**Coastal Patrol Vessels**

- Six coastal patrol vessels
- Skjold class
- 76mm gun, anti-ship and anti-air missiles
- IISS refers to these as Patrol and Coastal Combatants

Norway's warships or patrol ships do not have the capability to break ice.[347]

**Marjata, Intelligence Vessel**

- A new Norwegian military intelligence vessel, the "Marjata," the same name that was given to all three earlier vessels in this role over a 60-year period, will enter into service in 2016. "The current Marjata has been sailing since 1995 and will be retired when the new vessel enters service in two years' time. The new "Marjata" is substantially larger than the former; 126 meter long with a 23,5 meter beam. The vessel will potentially have a larger area of operation than the old one. Nothing is said about where the new "Marjata" will have her homeport. The current vessel makes port call to Kirkenes near Norway's border to Russia."[348]

**Submarines**

- Six Ula class (SIPRI)
- Six mine-clearance vessels
- Three minesweepers
- Three mine-hunting
- One of these usually with NATO's mine-clearance force
- Logistics vessel
    - 14 vessels: diving, training, survey, intelligence, oceanographic surveillance, supply, and Royal yacht[349]

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[343] Norwegian Armed Forces: http://mil.no/organisation/about/army/Pages/default.aspx
[344] The Military Balance counts them as destroyers.
[345] Norway's navy ships are not capable of breaking ice, but some have increased capacity for Arctic operations, notably newly-acquired Fridtjof Nansen class frigates.
[346] SIPRI p.8
[347] SIPRI
[348] Thomas Nilsen (17 March 2014), "Norway's new Arctic giant spyship," *Barents Observer*, http://barentsobserver.com/en/security/2014/03/norways-new-arctic-giant-spyship-17-03
[349] The Military Balance, 2012, IISS, p. 142.

- Planning a large support ship to be available by 2015
- "…operates a large 'research ship' with electronic and signals intelligence equipment, which is capable of operations in thin ice. A replacement was order in 2010."[350]
- "None of Norway's warships or patrol ships can break ice."[351]

### 1.3 Organizations and Operational Units (personnel)

The **Navy's "coastal squadron"** is its operational force, and the **Navy's Coast Guard** "in peacetime are the government's primary authority at sea and the Armed Force's most important resource for handling incidents in the Norwegian territorial waters."[352]

**Coast Guard**

- Ministry of defence says Coast Guard has 13 vessels of various size
  - IISS says Norway's Coast Guard has 14 Patrol and Coastal Combatant ships
  - The Svalbard ice capable Coast Guard vessels (entered into service in 2002)
  - 57mm gun
  - NBC protected
- The "Coastguard operates four large but lightly armed OPVs capable of operations in icy conditions, including three with a helicopter hangar, and four other large ocean-going OPVs."[353]
- The Coast Guard operates ice-capable ships equipped with anti-ship and anti-air weapons.

**Brigade Nord**

- Since 2009, the Brigade Nord is "the largest active unit of the Norwegian Army." The Brigade "is stationed in the north of Norway, above the Arctic Circle. It is winter-trained but is organized as a heavy mechanized unit and is equipped for operations in Norway."[354]

## 2. Recurring Operations and Exercises

**Military Exercises**[355]

*Cold Response*

- Norwegian run with significant NATO and regional participation
- 7-10,000 troops
- Annual, mid-March
- Training for large-scale operations in winter conditions

*Annual military exercises* in cooperation with NATO and regional partners like Sweden are designed to enhance capacity for large-scale operations in winter conditions.

[350] SIPRI
[351] SIPRI
[352] Norwegian Armed Forces: http://mil.no/organisation/about/navy/Pages/default.aspx
[353] SIPRI
[354] SIPRI (March 2012), "Military Capabilities in the Arctic."
[355] Norwegian Armed Forces: http://mil.no/exercises/coldresponse2012/Pages/about.aspx

# DENMARK

**General Information**

Denmark has announced the establishment of an Arctic Task Force and Arctic Command, and "The Danish forces are being outfitted for a combat capability with the clear intention that most of its forces will be able to operate in or near Arctic waters."[356]

- SIPRI reports that Denmark adopted a "special Arctic strategy" in 2011[357]
- Arctic Command to be headquartered in Nuuk, Greenland
- Plans to create "a modular Arctic Response Force composed of different parts of the Danish armed forces…"

**Denmark makes claim for North Pole**

- "The Kingdom of Denmark is claiming a total of 895,000 square kilometres of ocean floor in the Arctic Ocean, far more than expected. Denmark's "claim to the ocean floor... extends not only to the North Pole and across to the Russian side of the pole, as was expected, but all the way to Russia's maritime border, only 200 nautical miles from the Russian coast. Overlap between the Danish-Greenlandic claim and Russia's own forthcoming claim was expected, but the size of what is now likely to be the overlap is hundreds of thousands of square kilometres larger than previously projected."[358]

## 1. Security Assets available for Operations in the North

### 1.1 Bases (including stations, naval facilities, radar sites, etc)

**Greenland and Faroes Military Bases**

- A combined command
- Surveillance and sovereignty
- Fisheries inspection
- Search and rescue
- Support for scientific expeditions

**Gronnedal in Southwest Greenland**

- Detachments:

*Northeast Greenland National Park*
*Station Nord* (Northern Greenland)
*Luftgruppe Vest I Sondre Stromford/Kangerlussuaq* (Western Greenland)
*Forsvarets Vagt I Mestersvig* (Eastern Greeland)

**Thule Air Base** (North-Western Greenland)

**Island Command Faroes**

- Near Torshavn[359]

### 1.2 Equipment

#### 1.2.1 Air

**F-16 Fighter** (45)

- F-16s have used Kangerlussuaq (Sonder Stromfjord) airport in west Greenland, with some to be based there for short periods

[356] Rob Huebert (March 2010), "The Newly Emerging Arctic Security Environment," Canadian Defence & Foreign Affairs Institute, http://www.cdfai.org/PDF/The%20Newly%20Emerging%20Arctic%20Security%20Environment.pdf
[357] (SIPRI March 2012, pp 5-6):
[358] Martin Breum (14 December 2014), "The claim game," Arctic Journal, http://arcticjournal.com/opinion/1206/claim-game
[359] Ministry of Defence, "Tasks in the Arctic and the Northern Alliance," http://www.fmn.dk/eng/allabout/Pages/TasksintheArcticandtheNorthernAtlantic.aspx

- Thule Air Base, now dormant, could be used again
- Likely to replace F-16 with F-35

Photo Credit: RDAF F-16 MLU,
http://commons.wikimedia.org/wiki/File:F-16_MLU_of_Royal_Danish_Air_Force_(reg._ET-199),_static_display,_Radom_AirShow_2005,_Poland.jpg

**C-130J Herculese Transport** (4)

**CL-604 Challenger Passenger Transport** (3)

Photo Credit: Danish Air Show,
http://danishairshow.dk/en/aircrafts/aircraft/danske-flyvevaben

**Saab T-17 Supporter Training** (27)

Photo Credit: Picture of Saab MFI-17 Supporter, Radom Air Show 2007,
http://commons.wikimedia.org/wiki/File:MFI-17_Supporter,_Radom_Air_Show_2007.jpg

**Super Lynx (MK90B) Anti-Submarine Warfare Helicopters** (8)

**AS550 Fennec maritime Reconnaissance Helicopters** (8)

**EH101 Merlin Transport Helicopters** (14)

### 1.2.2 Land

Not available

### 1.2.3 Sea[360]

**Destroyer** (1)
- 2 more on order[361]

*Thetis class (300 ton) Multi-Role Frigates* (4)

*Ice-Capable Patrol Vessels*
- Can travel through ice up to a meter thick, equipped with 76mm guns, and cold add Harpoon and Sea Sparrow anti-air and anti-ship missiles and anti-submarine torpedos. For patrols in North Atlantic and off Greenland.

  Now building large ships: 2 *Abasalon* and 3 *Iver Huitfeldt* (may have ice capacity), equipped with 127mm gun and missiles and torpedos[362]

**Patrol and coastal combatant ships DIANA Class**[363]

*Arctic Patrol Ships Knud Rasmussen class* (2)
- Dedicated for patrols off Greenland

*Arctic patrol cutter AGDLEK class* (1)
- Ice-strengthened patrol craft operates from Greenland

*Mine warfare and mine countermeasures* (7)

*Logistics and support* (22)
- Ministry of Defence says of North Atlantic:
  - Two types of ships operate in the North Atlantic
  - Large THETIS-class patrol vessels
  - new KNUD RASMUSSEN-class inspection vessels
  - These ships are based at Naval Base Frederikshavn
  - Under operational control of Island Commander Faroe Islands and Island Commander Greenland[364]

## 1.3 Organizations and Operational Units (personnel)

**Fromandskorps** (frogman corps)
- Navy SEAL- like unit made up of armed divers[365]
- Can operate in Arctic

**Small Sled Patrol** (Slaedepatrulje Sirius) in Greenland:
The defence ministry says "the Sledge Patrol SIRIUS monitors the uninhabited coastline of approximately 2100 km." Patrol is by dog sleds in the winter and coastal boats in the summer
The area also patrolled by aircraft and helicopter
- Sovereignty patrols, as well as wildlife management (animal census and ringing birds)[366]

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[360] Military Balance 2012, p. 106, Climate Change and International Security, Danish Armed Forces Facts and Figures, February 2011. http://forsvaret.dk/FKO/eng/Documents/Fakta%20om%20Forsvaret_UK.pdf
[361] Military Balance, 2012.
[362] Climate Change and International Security.
[363] Danish Defence (2011). "Facts and Figures: The Danish Armed Forces," http://forsvaret.dk/FKO/eng/Facts%20and%20Figures/Documents/Fakta%20om%20Forsvaret_UK.pdf
[364] http://forsvaret.dk/SOK/eng/National/Pages/NorthAtlantic.aspx
[365] CASR, "Denmark's Arctic Assets and Canada's Response – Sovereignty and Strategic Resources of the High Arctic," http://www.casr.ca/id-arcticviking4.htm
[366] http://forsvaret.dk/SOK/eng/National/Pages/NorthAtlantic.aspx

### 1.4 Recurring Operations and Exercises

**Search and Rescue**

- In Greenland Sea in 2012
- 1000 personnel from Arctic Nations
- A live full-scale search and rescue exercise
- Participating countries
    - Canada
    - Denmark
    - Iceland
    - Norway
    - Russia
    - USA[367]

[367] Greenland Command/ISCOMGEENLAND: Search and Rescue Exercise Greenland Sea 2012, Final Exercise Report. Island Commander Greenland, http://www.institutenorth.org/assets/images/uploads/attachments/SAREX_Greenland_Sea_2012_Final_Exercise_Report.pdf

## JOINT EXERCISES

The proliferation of joint inter-state military exercises also reflects recognition of Arctic interdependence, but it must also be said that some exercises are still reflective of earlier strategic dynamics and thus not all promote attitudes of harmony and cooperation.

**Northern Eagle Naval Exercises**

Russia, Norway, and the US have held four annual joint exercises to develop joint manoeuvring and communications capabilities, as well as joint rescue operations. In 2012 the exercises were held in the Norwegian and Barents Seas.[368]

- 14-March-2014: The 2014 joint exercise Northern Eagle was "cancelled until further notice" after the US cancelled all military-to-military cooperation with Russia to protest Russian actions in Ukraine.[369]

**Operation Vigilant Eagle**

In 2011 "Russian Federated Air Force, the USAF and Canadian Air Force worked a training exercise that simulated terrorists hijacking a Boeing 757 in the Alaskan region of the North American Aerospace Defense Command. Other aircraft involved in the exercise were F-22's that were involved in interception and investigation. On the Russian side the aircraft was intercepted and investigated by three SU-27 jet fighters, a MIG-31, and two more SU-27's. The three countries worked together on the air terrorism exercise. Operation Vigilant Eagle is also an American law-enforcement effort headed by the FBI aimed at preventing political violence by "lone wolf" terrorists. The operation was first mentioned in the Wall Street Journal in April 2009."[370] Pugliese describes an Operation Vigilant Eagle exercise in 2010 as a joint exercise by Canada, Russia, and the US held in 2010, that involved military personnel operating from command centres in Russia and the US and fighter aircraft to follow and intercept a 'hijacked' plane.[371]

**Arctic Council SAR Table Top Exercise**

In October 2011 a two-day exercise in Whitehorse experts from the eight Arctic Council States (involving 32 delegates and 60 observers) "examined the strategic and operational aspects of the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, signed in Nuuk, Greenland, on May 12, 2011." Aeronautical and maritime SAR scenarios were addressed and delegates agreed that "because of each country's limited SAR resources and large areas of responsibility, an international response is needed."[372]

- A report by the Munk-Gordon Arctic Security Program and OpenCanada provides graphics and documentation of publicly reported search and rescue operations since 2010 to ask whether Canada is ready to meet its obligations under the Search and Rescue agreement.[373]

**Operation NANOOK**

Operation Nanook, has been conducted annually since 2007 by Canada, and has also involved international military partners, Canadian federal government departments and agencies, and provincial, territorial, and municipal

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[368] "The Russian Navy held joint military exercises with Norway and the US in the Norwegian Sea, 21 August 2012," *Arctic Info*. http://www.arctic-info.com/News/Page/v-norvejskom-more-prohodat-sovmestnie-ycenia-vms-rossii--norvegii-i-ssa-

[369] Thomas Nilsen (14 March 2014), "Crimea crisis puts Barents naval exercise on hold," Barents Observer. http://barentsobserver.com/en/security/2014/03/crimea-crisis-puts-barents-naval-exercise-hold-14-03

[370] OPERATION VIGILANT EAGLE: Air Terror Drill Intercepts, Investigates Hijacking in Simulated Air Terrorist Operation, GlobalConflictMaps.Com, 3 January 2011. http://www.globalconflictmaps.com/2011/01/03/operation-vigilant-eagle-air-terror-drill-intercepts-investigates-hijacking-in-simulated-air-terrorist-operation/

[371] David Pugliese (12 December 2010), "Selling Canada on the need for fighters," *Ottawa Citizen*, http://www2.canada.com/ottawacitizen/news/story.html?id=581f5e63-5feb-4983-9d70-f2d8cd0cc4fa&p=2

[372] "Arctic Council Search and Rescue Table Top Exercise," Foreign Affairs and International Trade Canada, http://www.international.gc.ca/polar-polaire/northstrat_searchandrescue-stratnord_searchandrescue.aspx?view=d

[373] "Are We Ready," OpenCanada.Org, 6 May 2013. http://opencanada.org/features/the-think-tank/graphic/are-we-ready/

Governments. It typically involves simultaneous activities at sea, on land and in the air, and the number of personnel has ranged from about 650 to more than 1,250.[374]

**Exercise POMOR**

Exercise POMOR is a joint Russian-Norwegian annual naval exercise. The purpose of the exercise is described by the Norwegian Armed Forces as follows: "to practice maritime security operations and to further develop the good relationship between the Norwegian and the Russian military."[375] POMOR 2012 was described by the *Barents Observer*: "This year's exercise will take place on four locations – one in Russia and three in Norwegian waters. The drills will focus on anti-terror and anti-piracy operations, interception of fast-speed boats illegally crossing the state borders, search and rescue operations. The exercise will also include joint manoeuvring, live artillery firing, anti-aircraft defense and detection of submarines. Norwegian coastal rangers and Russian naval infantry are also planned to take part in POMOR-2012."[376]

**Operation FRUKUS**

Operation FRUKUS is planned for 2013, with four vessels of the Russian Northern Fleet joining French, Norwegian and US navies in exercise linked to Partnership for Peace[377]

**Greenland SAR Exercise**

In 2012 Greenland conducted a live, full-scale search and rescue exercise in the Greenland Sea with 1000 personnel from Arctic Nations, including Canada, Denmark, Iceland, Norway, Russia, and USA[378]

**Operation Cold Response**

Cold Response is a major annual Norwegian-led exercise with significant participation from NATO states. In 2012 the fifth such exercise included operations in Swedish territory as well and involved "more than 16,000 sailors, soldiers, airmen, and Marines representing 15 nations."[379] The focus of the exercise is "to improve and practise capabilities in high intensity and multi-threat operations during cold weather conditions."[380] The exercise included a crisis response in the context of a UN Chapter VII mandate. Russia is not included in the exercise, leading critics to note the concern that "old twentieth century divisions are being re-ignited" by the exercise.[381]

- 21-March-2014: Cold Response 2014 brought together nearly 16,000 troops from 16 different countries to Northern Norway to train high-intensity operations in cold-weather environments. Russian observers took part as planned. It is one of the largest "joint combined" exercise in Europe, involving units from all military branches under the command of a joint headquarters. Two Russian military attachés visited the exercise together with 17 other attachés from foreign embassies in Norway, and one Russian observer has inspected the drills as part of a team from OSCE.[382]

**Forward Joint Navy Exercise: U.S., Russia, and Norway**

There are plans for a joint Navy exercise summer 2014, which would include the United States, Russia and Norway.[383]

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[374] http://www.cjoc-coic.forces.gc.ca/cont/rec-eng.asp
[375] http://mil.no/excercises/pomor2011/Pages/default.aspx
[376] Trude Pettersen (15 April 2012), "POMOR-2012 starts in one month," *Barents Observer*, http://barentsobserver.com/en/security/pomor-2012-starts-one-month
[377] "Russia's Northern Fleet Looks Ahead to International Drills," RIANOVOSTI, 4 January 2013. http://en.rian.ru/military_news/20130104/178576971.html
[378] Greenland Command/ISCOMGEENLAND: Search and Rescue Exercise Greenland Sea 2012, Final Exercise Report. Island Commander Greenland. http://www.institutenorth.org/assets/images/uploads/attachments/SAREX_Greenland_Sea_2012_Final_Exercise_Report.pdf
[379] Edward H. Lundquist (22 March 2012), "Exercise Cold Response Participants Get Chilly Reception in Norway," http://www.defensemedianetwork.com/stories/exercise-cold-response-participants-get-chilly-reception-in-norway/
[380] Press Release: Exercise Cold Response 2012. http://www.norge.fi/PageFiles/591341/IEPR%20-%20Exercise%20Cold%20Response%202012.pdf
[381] : NATO Exercise 'Cold Response 2012': A Crisis Response Operation or a Provocation to Russia?" NATO Watch, 03 May 2012. http://www.natowatch.org/node/635
[382] Trude Pettersen (21 March 2014), "Exercise Cold Response in final phase," *Barents Observer*, http://barentsobserver.com/en/security/2014/03/exercise-cold-response-final-phase-21-03
[383] Reuter (2014) "U.S. Navy eyes greater presence in the Arctic," http://www.reuters.com/

**Barents Rescue**

Barents Rescue is a cross-boundary emergency exercise for the Barents Euro-Arctic Region and has been held in 2001,2005, 2007, 2009, and 2011. The BEAC described Barents Rescue 2011 as including four practical field exercises that included scenarios involving "a train accident, rescue operations of trapped people in a collapsed industrial building and in a tunnel, and a chemical emission in a densely populated area." Emergency actors and organizations from all the Barents Region countries took part, with an on implementation of the 2009 Agreement on Emergency Prevention Preparedness and Response among Sweden, Finland, Norway and Russia.[384]

- 1-April-2014: The situation in Ukraine is not expected to affect the annual Norwegian-Russian emergency drill "Exercise Barents" which is to be help in June in the border areas in the Varanger Fjord. "Exercise Barents has been conducted annually since the 1980-ies. The traditional main partners in these exercises are the Joint Rescue Coordination Center Northern Norway in Bodø and the Maritime Rescue Coordination Center in Murmansk. Planning of the exercise alters between the two countries every year….Cooperation between the rescue coordination centers in Bodø and Murmansk has also proved to be fruitful during real accidents. Norway has on several occasions saved Russian sailors in distress, even on Russian territory. In December 2007 twelve Russian sailors were saved from a sinking cargo vessel outside the Rybachi Peninsula by a Norwegian rescue helicopter. The Norwegian crew was later awarded with the Russian medal for noble deed."[385]

**Iceland Airborne Surveillance**

Canada, Denmark, Norway, and the United States, the four Arctic States within NATO, are among NATO states making periodic contributions to "Airborne surveillance and interception capabilities to me Iceland's peacetime preparedness needs."[386] NATO reports that since 2008 it has maintained a periodic presence (usually, three to four weeks, three times a year) of fighter in Keflavik: "The air defense flying training missions over Iceland are conducted with the aircraft in an unarmed configuration in accordance with standard NATO practice. The single exception to this rule is that a onetime capability demonstration is conducted during every deployment. This involves arming and disarming NATO aircraft before and usually after a quick-reaction training "scramble", which is conducted to exercise the air surveillance and control system, and other Icelandic support personnel from Keflavik."

In March 2013 Canada announced that, for a second time, the Royal Canadian Air Force would deploy a detachment of six Canadian CF-18 fighters. Dubbing it "Operation Ignition," the Canadian aircraft, supported by about 160 Canadian military personnel, were scheduled to provide 24-7 surveillance and interception capabilities for several weeks.[387]

**CTBTO – The Comprehensive Test Ban Treaty Organization**

The International Monitoring System of the CTBTO includes seismic, infrasound, and radionuclide monitoring facilities across the Arctic, involving all of the circumpolar states, designed to detect any nuclear weapon test explosion.[388]

**Forward Rosneft Arctic Projects**

Rosneft, Russia's leader in the petroleum industry, produced a report "Russia and Norway: Prospects for Cooperation in the Arctic," published by the Fridtjof Nansen Institute. Artur Chilingarov, a Russian polar explorer and representative of President of the Russian Federation on international cooperation in the Arctic and Anarctic, said that "Russia and Norway provide an example of how disputed issues may be constructively resolved on the sole basis of national and international laws." Natural resources in the Arctic are a sought after commodity, Chilingarov believes that there should be "no problem in the Arctic that could not be resolved on the basis of good relations and constructive dialog."[389]

[384] "Barents Rescue Exercise: Making the Barents Region a safer place," BarentSaga, http://www.beac.st/?DeptID=20413
[385] Trude Pettersen (1 April 2014), "Emergency drill goes as planned," *Barents Observer*, http://barentsobserver.com/en/security/2014/04/emergency-drill-goes-planned-01-04
[386] "Iceland's 'Peacetime Preparedness Needs'," NATO, http://www.aco.nato.int/icelands-peacetime-preparedness-needs.aspx.
[387] Defence Watch (26 March 2013), "CF-18s to Patrol Iceland's Airspace," http://blogs.ottawacitizen.com/2013/03/26/cf-18s-to-patrol-icelands-airspace/
[388] The CTBTO's website includes a map showing all of its facilities. http://www.ctbto.org/map/#ims
[389] Joseph R. Fonesca (19 December 2014), "Report on Rosneft Arctic Projects," http://www.marinelink.com

## ARCTIC FORUMS

Besides the **Arctic Council**, the core regional Arctic forum with a Secretariat in Tromsø, Norway, there is a growing number of forums (some are listed here)[390] involving Arctic populations at state, sub-state, and non-governmental levels. They collectively represent a significant intent to cooperate, and while most neither directly nor indirectly address traditional, or hard, security issues (the exception is the meetings of the Chiefs of Defence), they do all have the potential to contribute to a pan-Arctic climate of mutuality and interconnectedness which in turn does have huge implications for security. And while there may be hints of forum envy emerging, the key reality is that these various forums reflect a fundamental recognition that the Arctic is indeed a place that basically rewards cooperation.[391]

- Iqaluit will host the 2015 Arctic Council ministerial gathering in April 2015. The meeting will set the objectives for 2015-2017. Canada's position as the chair of the Arctic Council will come to an end in 2015.[392]

**Arctic Five**

The five Arctic coastal states (Canada, Greenland, Norway, Russia, United States) met in Illulisat in 2008 to jointly declare that "the law of the sea provides for important rights and obligations concerning the delineation of the outer limits of the continental shelf, the protection of the marine environment, including ice-covered areas, freedom of navigation, marine scientific research, and other uses of the sea." Their declaration included a "commit[ment] to this legal framework and to the orderly settlement of any possible overlapping claims."[393] A second meeting, in Canada, in Chelsea in 2010,[394] reiterated the commitment to the peaceful settlement of overlapping claims in the Arctic and pledged cooperation and, as the Canadian hosts reported, "discussed the value of having our national agencies responsible for public safety issues consider these and other potential challenges in the Arctic and explore ways Arctic Ocean coastal states can share information and strengthen cooperation, consistent with national law."

Whether the group will be formalized as the Arctic G5, as the *Barents Observer* put it,[395] remains to be seen, given the criticisms it has faced for excluding the other three Arctic states and representatives of indigenous peoples. But consultation among the five, is likely to continue for the simple reason, as the Russian Foreign Minister said in his summary of the Chelsea meeting, the Arctic Ocean states have a "special responsibility…for the state of affairs in the region."[396]

**Arctic Defence Chiefs**

The Defence Chiefs of the eight Arctic Council states have begun to meet annually to share information their respective Arctic military capabilities, especially related to capacity in support civilian search and rescue and other missions. The first meeting was held in April 2012 in Goose Bay, Labrador and hosted by the Canadian Chief of Defence Staff. "The primary objective of the two-day conference was to build upon Canada's existing defence relationships in the region by offering attendees an informal opportunity to conduct direct multi- and bilateral discussions focused on Northern issues. Topics discussed included the sharing of knowledge and expertise about dealing with regional operational challenges posed by geography, climate and vast distances; responsible stewardship; and support to civil authorities."[397]

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[390] Heather Exner-Pirot (19 April 2013), "The Arctic Circle, Wayne Gretzky, and the Future of Arctic Cooperation," *Eye on the Arctic*, http://eyeonthearctic.rcinet.ca/the-arctic-circle-wayne-gretzky-and-the-future-of-arctic-cooperation/

[391] "NATO has 'no intention' to up presence in Arctic," *The Local: Norway's News in English*, 08 May 2013. http://www.thelocal.no/20130710/nato-has-no-intention-of-increasing-arctic-presence

[392] Nunatsiag Online (12 September 2014), "Iqaluit to host 2015 Arctic Council ministerial gathering," http://www.nunatsiaqonline.ca/

[393] The Ilulissat Declaration, Arctic Ocean Conference, Ilulissat, Greenland, 27 – 29 MAY 2008. http://www.oceanlaw.org/downloads/arctic/Ilulissat_Declaration.pdf

[394] Arctic Ocean Coastal States meeting, Chelsea, March 29, 2010, Summary by Lawrence Cannon, Foreign Affairs Minister of Canada. http://www.arctic-report.net/wp-content/uploads/2012/01/2010.03-Arctic-Ocean-Coastal-States-meeting-Chelsea-Canada-March-2010.pdf

[395] Atle Staalesen (30 March 2010), "Formalizing the Arctic G5," *Barents Observer*, http://barentsobserver.com/en/sections/politics/formalizing-arctic-g5

[396] The Embassy of the Russian Federation in Canada (1 April 2010), "Outcome of the Second Ministerial Meeting of the Arctic Ocean Coastal States, Chelsea, Canada, Press Release, http://www.rusembassy.ca/node/382

[397] "General Natynczyk and fellow northern Chiefs of Defence discuss shared Arctic interests, DND News Release, NR - 12.058 - April 13, 2012. http://www.forces.gc.ca/site/news-nouvelles/news-nouvelles-eng.asp?id=4151

They met again in June 2013 in Ilulissat, Greenland. According to defensenews.com,[398] the Defence Chiefs agreed to "strengthen cooperation in marine surveillance and expand joint military exercises. "Moreover, defense commanders agreed to identify and appraise the military and civilian capabilities in each country that can be used to support civilian missions in the Arctic over the next 12 months. "The new strategy, following a two-day meeting of defense commanders in the coastal Greenland town of Ilulissat that ended June 12, will focus on how the eight Arctic nations can bolster defense and security cooperation in the Arctic and how military resources can be better deployed to support civilian needs across borders."

In addition:
"A consensus was reached by the military chiefs of Denmark, the US, Canada, Russia, Finland, Sweden, Norway and Iceland to work toward a common goal in which all countries adhere to the Maritime Safety & Security Information System (MSSIS), a near real-time data collection and distribution network operated by 60 countries that shares information sourced from the marine tracking Automatic Identification System, coastal radar units and other maritime-related monitoring systems.

"MSSIS-based cooperation would mean the eight militaries could operate from a level playing field of knowledge and work with a common situational picture when collaborating on cross-border tasks in the Arctic."

**The Arctic Circle**[399]

"The Arctic Circle is designed to increase participation in Arctic dialogue and strengthen the international focus on the future of the Arctic. Participating organizations will maintain their full institutional independence, identity and decision-making abilities."

If the Arctic Five is criticized for being non-inclusive, the "Arctic Circle" is the opposite, casting a wide net for the purpose of facilitating dialogue in one large "open tent" among a broad range "of global decision-makers from all sectors, including political and business leaders, indigenous representatives, nongovernmental and environmental representatives, policy and thought leaders, scientists, experts, activists, students and media." Led by Iceland, the "Arctic Circle aims to support, complement and extend the reach of the work of the Arctic Council by facilitating a broad exchange of ideas and information at an open gathering held in mid-October of each year."

According to Iceland President Olafur Grimsson, "China, India, Singapore and other countries far from the Arctic Circle could be part of a new global forum to widen the discussion about the fate of the planet's Far North."[400]

The 2014 Assembly will be held October 31-November 2 in Reykjavik, Iceland

**Arctic Frontiers**[401]

According to its website, "Arctic Frontiers is organised as an independent network and a leading meeting place for pan-arctic issues." Established in 2006, its mission is:

- To increase attention and commitment to sustainable development of the Arctic, particularly from the corporate sector.
- To build new partnerships across sectors, generations and ethnic groups,
- To offer a forum for delivering state of the art science to the public and at the same time bringing the sociological, political and economic framework for management of the Arctic to the attention of science.
- To provide open access to everyone to the annual conferences through a live broadcast on the Internet, simultaneously interpreted in English and in Russian.
- To develop new approaches and solutions to environmental challenges caused by human activity.

[398] Gerard O'Dwyer (27 June 2013), "Arctic Nations Set Cooperation Guidelines," defensenews.com, http://www.defensenews.com/article/20130627/DEFREG01/306270013/Arctic-Nations-Set-Cooperation-Guidelines
[399] Arctic Circle - http://www.thearcticcircle.org/
[400] China, India, Singapore could join new Arctic Circle forum -http://in.reuters.com/article/2013/04/15/arctic-circle-idINDEE93E0I420130415
[401] Arctic Frontiers - http://www.arcticfrontiers.com/

The Arctic Frontiers secretariat is located in Tromsø, Norway and is responsible for day-to-day operations and for the organisation of the annual conference. The next conference will be in January 2014.

**Northern Forum**[402]

Founded[403] in 1991, the Northern Forum's mission is "to improve the quality of life of Northern peoples by providing Northern regional leaders a means to share their knowledge and experience in addressing common challenges; and to support sustainable development and the implementation of cooperative socio-economic initiatives among Northern regions and through international fora."

"Membership is available to regional and sub-regional governments, municipalities (where there is no regional entity) businesses, non-profit and non-governmental organizations," and "member regions are represented by their Governor, Premier, President or highest executive, or his/her duly mandated delegate." Its Secretariat is in Russia and the corporate office is in the United States. An extensive website points to a wide variety of programs and activities.

**Arctic Economic Council**

26-March-2014: The Arctic Council "recognizes the central role of business in the sustainable development of the Arctic". As a result, the Arctic Economic Council was formed, which was previously associated with the Task Force to Facilitate the Circumpolar Business Forum (TFCBF). The Arctic Economic Council will focus on the following:

- foster business development in the Arctic,
- engage in deeper circumpolar cooperation, and provide a business perspective to the work of the Arctic Council.[404]

"The initial meeting of the Arctic Economic Council will be held in Iqaluit, Nunavut, Canada on September 2-3, 2014. Arctic Council," the AEC is directed at fostering sustainable development and will feature three representatives from each of the Council's member states and indigenous permanent participant organizations (Alaska State Legislature)."[405]

[402] Northern Forum - http://www.northernforum.org/
[403] "The founding members included: Yukon Territory, Canada; Heilongjiang Province, Peoples' Republic of China; Lapland, Finland; Hokkaido, Japan; Dornod, Mongolia; Trondelag and Tromso, Norway; Chukotka Autonomous Okrug, Kamchatka Oblast', Magadan Oblast', Russian Federation; Republic of Korea; and the state of Alaska, U.S.A."
[404] Arctic Economic Council (2014). http://www.arctic-council.org/index.php/en/arctic-economic-council
[405] The Arctic Journal - "Minister Aglukkaq Announces Founding Meeting of the Arctic Economic Council," - http://arcticjournal.com

## Other Projects Involving the Arctic

**Interactive Arctic Risk Map**

DNV GL has developed an interactive Arctic risk. "The map presents multiple dimensions, such as the seasonal distribution of ice, metocean (physical environment) conditions, sea-ice concentrations, biological assets, shipping traffic and oil and gas resources, in a user-friendly, single layout. It also includes a Safety and Operability Index, showing the variation in different factors that impact the risk level depending on the season and their location in the Arctic. In addition, a location- and season-specific index has been developed showing the environmental vulnerability of marine resources with respect to oil spill as an external stressor."[406]

Arctic Risk Map - http://www.dnvgl.com/technology-innovation/strategic-projects/arctic/resources.aspx

**Arctic Fibre**[407]

"Arctic Fibre is a fibre optic telecommunications project developing one of the largest subsea cable networks in the world. The cable connects Asia to Western Europe via the southern portion of the North West Passage through the Canadian and Alaskan Arctic. In addition to providing transoceanic connectivity directly between the two continents, Arctic Fibre will be bringing affordable high speed Internet Access to the Arctic for the first time where bandwidth is currently limited. The introduction of high speed Internet will enable Arctic governments to deliver improved health and education services more cost effectively, spur economic development and empower local businesses, and allow consumers to access video and high speed applications."

**Japan: Independent underwater vehicle Urashima developed by JAMSTEC**[408]

The Japanese government "will launch a project to develop an autonomous underwater vehicle capable of collecting oceanographic data on ice distribution in the Arctic Ocean, The Yomiuri Shimbun learned Friday. The data will be used to ensure the safe passage of vessels carrying liquefied natural gas and other energy resources from Russia to Japan through the ice-covered Arctic Ocean....The Arctic Ocean route has the potential to be used for the transport of oil from Siberia in Russia, and for the export and import of automobile parts via Rotterdam, where leading European ports are located."

**China: "Chinese Icebreaker Set for Sixth Arctic Expedition"**[409]

Chinese icebreaker Xuelong, or Snow Dragon, is embarking on its sixth expedition in May 2014. The expedition will be 76 days long and include approximately 130 scientists and other crew. According to officials from the Polar Research Institute of China the focus will mostly be "on environmental research in the polar region". At the moment the Snow Dragon is the only Chinese icebreaker although there are discussions to "build a second icebreaker by 2016".

**China and the Arctic**

China is one of the most important rising powers, displaying an increasing interest in the Arctic. Chinese Read Admiral Yin Zhuo said, ""The Arctic belongs to all the people around the world as no nation has sovereignty over it..." China has an interest in Greenland's mineral resources, exploration and research of Arctic ('scientific diplomacy'), and the Northern Sea Route.[410]

**IMO: Adopts Polar Code Safety Requirements**

The International Maritime Organization (IMO) "finalized the Polar Code and adopted amendments to the International Convention for the Safety of Life at Sea, or the SOLAS, which will create mandatory safety requirements for ships

[406] Elinor Turander (26 August 2014), "DNV GL launches interactive Arctic Risk Map to communicate region's complex risk picture," http://www.dnvgl.com/
[407] Arctic Fibre - http://arcticfibre.com/
[408] The Japan News – "Unmanned Vessel to Explore Arctic," http://the-japan-news.com/
[409] Smith, Matthew (July 9, 2014), "Chinese Icebreaker Set for Sixth Arctic Expedition," Alaska Public Media.
[410] Mario Humberto Zorro Cuervo (29 November 2014), "China and the Arctic: The Ice Dragon," The News Hub, https://www.the-newshub.com/

operating in Arctic and Antarctic waters." The code will be in effect January 1, 2017 and cover topics such as training, certification, navigation, and operational assessments.[411]

**European Union: "France wants EU Empire to Expand into Arctic Circle"[412]**

"France is urging the European Union to seize influence on the Arctic Council, the organisation that brings together the eight nations with sovereign territory in the resource-rich Arctic region. However, Russia, which along with the United States and Canada dominates the council, is unlikely to tolerate any attempt by France or the EU to extend their bureaucratic reach over joint projects by the eight.... France nevertheless remains determined to urge the EU to push its imperial boundaries right into the Arctic with the dubious claim that 'five of the eight permanent members [of the Arctic Council] are European countries.'"

[411] Joseph Keefe (9 December 2014), "IMO adopts Polar Code Safety Requierements," http://www.marinelink.com/
[412] Synon, M.E. (18 July 2014), "France wants EU Empire to Expand into Arctic Circle," http://www.breitbart.com/Breitbart-London/2014/07/18/France-wants-the-EU-empire-to-expand-into-the-Arctic-Circle