

CIRCUMPOLAR MILITARY FACILITIES OF THE ARCTIC FIVE

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Updated: January 2017

Circumpolar Military Facilities of the Arctic Five

Introduction

This compilation of current military facilities in the circumpolar region¹ continues to be offered as an aid to addressing a key question posed by the Canadian Senate more than five years ago: “Is the [Arctic] region again becoming militarized?”² If anything, that question has become more interesting and relevant in the intervening years, with commentators divided on the meaning of the demonstrably accelerated military developments in the Arctic – some arguing that they are primarily a reflection of increasing military responsibilities in aiding civil authorities in surveillance and search and rescue, some noting that Russia’s increasing military presence is consistent with its need to respond to increased risks of things like illegal resource extraction, terrorism, and disasters along its frontier and the northern sea route, and others warning that the Arctic could indeed be headed once again for direct strategic confrontation.³ While a simple listing of military bases, facilities, and equipment, either based in or available for deployment in the Arctic Region, is not by itself an answer to the question of militarization, an understanding of the nature and pace of development of military infrastructure in the Arctic is nevertheless essential to any informed consideration of the changing security dynamics of 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.⁴ This paper is regarded as a “work in progress” and continues to be updated as new information and changes in military posture and engagement relative to the Arctic become available.

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 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.

² 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>

³ These perspectives, for example, are reflected in four recent papers from the Arctic Institute linked to a June 15 discussion in Washington on circumpolar security cooperation. <http://www.thearcticinstitute.org>

⁴ Of particular initial value have been and remain the following:

Huebert, Rob, “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>

Huebert, Rob; Exner-Pirot, Heather; Lajeunesse, Adam; Gullidge, Jay, “Climate Change and International Security: The Arctic as a Bellwether,” Center for Climate and Energy Solutions, May 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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CANADA

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

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

Yellowknife, Northwest Territories

- Joint Taskforce North (JTFN)⁵
- 1st Canadian Ranger Patrol Group (under JTFN)⁶
- 440 Transport Squadron (under JTFN)⁷

Whitehorse, Yukon

- JTFN detachment⁸

Alert, Nunavut

- Canadian Forces Station Alert⁹ (since the late 1950s)
- DND planning \$13M-\$15M in energy efficiency upgrades at Alert, along with six other bases across Canada, making total investments in energy efficient updates approximately \$100 million to \$175 million.¹⁰

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.¹¹

Iqaluit, Nunavut

- JTFN detachment¹²
- Coast Guard MCTS Centre¹³ (Maritime Communication and Traffic Services)
 - A hub for the Coast Guard’s Arctic operations while open from May – December, monitoring Arctic vessel traffic.

Forward Nanisivik Naval Facility, Nunavut

- Naval berthing/docking and refuelling facility¹⁴
 - 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 2016,¹⁵ and now anticipating being fully operational in 2018.¹⁶
 - The federal government awarded a \$55.8-million construction project to Almiq Contracting of Iqaluit in June 2014 and ground was broken in July of 2015.¹⁷

⁵ “Joint Task Force North,” National Defence and the Canadian Armed Forces, last modified 5 April 2016, <http://www.forces.gc.ca>

⁶ “1st Canadian Ranger Patrol Group,” Canadian Army, last modified 8 April 2016, <http://www.army-armee.forces.gc.ca>

⁷ “440 Transport Squadron,” Royal Canadian Air Force, last modified 3 May 2016, <http://www.rcaf-arc.forces.gc.ca>

⁸ “Detachments and Units” National Defence and the Canadian Armed Forces, last modified 6 January 2014, <http://www.forces.gc.ca>

⁹ “Canadian Forces Station Alert,” Royal Canadian Air Force, last modified 23 January 2014, <http://www.rcaf-arc.forces.gc.ca>

¹⁰ Ruskin, Brett, “Canadian Forces to invest at least \$100M in green infrastructure,” CBC News, 25 April 2016, <http://www.cbc.ca/>

¹¹ “Canadian Forces Station Alert,” Royal Canadian Air Force, last modified 23 January 2014, <http://www.rcaf-arc.forces.gc.ca>

¹² “Detachments and Units” National Defence and the Canadian Armed Forces, last modified 6 January 2014, <http://www.forces.gc.ca>

¹³ “Marine Communications and Traffic Services MCTS,” Canadian Coast Guard, last modified 10 June 2016, <http://www.ccg-gcc.gc.ca>

¹⁴ “Nunavut regulator approves Arctic naval facility,” CBC Online, 25 October 2013, <http://www.cbc.ca>

¹⁵ Col. (Retd) Sylvain Lescoutre, “Forward Operating Location Nanisivik: Halifax’s Gateway to Canada’s Arctic,” Royal United Services Institute of Nova Scotia, 24 April 2012, <http://www.rusi.ca>

¹⁶ “Building the North: Project List, Canada’s Economic Action Plan,” Government of Canada, date not available, <http://actionplan.gc.ca/>

¹⁷ “Nanisivik, Nunavut, naval facility breaks ground,” CBC News, 18 July 2016, <http://www.cbc.ca/>

- In March 2012 DefenceWatch reported a major scaling back of plans for the facility, which was confirmed in September 2014¹⁸, and again confirmed in SIPRI's 2016 Background Paper which noted it would be downsized to a refuelling base and delayed by several years.¹⁹

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 budget for the project due to the increasing costs. The budget for the base is now \$116 million.²⁰

Operational Specifications:

- 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 exists to 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”.²¹
- The CAF ATC includes:
 - 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
- Announced in February 2016 that the CAF wishes to expand its Arctic Training Centre at Resolute Bay. Expansion would allow the base to be operable year-round, improve conditions for troops, support increased training opportunities for Canadian Rangers and CAF personnel based in more southerly bases, and provide key support for Canada's annual exercise, Operation NANOOK.^{22 23}

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

¹⁸ Pugliese, David, “DND significantly cuts back on Harper’s much-ballyhooed plan to build a naval facility at Nanisivik,” Defence Watch, 22 March 2012, <http://blogs.ottawacitizen.com/>

¹⁹ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

²⁰ “Plans for Arctic Naval Base scaled back after costs soared,” The Prince George Citizen, 8 September 2014, <http://www.princegeorgecitizen.com>

²¹ “Backgrounder - Canadian Armed Forces Arctic Training Centre,” Department of National Defence, last modified 15 August 2013, <http://www.forces.gc.ca>

²² Pryce, Paul, “Resolute Bay: A chilly response in Ottawa,” The Nato Association of Canada, 1 March 2016, <http://natoassociation.ca>

²³ “Battle for the Arctic: Canada Boosts Military Presence in the Far North,” Sputnik News, 29 May 2016, <http://sputniknews.com>

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.”²⁴

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).²⁵

1.2 Equipment

1.2.1 Air

CC-138 Twin Otters²⁶

- 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 2020.²⁷
- *Defence Acquisition Guide 2015*: Final delivery date adjusted to 2022.²⁸

DeHavilland Canada CC-138 Twin Otter



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

²⁴ Balasevicius, Tony, “Towards A Canadian Forces Arctic Operating Concept,” Canadian Military Journal, <http://www.journal.forces.gc.ca>

²⁵ Woods, Allan, “Canada looking at building military bases in Arctic,” The Star, 14 July 2011, <http://www.thestar.com>

“...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.

“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.

²⁶ “CC-128 Twin Otters,” Royal Canadian Air Force, last modified 17 April 2015, <http://www.rcaf-arc.forces.gc.ca>

²⁷ “Defence Acquisition Guide 2014,” National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

²⁸ “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

Surveillance Drones

- Transport Canada is considering using an unmanned aerial system to monitor Arctic waters, scanning for environmental problems and shifting sea ice, as well as serving as an increased display of Canadian sovereignty over Arctic waters. The department's request notes that, "There is an increased presence of domestic marine activity and foreign vessels in the Arctic, thereby increasing the need for surveillance."²⁹

1.2.2 Land

Canadian Forces Station Alert³⁰ (since the late 1950s)

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

North Warning System³¹ (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)³²
 - 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 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."³³
- The Canadian part of the North Warning System was operated and maintained by Pan Arctic Inuit Logistics (PAIL) and and ATCO Structure and Logistics from 2001 - 2014. ³⁴ As of April 2014, Raytheon Canada, an Ottawa-based company, was awarded a 5-year contract to carry out the job.³⁵
 - According to CBC News, "at least a fifth of the salaries paid through the [Raytheon] contract must be for Inuit beneficiaries, and at least three beneficiaries must be full-time supervisors, managers or manager trainees."
- *Defence Acquisition Guide 2016* lists a preliminary estimate of \$1.5 billion in replacements for the NWS, with a contract being awarded in 2024 and final delivery of the replacements planned for 2026 – 2036.³⁶

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.

²⁹ Bob Weber, "Transport Canada wants drones to watch Arctic waters," The Canadian Press, 9 March 2016, <http://www.metronews.ca>

³⁰ "Canadian Forces Station Alert," Royal Canadian Air Force, last modified 23 January 2014, <http://www.rcaf-arc.forces.gc.ca>

³¹ "North Warning System," National Defence and the Canadian Armed Forces, last modified 17 December 2012, <http://www.forces.gc.ca>

³² "The Canada-U.S. Defence Relationship," National Defence and the Canadian Armed Forces, last modified 10 February 2015, <http://www.forces.gc.ca>

³³ Wallin, Pamela, Dallaire, Romeo, "Sovereignty and Security in Canada's Arctic: Interim Report," March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, March 2011, <http://www.parl.gc.ca>

³⁴ Wallin, Pamela, Dallaire, Romeo, "Sovereignty and Security in Canada's Arctic: Interim Report," March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, March 2011, <http://www.parl.gc.ca>

³⁵ "Raytheon wins 5-year North Warning System contract," CBC News, 1 April 2014, www.cbc.ca

³⁶ "Defence Acquisition Guide 2016," National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

- “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.”³⁷

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 2023.³⁸

Update March 2016: The Canadian Army plans to replace the Bv206 to either Argo XT tracked small unit support vehicles or D900 diesel-powered snowmobiles. Trials are currently in progress to decide which the army will use.³⁹

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.”⁴⁰
 - 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, 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.”⁴¹
 - Meanwhile, the Canadian Press reported in 2013 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. Leading up to 2013, 310 snowmobiles had been replaced, out of a fleet of 963, and another 310 all-terrain vehicles were required. However, an Army spokesperson 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.⁴²

1.2.3 Sea

Not available

1.3 Organizations and Operational Units (personnel)

³⁷ Referred to by David Pugliese, “Canada Ramps Up Arctic Arsenal,” Defense News, 25 January 2012, <http://www.defensenews.com>

³⁸ Pugliese, David, “Canada’s Special Forces to get new vehicles for the Arctic but Army left out in the cold,” Ottawa Citizen, 18 April 2014, www.ottawacitizen.com

³⁹ Richard Tomkins, “Cold war prep: Canadian tests Army vehicles in the Arctic,” United Press International, 4 March 2016, <http://www.upi.com>

⁴⁰ Referred to by David Pugliese, “Canada Ramps Up Arctic Arsenal,” Defense News, 25 January 2012, <http://www.defensenews.com>

⁴¹ Blatchford, Andy, “Canadian Forces test ‘Loki,’ a stealth snowmobile for covert Arctic ops,” Globe and Mail, 18 August 2014, <http://www.theglobeandmail.com>

⁴² Brewster, Murray, “Army scrambles to buy snowmobiles for Arctic units amid spending deep freeze,” Globe and Mail, 18 August 2013, <http://www.theglobeandmail.com>

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

- Joint Taskforce North (JTFN)⁴³
- 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 Squadron⁴⁴ (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 Centre⁴⁵
- Location: Resolute Bay, Nunavut
- Opened Aug 16, 2013
- Used for training and operations, including annual Exercise Arctic Ram
 - Pre-position equipment and vehicles
 - Also serves as "a command post for emergency operations and disaster response in support of civilian authorities."
 - The 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."*⁴⁶

- Announced in February 2016 that the CAF wishes to expand its Arctic Training Centre at Resolute Bay, and possibly allow for operations year round.

"We need to build (on) what we've got right now in terms of capacity," said Canadian Army Lt.-Col. Luc St-Denis, who co-ordinates training at the center and who oversaw its initial development. "January to April is a small season. There is potential for more than that, especially in the springtime and summertime."⁴⁷

⁴³ 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>

⁴⁴ "440 Transport Squadron," Royal Canadian Air Force, last modified 3 May 2016, <http://www.rcaf-arc.forces.gc.ca>

⁴⁵ "Backgrounder - Canadian Armed Forces Arctic Training Centre," Department of National Defence, 15 August 2013, <http://www.forces.gc.ca>

⁴⁶ "Ottawa opens scaled-back Arctic training facility in Nunavut's Resolute Bay," Nunatsiaq Online, 15 August 2013, <http://www.nunatsiaqonline.ca>

⁴⁷ Pugliese, David, "Canadian military looks to expand Arctic footprint," 23 May 2016, Defence News, <http://www.defensenews.com>

CC-138 Twin Otters Aircrew⁴⁸

- Location: Yellowknife, Northwest Territories
- Approximately 55 aircrew and technicians, who are a mixture of Regular Force and Reserve Force members

Canadian Forces Station Alert Personnel⁴⁹ (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

Rangers

1st Canadian Ranger Patrol Group (*under JTFN*)⁵⁰

- Headquartered in Yellowknife⁵¹
- Encompasses Nunavut, Yukon, Northwest Territories, and Northern British Columbia⁵²
- 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.⁵³
 - “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.”⁵⁴
 - 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.⁵⁵ The website of the Canadian Army includes an interactive map showing all locations along with brief descriptions of each unit's activities.⁵⁶
 - 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.”⁵⁷
- 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.”⁵⁸
- In February 2013 a Ranger died while on an exercise⁵⁹
 - 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.

⁴⁸ “CC-128 Twin Otters,” Royal Canadian Air Force, last modified 17 April 2015, <http://www.rcaf-arc.forces.gc.ca>

⁴⁹ “Canadian Forces Station Alert,” Royal Canadian Air Force, last modified 23 January 2014, <http://www.rcaf-arc.forces.gc.ca>

⁵⁰ “1st Canadian Ranger Patrol Group,” Canadian Army, last modified 8 April 2016, <http://www.army-armee.forces.gc.ca>

⁵² “1st Canadian Ranger Patrol Group,” Canadian Army, last modified 8 April 2016, <http://www.army-armee.forces.gc.ca>

⁵³ “About the Canadian Rangers,” Canadian Army last modified 6 June 2014, <http://www.army-armee.forces.gc.ca>

⁵⁴ “1st Canadian Ranger Patrol Group,” Canadian Army, last modified 12 July 2013, <http://www.army-armee.forces.gc.ca/en/1-crpg/index.page>

⁵⁵ “1st Canadian Ranger Patrol Group,” Canadian Army, last modified 8 April 2016, <http://www.army-armee.forces.gc.ca>

⁵⁶ “Patrols,” Canadian Army, last modified 4 January 2016, <http://www.army-armee.forces.gc.ca>

⁵⁷ “Patrols,” Canadian Army, last modified 4 January 2016, <http://www.army-armee.forces.gc.ca>

⁵⁸ DND - BG #09.002a - 17 April 2009. The Canadian Forces in the North. <http://www.cfna.dnd.ca/nr-sp/09-002a-eng.asp>

⁵⁹ “Canadian Ranger dies during Arctic military exercise,” CTV News, 19 February 2013, <http://www.ctvnews.ca>

- “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.”⁶⁰
 - 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 2018.⁶¹
 - According to SIPRI’s 2016 Background Paper, Trudeau’s Liberal government is planning to further increase the size of the Rangers, with a “special small battalion-sized (500 troops) regular army unit for Arctic operations” included in that plan.⁶²
- 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>

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.”⁶³

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.”⁶⁴

Canadian Coast Guard Auxiliary

- Creation of a Coast Guard Auxiliary in the Arctic is promised as part of Canada’s new \$1.5 billion oceans protections plan, unveiled in November 2016 by three federal government departments. The Auxiliary would contribute to “improvements in safety, especially in increased protection from oil spills and other marine emergencies”.⁶⁵

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.⁶⁶ The compulsory reporting

⁶⁰ Wallin, Pamela, Dallaire, Romeo, “Sovereignty and Security in Canada’s Arctic: Interim Report,” March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, March 2011, p. 7, <http://www.parl.gc.ca>

⁶¹ “Building the North: Project List, Canada’s Economic Action Plan,” Government of Canada, date not available, <http://actionplan.gc.ca/>

⁶² Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁶³ Wallin, Pamela, Dallaire, Romeo, “Sovereignty and Security in Canada’s Arctic: Interim Report,” March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, March 2011, p. 9, <http://www.parl.gc.ca>

⁶⁴ “Canada’s Special Forces to get new vehicles for the Arctic but Army left out in the cold,” Ottawa Citizen, 18 April 2014, www.ottawacitizen.com

⁶⁵ “Arctic will share in Canada’s new \$1.5 billion oceans protection plan,” Nunatsiaq News, 8 November 2016, <http://www.nunatsiaqonline.ca>

⁶⁶ “Vessel Traffic Reporting Arctic Canada Traffic Zone (NORDREG),” Canadian Coast Guard, last modified 24 June 2016, <http://www.ccg-cc.gc.ca>

reinforces Canada's sovereignty claims but, on the other hand, draws attention to the lack of enforcement capacity.⁶⁷ 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."⁶⁸

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 141° 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.⁶⁹

The Arctic Security Working Group⁷⁰

- 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."*⁷¹

"The group meets "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."⁷²

Pan Arctic Inuit Logistics (PAIL)⁷³

- PAIL⁷⁴ 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

⁶⁷ Exner-Pirot, Heather, "What's In a Name? NORDREG Becomes Mandatory," Eye on the Arctic, 12 July 2010, <http://eyeontheartctic.rcinet.ca>

⁶⁸ Wallin, Pamela, Dallaire, Romeo, "Sovereignty and Security in Canada's Arctic: Interim Report," March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, March 2011, p. 15, <http://www.parl.gc.ca>

⁶⁹ Peter Varga, "Iqaluit Coast Guard office maintains pan-Arctic vigil," Nunatsiaq Online, 26 July 2013, <http://www.nunatsiaqonline.ca>

⁷⁰ "Marine Communications and Traffic Services MCTS," Canadian Coast Guard, last modified 10 June 2016, <http://www.ccg-gcc.gc.ca>

⁷¹ Wallin, Pamela, Dallaire, Romeo, "Sovereignty and Security in Canada's Arctic: Interim Report," March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, March 2011, <http://www.parl.gc.ca>

⁷² ASWG Staff, "16th Meeting of the Arctic Security Working Group," 16 May 2007, Security Innovator, <http://securityinnovator.com>

⁷³ Wallin, Pamela, Dallaire, Romeo, "Sovereignty and Security in Canada's Arctic: Interim Report," March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, March 2011, <http://www.parl.gc.ca>

Labrador). The NWS work is done through a joint venture between PAIL and ATCO Structure and Logistics,⁷⁵ 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.”⁷⁶

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

2.2.1 Air

Aircraft⁷⁷

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,⁷⁸ to broaden capabilities beyond its initial anti-submarine warfare role, and to extend the operational life on 10 aircraft,⁷⁹ through the Aurora Incremental Modernization Project (AIMP) and the Aurora Structural Life Extension Project (ASLEP);⁸⁰
- 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 2020.⁸¹ “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).”⁸²

⁷⁴ Pan Arctic Inuit - <http://www.pail.ca>

⁷⁵ ATCO Structure and Logistics - <http://www.atcosl.com/en-ca/>

⁷⁶ Wallin, Pamela, Dallaire, Romeo, “Sovereignty and Security in Canada’s Arctic: Interim Report,” March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, March 2011, <http://www.parl.gc.ca>

⁷⁷ “Aircraft,” Royal Canadian Armed Forces, last modified 19 August 2015, <http://www.rcaf-arc.forces.gc.ca>

⁷⁸ Siemon T. Wezeman, “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012.

⁷⁹ “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>

⁸⁰ “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>

⁸¹ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, SIPRI, March 2012.

⁸² “Expanding the CP-140 Modernized Aurora Fleet”, Royal Canadian Airforce, last modified 20 March 2014, <http://www.rcaf-arc.forces.gc.ca/>



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

CF-18 Fighter Aircraft

- 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 2020⁸³
- 77 operational (59 CF-18AM or F/A-18A, and 18 CF-18BM or F/A 18B) regularly deployed to the Arctic region⁸⁴
- 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...”⁸⁵
- April 2016: Canadian government is currently carrying out upgrades to push the lifespan of the aircrafts to 2025.⁸⁶
 - About 1/3 of the fleet has undergone structural upgrades and electronic upgrades are also planned.⁸⁷
- Harper government had plans to replace all F/A-18s with 65 F-35s but, according to SIPRI’s 2016 Background Paper, the Trudeau government has announced that they will replace F/A 18s with a cheaper alternative, possibly F/A 18C
- Es.⁸⁸



Photo Credit: CF-188 Hornet, Royal Canadian Air Force, <http://www.rcf-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 III⁸⁹

- 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)⁹⁰

⁸³ “The Military Balance 2012,” IISS, 7 March 2012, p. 52., <https://www.iiss.org>

⁸⁴ “The Military Balance 2012,” IISS, 7 March 2012, p. 52., <https://www.iiss.org>

⁸⁵ “Canadian fighter jets intercept Russian bombers in Arctic,” CBC News, 19 September 2014, <http://www.cbc.ca/>

⁸⁶ Pugliese, David, “Time running out to upgrade Canada’s aging CF-18 jets,” Ottawa Citizen, 14 April 2016, <http://news.nationalpost.com>

⁸⁷ Berthlaume, Lee, “Canada doesn’t have enough fighter jets, Liberals say, despite plans to upgrade CF-18 fighter fleet,” Ottawa Citizen, 16 June 2016, <http://news.nationalpost.com>

⁸⁸ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A new Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016, p. 4.

⁸⁹ “CC-177 Globemaster III,” Royal Canadian Air Force, last modified 23 April 2014, <http://www.rcf-arc.forces.gc.ca>



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.”⁹¹



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

Airbus C-295

- In early December 2016, a number of officials from the Trudeau government announced the selection of the Airbus C-295 as Canada's next fixed-wing search-and-rescue plane to replace the nearly 50 year-old CC-115 Buffalo aircraft.⁹²
- A two-step procurement process will cost \$4.7 billion over the next two decades.
 - The first phase — at a cost of \$2.4 billion — involves the purchase of 16 C-295W aircraft modified for search-and-rescue missions as well as “a training simulator, to be located in Comox, B.C., and 11 years of in-service support and maintenance”.⁹³

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.”⁹⁴
- The last CC-130E Hercules took final flight on April 6 2016.⁹⁵
- The IISS reports 5 operate as tankers, KC-130H⁹⁶

⁹¹ “CC-115 Buffalo,” Royal Canadian Air Force, last modified 1 August 2013, <http://www.rcaf-arc.forces.gc.ca>

⁹² Brewster, Murray, “Airbus chosen to build Canada's new search planes, ending 12-year procurement odyssey,” 7 December 2016, CBC News, www.cbc.ca

⁹³ Brewster, Murray, “Airbus chosen to build Canada's new search planes, ending 12-year procurement odyssey,” 7 December 2016, CBC News, www.cbc.ca

⁹⁴ CC-130 Hercules - <http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/cc-130.page>, last modified 16 August 2013

⁹⁵ Pugliese, David, “Last RCAF C-130E Hercules flies into history,” Ottawa Citizen, 6 April 2016, <http://ottawacitizen.com>

⁹⁶ “The Military Balance 2012,” IISS, 7 March 2012, p. 52., <https://www.iiss.org>

- *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.⁹⁷



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 2010⁹⁸
 - “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”⁹⁹
- “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.”¹⁰⁰
- *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 2025.¹⁰¹
 - February 2016: “Cascade Aerospace Inc., announces the completion of the first Block 7.0 upgrade installation on a C-130J Super Hercules operated by the Royal Canadian Air Force (RCAF). This is the first C-130J Block 7.0 upgrade to be completed outside of an Original Equipment Manufacturer (OEM) or Government facility. All 17 CC-130Js in the RCAF’s fleet will receive the Block 7.0 upgrade with Cascade Aerospace managing the installation process.”¹⁰²
- *Defence Acquisition Guide 2015*: Final delivery estimated for 2025.¹⁰³



⁹⁷ “Defence Acquisition Guide 2014,” National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

⁹⁸ “CC-130J Hercules (Cargo Aircraft),” Royal Canadian Air Force, last modified 23 April 2014, <http://www.rcaf-arc.forces.gc.ca>

⁹⁹ “Canada welcomes final CC-130J Hercules,” CC-130J.ca, 8 June 2012, <http://cc-130j.ca>

¹⁰⁰ “CC-130J Hercules (Cargo Aircraft),” Royal Canadian Air Force, last modified 23 April 2014, <http://www.rcaf-arc.forces.gc.ca>

¹⁰¹ “Defence Acquisition Guide 2014,” National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

¹⁰² IMP Group International Inc., “Cascade Aerospace begins Block 7.0 Upgrade on Canada’s CC-130J Hercules,” 9 February 2016, <http://www.impgroup.com>

¹⁰³ “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, March 2015, <http://www.forces.gc.ca>

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.”¹⁰⁴
 - Canada operates 3 CC-150 (2 are in tanker role)
- *Defence Acquisition Guide 2015*: 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 \$249 million.¹⁰⁵



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.”¹⁰⁶ Two in this role enable an Arctic role for the F-18.¹⁰⁷
- 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.

Fixed-Wing Search and Rescue Aircraft Replacement Project¹⁰⁸

- “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.”¹⁰⁹
- 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.¹¹⁰
- 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:

¹⁰⁴ “CC-150 Polaris,” Royal Canadian Air Force, last modified 22 May 2014, <http://www.rcaf-arc.forces.gc.ca>

¹⁰⁵ “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

¹⁰⁶ “CC-150 Polaris,” Royal Canadian Air Force, last modified 22 May 2014, <http://www.rcaf-arc.forces.gc.ca>

¹⁰⁷ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, SIPRI, March 2012, p. 3.

¹⁰⁸ 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.

¹⁰⁹ “Fixed-Wing Search and Rescue Aircraft Replacement Project,” National Defence and the Canadian Armed Forces, last modified 25 July 2014, <http://www.forces.gc.ca>

¹¹⁰ “Defence Acquisition Guide 2014,” National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

“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.”¹¹¹

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.”¹¹²
- In May 2013 the three Griffons at Canadian Forces Base Goose Bay were all grounded for repairs.¹¹³
- The Canadian Government plans to extend the life of the aging helicopters to 2024 to “bridge the gap until a replacement capability is acquired through the Tactical Reconnaissance Utility Helicopter project”. The cost of the project is estimated at \$500 million – \$1.5 billion.¹¹⁴



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 system¹¹⁵
- *Defence Acquisition Guide 2015*: The Cormorant is to receive a mid-life upgrade, the objective of which is “to extend the all-weather rotary wing search and rescue capability to at least 2040, to return the capability to the Trenton main operating base, and to provide capability improvements to enhance its overall mission effectiveness.” The cost is estimated to be between \$500 million - \$1.5 billion and the request for proposal is to be released in 2017.¹¹⁶
- *Defence Acquisition Guide 2016*: The request for proposal release has been pushed to 2018.¹¹⁷

¹¹¹ Byers, Michael, Webb, Stewart, “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>

¹¹² “CH-149 Cormorant,” Royal Canadian Air Force, last modified August 2013, <http://www.rcaf-arc.forces.gc.ca>

¹¹³ 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>

¹¹⁴ “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

¹¹⁵ “CH-149 Cormorant,” Royal Canadian Air Force, last modified 1 August 2013, <http://www.rcaf-arc.forces.gc.ca>

¹¹⁶ “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, March 2015, <http://www.forces.gc.ca>

¹¹⁷ “Defence Acquisition Guide 2016,” National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>



Photo Credit: CH-149 Cormorant, Royal Canadian Air Force, <http://www.rcf-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 Cyclone¹¹⁸



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

CH-148 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 at least six interim versions of the Cyclone for pilot training.¹¹⁹
 - 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.”¹²⁰
- DND is expecting a fully capable CH-148 Cyclone delivered in 2018.¹²¹
- January 2016: “A crew from the Royal Canadian Air Force (RCAF) recently made history with the first all RCAF crew landing the Sikorsky CH-148 Cyclone on the back of one of the Royal Canadian Navy's modernized frigates, Her Majesty's Canadian Ship Halifax. Pilots from 12 Wing Shearwater were conducting deck qualification training in advance of going to sea next month for further operational testing and evaluation.”¹²²

¹¹⁸ “CH-124 Sea King,” Royal Canadian Air Force, last modified 1 August 2013, <http://www.rcf-arc.forces.gc.ca>

¹¹⁹ “CH 148 Cyclones delivered to Halifax airbase,” CBC News, 19 June 2015, <http://www.cbc.ca>

¹²⁰ “CH-148 Cyclone,” Royal Canadian Air Force, last modified 18 September 2013, <http://www.rcf-arc.forces.gc.ca>

¹²¹ Department of National Defence, “Archived - Maritime Helicopter Project: Status (Fact Sheet),” Government of Canada, last modified June 2014, <http://news.gc.ca>

¹²² Royal Canadian Air Force, “Historic milestone for Sikorsky CH-148 Cyclone,” Vertical Magazine, 29 January 2016, <http://www.verticalmag.com>



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

Medium to Heavy Lift Helicopter

- “The Department of National Defence (DND) acquired 15 advanced, multi-mission, Medium-to-Heavy lift helicopters, or more specifically the Canadian version of the F-model Chinook (also known as CH-147F)... Canada took delivery of the 15th and final Chinook in July 2014.”¹²³
- “April 2015: Two Chinooks were deployed for the first time to Kapuskasing as a response to flooding.”¹²⁴
- “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.”¹²⁵
- “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.”¹²⁶

Fixed Wing Search and Rescue Aircraft Replacement Project

- “The new fleet of fixed-wing SAR aircraft will replace an ageing fleet of six CC-115 Buffalo aircraft and 12 CC-130 Hercules aircraft that are currently being used for SAR duties.”¹²⁷
- Project is currently in definition stage
 - “The competitive procurement strategy is a capability-based requirement in which industry will be required to propose the type of aircraft, the number of aircraft and the number of bases required to meet the level of service. Mixed-fleet solutions are also possible.”¹²⁸
 - 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.¹²⁹

¹²³ “Fixed Wing Search and Rescue Aircraft Replacement Project,” National Defence and the Canadian Armed Forces, last modified 13 May 2016, <http://www.forces.gc.ca>

¹²⁴ “Medium-to-heavy lift helicopter project: status,” National Defence and the Canadian Armed Forces, last modified 25 June 2015, <http://www.forces.gc.ca>

¹²⁵ The Role And Capabilities of the Chinook F Model

¹²⁶ “Canada’s newest generation of Chinook helicopters,” Flightglobal/Airspace Forum, 13 January 2013, <http://www.flightglobal.com>

¹²⁷ “Medium-to-heavy lift helicopter project: status,” National Defence and the Canadian Armed Forces, last modified 25 June 2015, <http://www.forces.gc.ca>

¹²⁸ “Medium-to-heavy lift helicopter project: status,” National Defence and the Canadian Armed Forces, last modified 25 June 2015, <http://www.forces.gc.ca>

¹²⁹ Pugliese, David, “Canada to let private companies decide where search-and-rescue aircraft based,” Ottawa Citizen, 15 April 2014, www.ottawacitizen.com

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 1995¹³⁰
- 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.¹³¹ RADARSAT-2 is "one of 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".¹³²

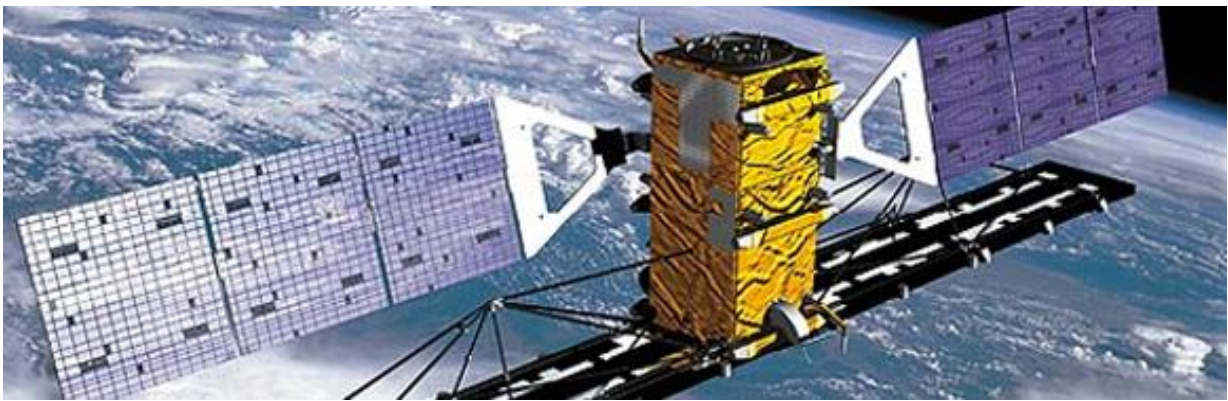


Photo Credit: RADARSAT 2, Canadian Space Agency, <http://www.asc-csa.gc.ca/eng/satellites/radarsat2/>

RADARSAT Constellation

- Plans for three new RADARSAT satellites were awarded in Jan 2013¹³³
- 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".¹³⁴
- 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."¹³⁵

¹³⁰ "RADARSAT-1," Canadian Space Agency, last modified 21 March 2014, <http://www.asc-csa.gc.ca>

¹³¹ "RADARSAT-1," Canadian Space Agency, last modified 21 March 2014, <http://www.asc-csa.gc.ca>

¹³² "Canadian satellites 'on target' to revolutionize maritime domain awareness," Defence IQ, 2014, <http://www.defenceiq.com>

¹³³ The Canadian Press, "MacDonald, Dettwiler and Associates sign \$706M Radarsat deal," CBC News, 9 January 2013, <http://www.cbc.ca>

¹³⁴ "Building the North: Project List, Canada's Economic Action Plan," Government of Canada, date not available, <http://actionplan.gc.ca/>

¹³⁵ "MDA awarded \$706 million contract to build three radar satellites," MDA Information Systems website, 9 January 2013, <http://www.mdacorporation.com>

Maritime Monitoring and Messaging Micro-Satellite (M3MSat)

- The launch of the M3MSat, a Canadian military satellite for maritime surveillance in conjunction with Radarsat 2, was delayed as the result of sanctions against Russia. It was to have been launched in Kazakhstan from a Russian facility.¹³⁶ The launch was re-scheduled for June 2016 and launched successfully from a facility in Sriharikota, India.¹³⁷
- 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.¹³⁸

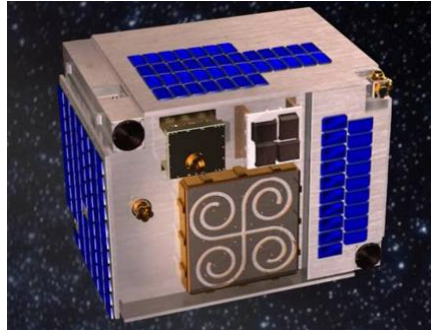


Photo Credit: M3MSat, Canadian Space Agency, <http://www.asc-csa.gc.ca/eng/satellites/m3msat/>

Project Polar Epsilon

- *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 2019.¹³⁹
- “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....”¹⁴⁰
- RadarSat-2 launched in 2007 and was modified from 2009.¹⁴¹
- Current stage of Polar Epsilon went fully operational in August 2011.¹⁴²
- SIPRI’s 2016 Background paper notes that, “this programme has been modified to use data from three civilian satellites, to be launched in 2018, linked to a military network to be ordered in 2017 for delivery in 2019.”¹⁴³

Enhanced Satellite Communication Project

- “The Canadian military wants to build a new constellation that would provide 24-hour satellite communications for the Arctic region as early as 2023... The program would likely include at least two satellites in an elliptical orbit

¹³⁶ “Maritime Monitoring and Messaging Microsatellite (M3MSat),” 11 May 2016, National Defence and the Canadian Armed Forces, <http://www.forces.gc.ca>

¹³⁷ “Canada’s M3MSat Successfully Launch,” 22 June 2016, Government of Canada, www.news.gc.ca

¹³⁸ Pugliese, David, “Russian sanctions have killed Canadian satellite launch,” *Ottawa Citizen*, 24 April 2014, www.ottawacitizen.com

¹³⁹ “Defence Acquisition Guide 2014,” National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

¹⁴⁰ “A new step for the Polar Epsilon project,” *The Maple Leaf*, (Vol. 13, No. 24), Department of National Defence, 21 July 2010, <http://www.forces.gc.ca>

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.”

¹⁴¹ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

¹⁴² “Polar Epsilon keeps watch over Canada’s coastal waters,” MDA Information Systems website, date not available, <http://www.mdacorporation.com>

¹⁴³ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

and could cost about \$2.4 billion Canadian dollars, said Col. Jeff Dooling, director of space requirements for the Canadian Department for National Defence.”¹⁴⁴

- Research for the program has been drawn from an incomplete Canadian Space Agency study that started in 2010.¹⁴⁵
- “The program would feature X-band and Ka-band communications as well as ultra-high frequency narrowband communications over the North Pole.”¹⁴⁶
- According to the Canadian *Defence Acquisition Guide 2016*, this project will complete the CAF’s SATCOM Roadmap.¹⁴⁷

Uninhabited Aerial Vehicles

UAV Acquisition

- 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.”¹⁴⁸
 - Contract award for JUSTAS planned for 2020 and final delivery planned for 2025¹⁴⁹
 - Acquisition plans include up to 12 UAVs but, according to SIPRI’s 2016 Background Paper, no orders had yet been placed yet. However, some of the UAVs dedicated to Arctic surveillance have become a priority.¹⁵⁰
- 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.¹⁵¹
- Defense Update reported in 2013 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 900.¹⁵²
- It was noted in an article by David Pugliese in May 2015 that the US-built Predator could be pulling ahead as the preferred option.¹⁵³

5 Heron CU-170

- Leased since 2011 from MacDonald, Dettwiler and Associates of Vancouver, BC to replace the Sperwer and “meet the urgent and growing demand for UAV support to operations until a long-term UAV solution is in place”¹⁵⁴

David Pugliese on Canada’s potential long-term solution

“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

¹⁴⁷ “Defence Acquisition Guide 2016,” National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

¹⁴⁸ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, SIPRI, March 2012.

¹⁴⁹ “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, March 2015, <http://www.forces.gc.ca>

¹⁵⁰ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

¹⁵¹ 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/vol11/no4/doc/Page%2024%20Bond%20Article%20English.pdf>

¹⁵² “Heron, Reaper and Hermes 900 Compete for Canada’s Arctic mission,” 15 May 2013

¹⁵³ Pugliese, David, “Canada restarts attempts to buy drones,” *Defense News*, 16 May 2015, <http://www.defensenews.com>

¹⁵⁴ “CU-170 Heron,” Canadian Forces Military, 5 June 2016, <http://canadianforcesmilitary.com>

promise to project Canada's sovereignty over its Arctic territories. Northrop official Dane Marolt said the company has proposed the purchase of at least three UAVs, dubbed Polar Hawks.

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.¹⁵⁵

A May 2013 posting in the "Wanderingraven's Blog" described Canada's 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.¹⁵⁶

In May 2015, Pugliese noted that Canada's attempt to buy drones, which was on hold for the past couple years, recently restarted. "Royal Canadian Air Force Brig. Gen. Phil Garbutt told industry representatives in Ottawa April 9 that the plan is to have the first aircraft available for operations in 2021...Air Force Col. Ian Lightbody, director of air requirements, noted that a contract is expected to be awarded in 2019. All aircraft would be delivered by 2023, he added." It was also noted in Pugliese's May 2015 article that the US-built Predator could be pulling ahead as the preferred option.¹⁵⁷

2.2.2 Land

Not available

2.2.3 Sea

Ships - Coast Guard Icebreakers

- 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"¹⁵⁸
 - 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".¹⁵⁹
- Support Canadian Navy ships on Arctic voyages, as well as commercial ships
- 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)¹⁶⁰
- The Coast Guard fleet includes:
 - Two heavy icebreakers:
 - CCGS Louis S. St-Laurent
 - CCGS Terry Fox
 - Four medium icebreakers:
 - CCGS Amundsen [a research vessel¹⁶¹]
 - CCGS Des Groseilliers
 - CCGS Henry Larsen
 - CCGS Pierre Radisson

¹⁵⁵ Pugliese, David, "Canada eyes UAVs to Supply Arctic Missions," Defense News, 30 April 2013, <http://www.defensenews.com>

¹⁵⁶ "Canadian Government favouring Global Hawk drone?" *Wanderingraven's Blog*, 7 April 2013, <http://wanderingraven.wordpress.com>

¹⁵⁷ Pugliese, David, "Canada restarts attempts to buy drones," Defense News, 16 May 2015, <http://www.defensenews.com>

¹⁵⁸ "Icebreaking Levels of Service," Canadian Coast Guard, last modified 24 June 2013, <http://www.ccg-gcc.gc.ca>

¹⁵⁹ Weber, Bob, "Canadian icebreakers head out to map Arctic sea floor," The Canadian Press, 8 August 2014, <http://www.theglobeandmail.com>

¹⁶⁰ "Icebreaking Levels of Service," Canadian Coast Guard, last modified 24 June 2013, <http://www.ccg-gcc.gc.ca>

¹⁶¹ Amundsen - <http://www.amundsen.ulaval.ca/index.php?url=1>

- Seven light icebreakers (high-endurance multi-tasked vessels which can operate only in the Western Arctic).¹⁶²
- A new polar icebreaker (CCGS John G. Diefenbaker) is planned for the Coast Guard
 - Design contract has been issued and construction contract awarded to Seaspan Marine Corp. of B.C.¹⁶³ New \$1.3 billion ship was to be delivered in 2014 for sea trials.¹⁶⁴ Arctic performance trial and full operational capability was to be achieved in 2018.¹⁶⁵
 - In 2013, production of this new icebreaker was delayed to prioritize the non-Arctic acquisition of support ships for the navy. SIPRI's 2016 Background Paper reported that, "The icebreaker will not be ready before 2021 and, with the price estimated in 2014 at 1.3 billion Canadian dollars (\$1.2 billion), there is some speculation that it might be cancelled."¹⁶⁶
 - Most recent updates from the Canadian government state that – due to supply ship delays – the completion of the Diefenbaker will be delayed until 2022 or 2023.¹⁶⁷



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



Artist's conception of CCGS John G. Diefenbaker, Canadian Coast Guard, http://www.nunatsiaqonline.ca/stories/article/65674coast_guard_new_1.3_billion_arctic_icebreaker_to_be_ready_by_2022/

Ships - Navy

The Canadian Navy has a fleet of 33 vessels (3 Destroyers, 12 Frigates, 2 Supply Ships, 12 Coastal Defence; 4 submarines)¹⁶⁸

- While the Destroyers and Frigates are "ice-strengthened" and have the range to sail in the Arctic, they do not have icebreaking capabilities

¹⁶² "Icebreaking Levels of Service," Canadian Coast Guard, last modified 24 June 2013, <http://www.ccg-gcc.gc.ca>

¹⁶³ Brian Pehora, "Coast Guard: new \$1.3 billion Arctic icebreaker to be ready by 2022", Nunatsiaq News Online, 28 January 2016, <http://www.nunatsiaqonline.ca>

¹⁶⁴ Brian Pehora, "Coast Guard: new \$1.3 billion Arctic icebreaker to be ready by 2022", Nunatsiaq News Online, 28 January 2016, <http://www.nunatsiaqonline.ca>

¹⁶⁵ "Building the North: Project List, Canada's Economic Action Plan," Government of Canada, date not available, <http://actionplan.gc.ca/>

¹⁶⁶ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

¹⁶⁷ Berthiaume, Lee, "New delay slows construction of navy supply ships, polar icebreaker," The Canadian Press, 9 December 2016, <http://www.thecanadianpress.com/>

¹⁶⁸ "Royal Canadian Navy, Fleet & Unit," Royal Canadian Navy, last modified 19 August 2013, <http://www.navy-marine.forces.gc.ca>

- The home ports are Maritime Forces Atlantic (MARPLANT) in Halifax, and Maritime Forces Pacific (MARPAF) in Esquimalt, B.C.
- “Judy Foote, minister of public services and procurement, said in June 2016 that up to 15 new Canadian Surface Combatant ships will replace the navy’s present Iroquois-class destroyer and its seven Halifax-class frigates that form the bulk of the navy’s Atlantic Fleet.” These CSC vessels will feature an existing warship design.¹⁶⁹
- The navy’s last research vessel, CFAV Quest, will be decommissioned due to cost-cutting measures, “leaving the country’s defence scientists without their own ship to conduct research in the Arctic and other locations, according to documents leaked to Postmedia”.¹⁷⁰

Arctic/Offshore Patrol Ship (AOPS) procurement

- The shipbuilding strategy originally announced by Harper in 2011 was “an umbrella agreement that designated the Irving shipyard in Halifax and the Seaspan shipyard in British Columbia as the two locations.” Currently, though, the Trudeau government is negotiating the details of the agreement (ie. how many ships) with the yards.¹⁷¹
- According to the Defence Acquisition Guide 2015, “the Naval Shipbuilding Projects Office (NSPO) intends to establish an In-Service Support (ISS) Contract that combines the Arctic/Offshore Patrol Ships’ and Joint Support Ships’ ISS requirements into a single, 35-year through-life contract.”¹⁷²
- More details on the contract status:
 - The project was announced by the Harper government as a \$3.1 billion project¹⁷³, though the *Defence Acquisition Guide 2015* estimates the project to be above \$3.5 billion.¹⁷⁴
 - The plan has shifted from six to eight ships being built by 2021-2025¹⁷⁵ to five guaranteed ships with the sixth cost-dependant.¹⁷⁶
 - The beginning of construction on the Royal Canadian Navy's (RCN) first Harry DeWolf-class of arctic offshore patrol vessels (AOPS) began in June 2016.¹⁷⁷
 - Irving Shipbuilding said the following in a September 2016 statement issued to the press: “Construction on the first AOPS vessel, HMCS Harry DeWolf, is well underway with 50 of the ship’s 64 components complete or under construction. On August 25, Irving Shipbuilding was pleased to cut steel on the second AOPS, the future HMCS Margaret Brooke. HMCS Harry DeWolf is scheduled to be delivered to the Royal Canadian Navy in 2018.”¹⁷⁸
- Details on the ships themselves:
 - The AOPS will have ice-breaking capabilities and the ability to provide support to the CH 148 Cyclone.
 - The vessels will “allow the RCN to operate further north on a sustained basis into the Canadian Arctic, while boosting its Arctic collaboration with the Canadian Coast Guard, as well as other governmental departments and international allies.”¹⁷⁹

Submarines

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

- 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

¹⁶⁹ Shaw, Fram Din, “Navy needs ships to watch Russia, says Liberal MP John McKay,” 28 June 2016, The Chronicle Herald, <http://thechronicleherald.ca>

¹⁷⁰ Pugliese, David, “Say Goodbye to Canadian Forces Auxiliary Vessel Quest – military quietly orders ship to be “divested””, Ottawa Citizen, 2 September 2016, <http://ottawacitizen.com>

¹⁷¹ Pugliese, David, “Irving facing significant offshore challenges in building Arctic Offshore Patrol Ships,” Ottawa Citizen, 8 September 2016, <http://ottawacitizen.com>

¹⁷² “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, March 2015, <http://www.forces.gc.ca>

¹⁷³ Jordan Press, “PM talks up need for Arctic military presence,” Vancouver Sun, 25 August 2012, <http://www.vancouversun.com>

¹⁷⁴ Pugliese, David, “Naval Officers learn how to handle ice-filled waters in anticipation of new Arctic patrol ships,” National Post, 5 September 2016, <http://news.nationalpost.com>

¹⁷⁵ “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, March 2015, <http://www.forces.gc.ca>

¹⁷⁶ Pugliese, David, “Naval Officers learn how to handle ice-filled waters in anticipation of new Arctic patrol ships,” National Post, 5 September 2016, <http://news.nationalpost.com>

¹⁷⁷ “Construction begins on Canadian Navy’s first Harry DeWolf-class AOPS,” NavalTechnology.com, 14 June 2016, www.naval-technology.com

¹⁷⁸ Pugliese, David, “Irving facing significant offshore challenges in building Arctic Offshore Patrol Ships,” Ottawa Citizen, 8 September 2016, <http://ottawacitizen.com>

¹⁷⁹ “Construction begins on Canadian Navy’s first Harry DeWolf-class AOPS,” NavalTechnology.com, 14 June 2016, www.naval-technology.com

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.¹⁸⁰
- The 2014 procurement guide confirms plans to “extend the service life of the Victoria Class submarine beyond its current mid-2020s end of life,”¹⁸¹ and the 2016 Defence Acquisition Guide estimates delivery of the project is 2026-2036.¹⁸² The Submarine Equipment Life Extension (SELEX) Project is estimated above \$1.5 billion.¹⁸³

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.”¹⁸⁴

- In April 2012 Operation Nunavut included diving operations off of Devon Island to install “undersea surveillance devices.”¹⁸⁵

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 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.”¹⁸⁶

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”¹⁸⁷
- “Canada also is creating a 500-member Army response capability for the Arctic”¹⁸⁸
- Canadian reserves unit in Yellowknife to be increased to 100 by 2019¹⁸⁹
- “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.’”¹⁹⁰ However, Major General Alan Howard, assistant chief of the land staff of the

¹⁸⁰ Brewster, Murray, “Navy planners trying to sell Ottawa on submarine replacement plan,” *Globe and Mail*, 20 August 2012, <http://www.theglobeandmail.com>

¹⁸¹ “Defence Acquisition Guide 2014,” National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

¹⁸² “Defence Acquisition Guide 2016,” National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

¹⁸³ “Defence Acquisition Guide 2014,” National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

¹⁸⁴ Wallin, Pamela, Dallaire, Romeo, “Sovereignty and Security in Canada’s Arctic: Interim Report,” March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, March 2011, <http://www.parl.gc.ca>

¹⁸⁵ “It’s Arctic spring exercise season for Canada’s military: Operation Nunavut to kick off April 10,” Nunatsiq News, April 9, 2012, <http://www.nunatsiagonline.ca>

¹⁸⁶ Referred to by David Pugliese, “Canada Ramps Up Arctic Arsenal,” 25 January 2012, <http://www.defensenews.com>

¹⁸⁷ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012.

¹⁸⁸ Referred to by David Pugliese, “Canada Ramps Up Arctic Arsenal,” 25 January 2012, <http://www.defensenews.com>

¹⁸⁹ Referred to by David Pugliese, “Canada Ramps Up Arctic Arsenal,” 25 January 2012, <http://www.defensenews.com>

¹⁹⁰ Wallin, Pamela, Dallaire, Romeo, “Sovereignty and Security in Canada’s Arctic: Interim Report,” March 2011 Interim Senate Report Standing Senate Committee on National Security and Defence, March 2011, <http://www.parl.gc.ca>

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."¹⁹¹

Canadian Coast Guard

- In 2016, Coast Guard activity in the Arctic included the deployment of eight CCG icebreakers.¹⁹²
- Planning priorities for 2016 CGC Arctic operations included: escort and icebreaking for commercial vessel traffic, icebreaking in support of community resupply, navigational aid maintenance.¹⁹³
- "Planning for Arctic Operations is carried out throughout the year but the new season officially starts with the opening of the Marine Communications and Traffic Services (MCTS) Centre in Iqaluit."¹⁹⁴
- Creation of a Coast Guard Auxiliary in the Arctic is promised as part of Canada's new \$1.5 billion oceans protections plan, unveiled in November 2016 by three federal government departments.¹⁹⁵

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."*¹⁹⁶

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).¹⁹⁷

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:

- 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.¹⁹⁸

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

¹⁹¹ 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>

¹⁹² "Canadian Coast Guard Arctic Operations 2016," Government of Canada, 29 July 2016, <http://news.gc.ca>

¹⁹³ "Canadian Coast Guard Arctic Operations 2016," Government of Canada, 29 July 2016, <http://news.gc.ca>

¹⁹⁴ "Canadian Coast Guard Arctic Operations 2016," Government of Canada, 29 July 2016, <http://news.gc.ca>

¹⁹⁵ "Arctic will share in Canada's new \$1.5 billion oceans protection plan," Nunatsiq News, 8 November 2016, <http://www.nunatsiagonline.ca>

¹⁹⁶ Rob Huebert, "The Newly Emerging Arctic Security Environment," Canadian Defence and Foreign Affairs Institute, March 2010, <http://www.cdfai.org>

¹⁹⁷ "Operation NEVUS," National Defence and the Canadian Armed Forces, last modified 7 June 2016, <http://www.forces.gc.ca>

¹⁹⁸ "Operation NANOOK," National Defence and the Canadian Armed Forces, last modified 29 September 2016, <http://www.forces.gc.ca>

- 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.¹⁹⁹

Conducted annually since 2007, the operation has also involved international military partners, mainly from the US, Canadian federal government departments and agencies, provincial, territorial, and municipal governments, as well as non-governmental agencies. 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.

Operation Nanook 2016, occurring in late August/early September, focused on interagency operations with federal and territorial agencies in the Yukon and Nunavut. Training in the Yukon centred around responding to an earthquake, while training in the Rankin Inlet region of Nunavut surrounded responding to a security crisis.²⁰⁰

According to the Department of National Defence and the Canadian Armed Forces, "Operation NANOOK 2016 enabled the Canadian Armed Forces to showcase its ability to operate effectively in the North while improving relationships with northern partners that would be required to respond to a request for assistance in the event of a real emergency."²⁰¹

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.²⁰²
- In April 2012 "more than 150 soldiers, divers and Canadian Rangers" participated in Operation Nunalivut out of Resolute Bay.²⁰³

Conducted annually since 2007, Operation NUNALIVUT 2016 ran throughout April and was designed to "exercise Canadian sovereignty and to demonstrate the Canadian Armed Forces' capability projection in the High Arctic during winter."²⁰⁴ It involved approximately 230 Canadian Armed Forces personnel under Joint Task Force (North) and took place near Alert and Resolute Bay (Nunavut).²⁰⁵ Operation Nunalivut 16 consisted of two activities: ice dives, conducted by Navy divers, and patrols and survival training, conducted by Canadian army personnel.²⁰⁶

- In 2013, 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.²⁰⁷ In 2016, Canadian Rangers participated as guides for the troops. The 2016 Operation was also unique for the participation of a team from the United States Air Force who instructed Canada's air force on how to build a ski landing strip to land a C-130 Hercules.²⁰⁸

Operation NUNAKPUT

A "whole-of-government" operation that emphasizes aid to law enforcement in the north and takes place in the Mackenzie River, Great Slave Lake and Beaufort Sea region of the western Arctic.²⁰⁹

¹⁹⁹ "Operation NANOOK," National Defence and the Canadian Armed Forces, last modified 29 September 2016, <http://www.forces.gc.ca>

²⁰⁰ Regehr, Ernie, "Operation NANOOK 2016 and DND aid to civil authorities," *Disarming Arctic Security*, 13 December 2016, <http://thesimonsfoundation.ca>

²⁰¹ "Operation NANOOK," National Defence and the Canadian Armed Forces, last modified 29 September 2016, <http://www.forces.gc.ca>

²⁰² "Operation NUNALIVUT," National Defence and the Canadian Armed Forces, 16 May 2016, <http://www.forces.gc.ca>

²⁰³ "It's Arctic spring exercise season for Canada's military: Operation Nunalivut to kick off April 10," *Nunatsiaq News*, 9 April 2012, <http://www.nunatsiaqonline.ca>

²⁰⁴ "Operation NUNALIVUT," National Defence and the Canadian Armed Forces, 16 May 2016, <http://www.forces.gc.ca>

²⁰⁵ "Operation Nunalivut 2016 Underway in the High Arctic," Department of National Defence, 4 April 2016, <http://www.rcaf-arc.forces.gc.ca>

²⁰⁶ "Operation Nunalivut 2016 Underway in the High Arctic," Department of National Defence, 4 April 2016, <http://www.rcaf-arc.forces.gc.ca>

²⁰⁷ Defence Watch, "Operation Nunalivut 2013 Concludes," *Ottawa Citizen*, 24 April 2013, <http://ottawacitizen.com>

²⁰⁸ Hinchey, Garrett, "Canadian, U.S. troops share knowledge at Arctic military operation," *Canadian Broadcasting Company*, 11 April 2016, <http://www.cbc.ca>

²⁰⁹ "Operation NUNAKPUT," National Defence and the Canadian Armed Forces, 24 November 2014, <http://www.forces.gc.ca>

Conducted annually since 2007, Operation NUNAKPUT 2016 took place from July 5-20 and “consisted of a series of maritime patrols, training opportunities, and community engagements”.²¹⁰

Exercise STALWART GOOSE

An annual exercise aimed at qualifying Canadian troops to operate in the North.

Exercise STALWART GOOSE 16: Soldiers from the 5th Canadian Division’s Arctic Response Company Group (ARCG) traveled again to Goose Bay, Newfoundland, and Labrador to test their survival skills and enhance their combat skills in extreme cold weather. The 2016 exercise consisted of long range snowmobile patrols, building improvised shelters and defence structures, as well as ice roads and aircraft landing strips. Canadian Rangers continue to support the soldiers with their expertise in this area.²¹¹

Exercise Arctic Bison

Exercise Arctic Bison 2015: “Ex AB 15 will be conducted by 38 Canadian Brigade Group (38 CBG) from 13-22 February 2015 along the length of Lake Winnipeg. Ex AB 15 will see approximately 110 members of the Canadian Army travel by snowmobile from Gimli to Grand Rapids, with approximately 40 members remaining in Gimli in the Land Component Command (LCC) headquarters or in supporting roles. The exercise will focus on the achievement of the Arctic Response Company Group (ARCG) Full Operating Capability criteria, specifically focussing on the ability of the ARCG to force project and sustain itself 300 km from its support base.”²¹²

Exercise Polar Sound²¹³

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.

Exercise First Run²¹⁴

Located on Lake Winnipeg, First Run is an annual exercise for members of the Arctic Response Company Group (ARCG). It’s held in preparation for Exercise ARCTIC RAM in Resolute Bay. First Run occurs annually in January, and last occurred January 2016.

Exercise Arctic Ram

Canadian National Defence Minister Harjit S. Sajjan, under the new Trudeau government, is naming the protection of arctic borders as a key security priority for Canada. “The Department of National Defence and the Canadian Armed Forces are fully committed to exercising our northern sovereignty and these Arctic training scenarios allow us to demonstrate greater visible presence in Canada’s North,” says Sajjan. The Canadian Army regularly conducts simulated training exercises to develop and test cold-weather survival skills. The training enhances troops’ ability to quickly respond to threats and domestic emergencies, such as natural disasters, extreme weather events and other hazards. Lasting until March, approximately 2,500 Canadian Army soldiers from the Regular Force, Primary Reserve and Canadian Rangers are participating in such exercises, including exercise Arctic Ram.²¹⁵

- Example of simulated training exercise to develop and test cold-weather survival skills.
- Not annual, but is notable as it is part of the Canadian government’s Arctic sovereignty plan to “prepare soldiers to respond if there were an emergency in the arctic”.²¹⁶
- “The mission of arctic exercises is to train for the Canadian Armed Forces’ capability to deploy in the north”, says CTV News Winnipeg.²¹⁷

²¹⁰ “Operation Nunakput,” National defence and the Canadian Armed Forces, 5 August 2016, <http://www.forces.gc.ca>

²¹¹ David Pugliese, “Soldiers from Arctic Response Company Group head to Goose Bay for winter exercises,” Ottawa Citizen, 4 March 2016, <http://ottawacitizen.com>

²¹² “Exercise ARCTIC BISON 2015”, Canadian Army, 17 February 2015, <http://www.army-armee.forces.gc.ca>

²¹³ Jennifer Wright, “Canadian Rangers assist other government and civilian agencies during Exercise Polar Sound 12,” Public Affairs, Joint Task Force (North), March 2012, <http://www.jtfn-foin.forces.gc.ca>

²¹⁴ “3rd Canadian Division Exercises and Operations,” Government of Canada, <http://www.army-armee.forces.gc.ca>

²¹⁵ “Canadian Army conducts training to maintain arctic readiness,” army-technology.com, 10 February 2016, <http://www.army-technology.com>

²¹⁶ “Thunder Bay soldiers feel the chill in exercise arctic ram,” CBC News, 10 February 2016, <http://www.cbc.ca>

²¹⁷ “Army reservists test their mettle in high Arctic,” CTV Winnipeg, 13 February 2016, <http://winnipeg.ctvnews.ca>

This exercise, bringing one hundred army reservists in the Arctic Response Company Group to Resolute Bay, Nunavut, marks the farthest north the Company has ever travelled for training.²¹⁸

²¹⁸“Army reservists test their mettle in high Arctic,” CTV Winnipeg, 13 February 2016, <http://winnipeg.ctvnews.ca>

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)²¹⁹

- 354th Fighter Wing
- 354th Operations 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.”²²⁰
- April 2016: “The Department of Defense has asked Congress to fund seven construction projects at Eielson for fiscal 2017, which starts Oct. 1, 2016.”²²¹ This request came as a response to the Air Force’s announcement of plans to begin stationing 54 F-35s at the base near Fairbanks in 2020.²²² A release from US Congress representative Don Young’s office lists projects planned for 5 sites in Alaska, including updates at Eielson Air Force Base related to the planned basing of F-35 fighter jets.²²³
 - As of August 2016, “\$500 million in new construction is planned for Eielson Air Force Base to support the upcoming deployment of F-35 Fighters.”²²⁴

Elmendorf Air Force Base (near Anchorage):²²⁵

- Shares the base with the Fort Richardson Army Base
- Hosts the Alaskan NORAD Region
- Aerospace warning
- Hosts the 11th Air Force
- 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.”²²⁶
- 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

²¹⁹ US Air Force - <http://www.eielson.af.mil/units/index.asp>

²²⁰ “Report to Congress on Arctic Operations and the Northwest Passage,” Department of Defense, May 2011, <http://www.defense.gov>

²²¹ “Congress split over funding for F-35 infrastructure at Eielson Air Force Base,” The Associated Press, 15 April 2016, <http://www.adn.com>

²²² “Congress split over funding for F-35 infrastructure at Eielson Air Force Base,” The Associated Press, 15 April 2016, <http://www.adn.com>

²²³ Bross, Dan, “Congress passes bills of Alaska military projects,” Alaska Public Media, 19 May 2016, <http://www.alaskapublic.org>

²²⁴ Bross, Dan, “Eielson Air Force Base has new construction plan for incoming F-35 fighters,” Alaska Public Media, 19 August 2016, <http://www.alaskapublic.org>

²²⁵ US Air Force - <http://www.iber.af.mil/units/index.asp>

²²⁶ Huebert, Rob; Exner-Pirot, Heather; Lajeunesse, Adam; Gullledge, Jay, “Climate Change and International Security: The Arctic as a Bellwether,” Center for Climate and Energy Solutions, May 2012, <http://www.c2es.org/docUploads/arctic-security-report.pdf>

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.”²²⁷

Eareckson Air Station²²⁸

- 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 system spans the north of Canada).

Air Station, Kodiak²²⁹

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

Kodiak Launch Complex / Pacific Spaceport Complex Alaska (PCSA)

- “PCSA is a launch range owned and operated by AAC, an agency of the State of Alaska. PCSA is located at Narrow Cape on Kodiak Island, Alaska and occupies over 3,700 acres. The complex provides integration, checkout, and launch facilities to Government and commercial customers desiring to launch suitably sized vehicles. The launch site is focused on providing responsive and efficient launch capability for polar, sun synchronous, and high inclination orbits.”²³⁰
- An Alaska Public Media report in August 2016 announced that PCSA will soon be active again after a launch failure damaged the complex in 2014.²³¹

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 capabilities²³²

Thule Air Base in Greenland

- According to SIPRI’s 2016 Background Paper, this base is the “most northerly US air base but it currently houses only a large intercontinental ballistic missile (ICBM) detection radar and no aircraft.”²³³
- According to the 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.”²³⁴
- 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,

²²⁷ “Report to Congress on Arctic Operations and the Northwest Passage,” Department of Defense, May 2011, <http://www.defense.gov>

²²⁸ “Eareckson Air Station,” GlobalSecurity.Org, last modified 20 July 2011, <http://www.globalsecurity.org>

²²⁹ US Coast Guard - http://www.uscg.mil/bsukodiak/general_info.asp

²³⁰ “Pacific Spaceport Complex – Alaska,” Alaska Aerospace Corporation, no date, <http://akaerospace.com>

²³¹ Desroches, Kayla, “Alaska Aerospace Corporation launches into new period on island,” Alaska Public Media, 18 August 2016, <http://www.alaskapublic.org>

²³² US Coast Guard - <http://www.uscg.mil/d17/airstasitka/Mission.asp>

²³³ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

²³⁴ 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.”²³⁵

Refurbishing air base at Keflavic, Iceland

- Pentagon’s 2017 budget proposal includes \$22 million request for refurbishing installations at Keflavic
- Plans to house American personnel as well as new anti-submarine reconnaissance aircraft, Boeing P-8 Poseidon
- This base was considered a valuable piece of American defences during the Cold War era, but had been slowly closing down in the years since.²³⁶

1.1.2 Land

Fort Greely²³⁷

- Hosts US BMD mid-course interceptors²³⁸
- 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.”²³⁹
- 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.²⁴⁰

Fort Wainwright²⁴¹

- Infantry combat team
- Combat aviation brigade
- While the US Army is in the process of cutting 80,000 troops from its ranks (going from 570,000 to 490,000 within the years 2013-2019), 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.²⁴²
- 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.”²⁴³
- 128 extra soldiers were assigned to the base in 2015 to follow the Gray Eagle missile-equipped combat drone unit’s arrival, according to an announcement from Alaska’s congressional delegation.²⁴⁴
 - First Grey Eagle took inaugural flight on 11 April 2016²⁴⁵
- “Construction of a \$47 million unmanned aerial vehicle hangar [in] Ft. Wainwright is also in the U.S. House approved appropriations bill. The hangar is for the post’s new Grey Eagle intelligence, surveillance and reconnaissance unit.”²⁴⁶

Cold Regions Test Center (in Fort Wainwright)

Fort Richardson (joint base with Elmendorf AFB)²⁴⁷

- Alaskan Command centre for 21,000 Alaskan military personnel

²³⁵ “Report to Congress on Arctic Operations and the Northwest Passage,” Department of Defense, May 2011, <http://www.defense.gov>

²³⁶ Lanteigne, Mark, “Return to Keflavik?” The Arctic Journal, 31 March 2016, <http://arcticjournal.com>

²³⁷ Powers, Rod, “Fort Greely, Alaska,” About.com, date not available, <http://usmilitary.about.com>

²³⁸ 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. Shanker, Thom; Sanger, David, E.; Fackler, Martin, “U.S. Is Bolstering Missile Defense to Deter North Korea,” New York Times, 15 March 2013. <http://www.nytimes.com>

²³⁹ “Report to Congress on Arctic Operations and the Northwest Passage,” Department of Defense, May 2011, <http://www.defense.gov>

²⁴⁰ Hennigan, W.J., “Problem-plagued missile defense system fails in \$214-million test,” Los Angeles Times, 5 July 2013, <http://www.latimes.com>

²⁴¹ “Fort Wainwright Alaska: Units and Support,” US Army, last updated 23 February 2013, <http://www.wainwright.army.mil>

²⁴² Friedman, Sam, “Fort Wainwright to grow as Army shrinks,” Newsminer.com, 25 June 2013, <http://www.newsminer.com>

²⁴³ “Report to Congress on Arctic Operations and the Northwest Passage,” Department of Defense, May 2011, <http://www.defense.gov>

²⁴⁴ Hollander, Zaz, “U.S. Army to add 9 combat drones at Fort Wainwright,” Alaska Dispatch News, 5 June 2015, <http://www.adn.com>

²⁴⁵ Sgt. Brady, Sean, “First Gray Eagle Flight Expands Army Aviation Capability in Alaska,” PACOM News, 20 April 2016, www.pacom.mil

²⁴⁶ Bross, Dan, “Congress passes bills of Alaska military projects,” Alaska Public Media, 19 May 2016, <http://www.alaskapublic.org>

²⁴⁷ US Air Force, Joint Base - <http://www.iber.af.mil/units/index.asp>

- US Army Alaska (USARAK)²⁴⁸
- 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.²⁴⁹

Northern Warfare Training Centre²⁵⁰

- 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"²⁵¹
 - 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."²⁵²

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 refueled primarily at Dutch Harbor.²⁵³

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."²⁵⁴

Base at Keflavik, Iceland possibly reopening

- Within the Pentagon's 2017 budget proposal was a request for \$22 million to refurbish the installations at Keflavik in order to house American personnel as well as Boeing P-8 Poseidon aircraft.²⁵⁵

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 raised²⁵⁶ 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.²⁵⁷ 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.²⁵⁸

²⁴⁸ "USARK Organizations", U.S. Army Alaska, no date listed, <http://www.usarak.army.mil>

²⁴⁹ Friedman, Sam, "Fort Wainwright to grow as Army shrinks," Newsminer.com, 25 June 2013, <http://www.newsminer.com>

²⁵⁰ "Northern Warfare Training Centre," U.S. Army, <http://www.wainwright.army.mil/nwtc/>

²⁵¹ "Northern Warfare Training Centre," U.S. Army, <http://www.wainwright.army.mil/nwtc/>

²⁵² Sgt. Smith, Jeffrey, "Developing Arctic leaders in the last frontier," U.S. Army, <http://www.dvidshub.net>

²⁵³ "United States Coast Guard Arctic Strategy," United States Coast Guard, May 2013, http://www.uscg.mil/seniorleadership/DOCS/CG_Arctic_Strategy.pdf

²⁵⁴ "Report to Congress on Arctic Operations and the Northwest Passage," Department of Defense, May 2011, <http://www.defense.gov>

²⁵⁵ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

²⁵⁶ O'Rourke, Ronald, "Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress," US Congressional Research Service, 10 December 2012, <http://www.fas.org/sgp/crs/weapons/RL34391.pdf>

²⁵⁷ "Alaska Department of Transportation and Public Facilities/Statewide Design and Engineering Services: Arctic Port Study," State of Alaska, no date listed, <http://www.dot.state.ak.us/stwddes/desports/arctic.shtml>

²⁵⁸ Lockyer, Ellen, "Study Names Nome, Port Clarence as Best Region For Deep Water Arctic Port," Alaska Public Media, 31 January 2013, <http://www.alaskapublic.org>

- 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.”²⁵⁹

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 2030.²⁶⁰

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.”²⁶¹

MQ-1C Gray Eagle Unmanned Aerial System²⁶²

- Arrived in Alaska late 2015 to “enhance the tactical capabilities of commanders in USARAK Aviation, Stryker and Airborne units, along with joint partners”.
- Gray Eagle took inaugural flight in Alaskan airspace on 11 April 2016
- “The versatility of Gray Eagle gives units in Alaska the ability to train for wartime tasks with real-world combat assets. The aircraft is the newest addition to UATF’s inventory, capable of operating in extreme cold regions across the globe.”



Photo Credit: MQ-1C Gray Eagle, General Atomics Aeronautical, <http://www.ga-asi.com/gray-eagle>

S-92 SAR helicopter²⁶³

- Alaska’s North Slope Borough (NSB) received its first S-92 SAR helicopter in September 2016.
 - “According to the U.S. Census Bureau, NSB has a total area of 94,796 square miles of which 88,695 are land and 6,101 are water, thus the need for a long-range, all-weather capable aircraft.”

HC 130 Aircraft²⁶⁴

- “While the USA has over 200 long-range maritime patrol aircraft, only a few US Coast Guard HC-130 aircraft based on Kodiak Island operate over the Bering Sea and the Arctic.”

²⁵⁹ Pettersen, Trude, “US Navy to study the Arctic,” The Barents Observer, 1 August 2013 <http://barentsobserver.com>

²⁶⁰ “Caryey Restino, Arctic port study delayed past March,” The Arctic Sounder, 14 February 2014, <http://www.thearcticsounder.com>

²⁶¹ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012.

²⁶² Brady, Sean, “Alaska Aviation Task Force expands Army Aviation capability,” US Army, 18 April 2016, <http://www.army.mil>

²⁶³ Waitt, Tammy, “Sikorsky delivers AK’s first S-92 Search and Rescue helicopter,” American Security Today, 30 September 2016, <https://americansecuritytoday.com>

²⁶⁴ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.



Photo Credit: S-92 Helicopter, Skip Robinson, Sikorsky, <https://americansecuritytoday.com>

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 agreement²⁶⁵] (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.”²⁶⁶
 - US Navy Adm. Mark Ferguson commented that, due to decommissioning and budget decisions, that figure will drop to 41 by the late 2020s.²⁶⁷
- 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”²⁶⁸
- “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*.”²⁶⁹
- “In April 2011 two US nuclear attack submarines participated in Ice Exercise (ICEX) 2011, operating under the Arctic ice.”²⁷⁰
- Recently, in April 2016, US attack submarines Hampton and Hartford participated in Ice Exercise (ICEX) 2016. The US Navy determined that the primary objectives of submarine force readiness were met.²⁷¹
- US SSBNs²⁷² are assumed not to be specifically designed for Arctic deployment, according to analysts, and are not known to be deployed there,²⁷³ 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

²⁶⁵“The Presidential Nuclear Initiatives (PNIs) on Tactical Nuclear Weapons at a Glance,” Arms Control Association, August 2012, <http://www.armscontrol.org/factsheets/pniglance>

²⁶⁶ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012, p. 13.

²⁶⁷ Scuitto, Jim, Top Navy Official: Russian sub activity expands to Cold War level,” CNN, 19 April 2016, <http://www.cnn.com>

²⁶⁸ Lajeunesse, Adam, “Research Note: American SSNs in Canadian Arctic Waters, 1960-1988,” Laurier Centre for Military Strategic and Disarmament Studies, <http://www.canadianmilitaryhistory.ca>

²⁶⁹ Climate Change and Arctic Security Report

²⁷⁰ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012, p. 13.

²⁷¹ “US meets primary objectives of submarine force readiness exercise in Arctic,” Sputnik News, 25 March 2016, <http://sputniknews.com>

²⁷² “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>

²⁷³ Wallace, Michael, Stables, Steve, “Ridding the World of Nuclear Weapons: A Task Long Overdue,” Canadian Pugwash Group and the Rideau Institute, March 2010, <http://www.arcticsecurity.org/docs/arctic-nuclear-report-web.pdf>

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.”²⁷⁴ 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.”²⁷⁵
- “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.”²⁷⁶

*Offshore Patrol Cutter (OPC) program*²⁷⁷

- An acquisition project of the US Coast Guard
- OPC program replacing the 270-foot and 210-foot medium-endurance cutters that are 25 to 50 years old.
- Costs an estimated \$11 billion (most expensive in US Coast Guard history).

*** Eastern Shipbuilding was contracted in September 2016 to build the Coast Guard’s new Offshore Patrol Cutters.²⁷⁸

Icebreakers

- Addressing the limited icebreaking capability of the US Coast Guard has been an issue for a number of years. In 2012, the Congressional Research Service noted the following about its icebreaking capacity:
 - “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.”²⁷⁹ 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.”²⁸⁰ The Coast Guard has put forward that six icebreakers would satisfy the strategic needs of the U.S. in the polar regions.²⁸¹ In early November 2016, a Request for Information was issued by the Coast Guard which “detailed the Coast Guard’s plans to use a single shipyard to build three icebreakers over the next decade”.²⁸²
 - As of March 2016, the US Coast Guard is moving ahead with an acquisition strategy for a new icebreaker to “mitigate a possible three- to six-year heavy icebreaker capacity gap”²⁸³ as the agency’s lone active ice breaker *Polar Star* nears the end of its service life,” says the US Government Accountability Office.²⁸⁴ The icebreaker is expected to cost up to \$1 billion and the process of accepting proposals will start in 2017 with a contract award set for 2019, and building starting in 2020.²⁸⁵
 - Congress had previously declined funding for the project.²⁸⁶

²⁷⁴ Lawrence S. Winter, “Opinion: New nuclear submarine arms race poses great danger,” Times of Trenton, 12 August 2014, <http://www.ni.com>

²⁷⁵ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012, p. 13.

²⁷⁶ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012, p. 13.

²⁷⁷ Marcario, John C., “Coast Guard to focus on Arctic, Recapitalizing the fleet,” SEAPOWER Magazine, 6 July 2016, <http://www.seapowermagazine.org>

²⁷⁸ LaGrone, Sam, “Eastern Shipbuilding Wins Coast Guard Offshore Patrol Cutter Award; Bests BIW. Bollinger,” USNI News, 15 September 2016, <https://news.usni.org>

²⁷⁹ “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>

²⁸⁰ O’Rourke, Ronald, “Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress,” US Congressional Research Service, 10 December 2012, <http://www.fas.org/sgp/crs/weapons/RL34391.pdf>

²⁸¹ Bryant, Dennis, “America Needs Icebreakers,” MarineLink, 22 November 2016, <http://www.marinelink.com>

²⁸² Martinson, Erica, “Coast Guard advances plans to build 3 icebreakers,” The Arctic Sounder, 5 November 2016, <http://www.thearcticsounder.com>

²⁸³ According to a June 2016 GOA report, projections show that the US Coast Guard will likely face a 3- to 6-year gap in its heavy icebreaker capability before a new one is ready.

²⁸⁴ Nicholas, Scott, “GAO: Coast Guard to address Arctic regional operation capacity gaps,” ExecutiveGov, 14 July 2016, <http://www.executivegov.com>

²⁸⁵ Pugliese, David, “U.S. Coast Guard Moves Ahead on New Icebreaker,” Ottawa Citizen, 29 January 2016, <http://ottawacitizen.com>

²⁸⁶ Todaro, Chelsea, Congress Declines to Help Coast Guard Fund New Polar Icebreaker,” Military News – National Defense, 17 September 2014, <http://www.military.com/>

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, 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.²⁸⁷
 - Likely to be used as scientific platform as well.²⁸⁸

Healy

- A 420 foot vessel capable of breaking 4.5 feet of ice at three knots, and eight feet by backing a ramming.²⁸⁹
- “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.²⁹⁰



Photo Credit: Healy, United States Coast Guard, [http://commons.wikimedia.org/wiki/File:USCGC_Healy_\(WAGB-20\)_north_of_Alaska.jpg](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.”²⁹¹

The Congressional Research Service says this about 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.”

²⁸⁷ Carlsen, Audrey, “Polar Star Headed for Arctic Ice Trials,” Unalaska Community Broadcasting, 23 June 2013, <http://kucb.org>

²⁸⁸ Restino, Carey, “Coast Guard: Refurbished icebreaker heads north,” AlaskaDispatch, 6 July 2013, <http://www.alaskadispatch.com>

²⁸⁹ Restino, Carey, “Coast Guard: Refurbished icebreaker heads north,” AlaskaDispatch, 6 July 2013, <http://www.alaskadispatch.com>

²⁹⁰ O’Rourke, Ronald, “Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress,” US Congressional Research Service, 10 December 2012, <http://www.fas.org/sgp/crs/weapons/RL34391.pdf>

²⁹¹ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012, p. 13.

1.3 Organizations and Operational Units (personnel)

US Coast Guard

- In May 2013 the Coast Guard released a new “Arctic Strategy”²⁹² 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.²⁹³ The report²⁹⁴ 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”;
 - “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 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.²⁹⁵
- August 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.”²⁹⁶
- April 2016 – In April, the U.S. Coast Guard participated in The Northwest Passage Tabletop Exercise, a mass joint tabletop exercise to “test and evaluate interagency cooperation and focus on the response to a cruise ship experiencing progressive flooding in a remote Arctic region in the vicinity of the U.S./Canadian border.”²⁹⁷
- June 2016 – Coast Guard has leased a facility in coastal town of Kotzebue, Alaska, to house two MH-60 Jayhawk helicopters for the next 5 years. Will also be seasonal home base for Operation Arctic Shield.²⁹⁸ USCG will lease from May 1st to September 30th each year.²⁹⁹

²⁹² “United States Coast Guard Arctic Strategy,” U.S. Coast Guard, May 2013, http://www.uscg.mil/seniorleadership/DOCS/CG_Arctic_Strategy.pdf

²⁹³ McDermott, Jennifer, “Arctic to remain part-time pursuit of Coast Guard,” The Day, 21 May 2013, <http://theday.com>

²⁹⁴ “United States Coast Guard Arctic Strategy,” U.S. Coast Guard, May 2013, http://www.uscg.mil/seniorleadership/DOCS/CG_Arctic_Strategy.pdf

²⁹⁵ Kelly, Casey, “New Coast Guard District 17 commander brings Arctic Experience,” KTOO, 14 June 2014, <http://www.ktoo.org>

²⁹⁶ Haun, Eric, “Coast Guard Preps for Arctic Research,” MarineLink, 1 August 2014, <http://www.marinelink.com>

²⁹⁷ “Coast Guard, partners, industry conduct mass rescue tabletop exercise in Anchorage, Alaska,” US Coast Guard Newsroom, 22 April 2016, <http://www.uscgnews.com>

²⁹⁸ Andrews, Laurel, “Coast Guard launches seasonal home base in Kotzebue,” 26 June 2016, Alaska News, <http://www.adn.com>

- Increase in Coast Guard’s need for large-scale rescue exercises³⁰⁰
 - As a result of increased cruise-based tourism like the Crystal Serenity cruising the Northwest Passage in August 2016, the U.S. Coast Guard has had to increase its level of response-preparedness for mass emergencies along that route.
 - A successful rescue exercise in Northern Alaska was completed in early August as the Crystal Serenity was preparing to leave port.

2015 Arctic Executive Steering Committee³⁰¹

- President Barack Obama “issued an executive order aimed at coordinating federal action on the Arctic. The order establishes a new Arctic executive steering committee. It will have some two dozen members, including deputy secretaries from the departments of State, Defense, Homeland Security and Interior. Among the stated goals is to better collaborate with the State of Alaska and Alaska tribes.”

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.³⁰²

U.S. Navy Arctic Roadmap³⁰³

- 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 was for the period FY2010-FY2014. Rather than setting out Arctic plans and policies, it set out a schedule for the development and implementation of such plans and policies. As such it called for things like the development strategic objectives and command structure requirements, and assessments of current Navy Arctic capabilities.³⁰⁴
- **U.S. Navy Arctic Roadmap for 2014 – 2030:** “Over the last four years, Task Force Climate Change, in consultation and collaborating with the broader governmental and private scientific communities, has concluded that ice conditions in the Arctic Ocean are changing more rapidly than first anticipated. This updated U.S. Navy Arctic Roadmap prepares the U.S. Navy to respond effectively to future contingencies, delineates in the U.S. Navy’s Arctic Region leadership role with the Defense Department, and articulates the Navy’s support to national priorities.”³⁰⁵

Deployment of 330 US Marines in Norway³⁰⁶

- The Norwegian government announced in October 2016 that 330 US Marines will be stationed on rotation around 1,000 kilometres (600 miles) from the Russian border starting in January 2017.
- According to the Norwegian Defence Ministry, “they will be engaged in training and manoeuvres in almost Arctic conditions.”
- “The deployment...is a US initiative which Oslo is presenting as a trial to be evaluated during 2017.”

2. Recurring Operations and Exercises

Ice Exercise (ICEX)

- **ICEX 2016**³⁰⁷

²⁹⁹ “USCG takes control of Kotzebue aviation facility,” 24 June 2016, KTUU, <http://www.ktuu.com>

³⁰⁰ Bergman, Julia, “Mass Rescue Exercise Tests Response Capabilities in Arctic,” Military.com, 25 August 2016, www.military.com

³⁰¹ Ruskin, Liz, “Obama Issues Executive Order on Arctic Co-ordination,” Alaska Public Media, 21 January 2015, www.alaskapublic.org

³⁰² Petty Officer 1st Class Eggert, Shawn, “Coast Guard Arctic Craft Project looks to older technologies to tackle new challenges in Arctic,” DVIDS, 19 August 2014, <http://www.dvidshub.net>

³⁰³ “U.S. Navy Arctic Roadmap 2014-2030,” U.S. Navy, www.navy.mil

³⁰⁴ O’Rourke, Ronald, “Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress,” US Congressional Research Service, 10 December 2012, p. 63-65, <http://www.fas.org/sgp/crs/weapons/RL34391.pdf>

³⁰⁵ “U.S. Navy Arctic Roadmap 2014-2030,” U.S. Navy, www.navy.mil

³⁰⁶ L’Agence France Presse, “US to deploy 330 troops in Norway,” Yahoo, 24 October 2016, www.yahoo.com

³⁰⁷ “US Navy Begins Ice Exercise (ICEX) 2016 in Arctic Ocean,” Naval-technology.com, 3 March 2016, <http://www.naval-technology.com>

- ICEX 2016 occurred in the Arctic Ocean in March following construction of the temporary US Navy Ice Camp, SARGO.
- This exercise continues to be coordinated by ASL and continues to be aimed at assessing operational capacity of the submarine force in the Arctic while advancing scientific research.
- The operation reflects the USA's national security and homeland defense interests in the region.
- ICEX is a five-week exercise with over 200 participants from four nations.

Northern Edge

- The biennial exercise is a training event involving US Air Force, Navy, Army and National Guard.³⁰⁸
- "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]."³⁰⁹
- Northern Edge, which normally runs every two years, was cancelled in 2013 and ran for the first time since 2011 from June 15-26 2015.³¹⁰
- The next Northern Edge is scheduled for May 2017. Lingering concern from coastal communities in Alaska about the environmental impacts of Northern Edge 2015 is making plans for 2017 controversial.³¹¹
- May occur in the fall season in future due to a resolution submitted to Homer City Council (and approved by members in August 2016) to delay trainings in the Gulf of Alaska from summer to fall to avoid negative impacts on migrating marine species. Resolution is waiting the Alaska Senator's approval.³¹²

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.³¹³

Alaska Shield

- A series of exercises for developing responses of catastrophic events (e.g. earthquake) in Alaska, involving military and civilian agencies.³¹⁴

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..."³¹⁵

Operation Deep Freeze

- The U.S. military's annual logistical support of the National Science Foundation's U.S. Antarctic Program
- The mission includes breaking through Antarctic ice to resupply McMurdo Station, a large US Antarctic research station.
- Operation Deep Freeze 2016 used Coast Guard Cutter Polar Star to create a 13-mile channel allowing two supply vessels to reach McMurdo Station.

Operation Arctic Pegasus³¹⁶

- US Army Alaska's annual joint exercise

³⁰⁸ Northern Edge 2011 - <http://www.jber.af.mil/alcom/northernedge/northernedge2011.asp>

³⁰⁹ Northern Edge 2011 - <http://www.jber.af.mil/alcom/northernedge/northernedge2011.asp>

³¹⁰ "Northern Edge joint military training exercise," Alaska Dispatch News, 23 June 2015, <http://www.adn.com>

³¹¹ "Alaska senator says Navy has explaining to do," RCinet, 21 September 2016, www.rcinet.ca

³¹² Farzan Shahla, "Proposed naval training causes concern," Alaska Public Media, 15 August 2016, <http://www.alaskapublic.org>

³¹³ Arctic Edge - <http://www.jber.af.mil/alcom/arcticedge/>

³¹⁴ Alaska Shield 2012 focused on winter storm response:

<http://ready.alaska.gov/press/Statewide%20Exercise%20Prepares%20Alaska%20for%20Big%20Winter%20Storm.pdf>

³¹⁵ Clemens, Jay, "NOAA, Coast Guard test systems for Arctic Response Missions," ExecutiveGov, 15 Aug. 2014, <http://www.executivegov.com>

³¹⁶ Friedman, Sam, "Fort Wainwright's Strykers strike out for the Arctic," News Miner, 5 November 2015, <http://www.newsminer.com>

- Testing rapid-deployment readiness in Arctic conditions
- Arctic Pegasus last took place in November 2015, when Stryker vehicles were deployed for the first time above the Arctic Circle

Exercise Red Flag – Alaska (RFA)³¹⁷

- “a multi-service, multi-national, air combat training exercise sponsored by the Pacific Air Forces of the US Air Force”
- Began in 1976 in the Philippines as “Cope Thunder”, and moved to Eielson Air Force Base (AFB) in Alaska in 1992. Renamed “Red Flag – Alaska” in 2006.
- While “the main objective of the exercise has been to improve the ability of aircrew to handle high-stress combat situations”, the aim has expanded to “overwhelm the senses with combat simulations”, according to Lt Col Reggie Smith of the 353rd Combat Training Squadron (CTS).
- The 2016 series of field training exercises concluded on 19 August, 2016.³¹⁸

Operation Arctic Shield³¹⁹

- An operation of the US Coast Guard which began in 2012 and occurs annually to increase the agency’s Arctic awareness and preparedness.
- As of July 2016, its seasonal home will be established in Kotzebue, Alaska.
 - “In prior Arctic Shield Operations years, the Coast Guard had skipped from town to town each summer — from Kotzebue to Barrow to Prudhoe Bay. A permanent base will allow for more flexibility, [Coast Guard Chief Petty Officer Shawn] Eggert said.”

³¹⁷ Fence Check, <http://www.fencecheck.com>

³¹⁸ “Red Flag Alaska: Eielson Airforce Base,” United States Air Force, no date listed, <http://www.eielson.af.mil>

³¹⁹ Andrews, Laurel, “Coast Guard launches seasonal home base in Kotzebue,” 26 June 2016, Alaska News, <http://www.adn.com>

RUSSIA

1. Security Assets available for Operations in the North

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

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.”³²⁰ 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. 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.³²¹

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.”³²²
- 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
- Russia Joint Strategic Command North (JSCN), created in 2014 as overarching command structure for the developing arctic force, has headquarters at Severomorsk.³²³

Bases on the Kola Peninsula

Motovsky

Gremikha

Ura Guba

*Severdoninsk*³²⁴

Wrangle Island³²⁵

- A Pacific fleet naval base
- In the midst of significant build-up. 68 new bases to be built on Wrangle Island and Cape Schmidt by end of 2017.³²⁶

³²⁰ Rogoway, Tyler, “Russia Annexes and Deploys Forces to Tiny but Strategic Arctic Island,” Foxtrot Alpha blog, 26 October 2014, <http://foxtrotalpha.jalopnik.com>

³²¹ Adomanis, Mark, “Russia Plans Massive Arctic Expansion,” USNI, 9 August 2012, <http://news.usni.org>

³²² “Northern Fleet”, GlobalSecurity.Org, last modified 21 September 2014, <http://www.globalsecurity.org/military/world/russia/mf-north.htm>

³²³ Poulin, Andrew, “5 ways Russia is positioning to dominate the Arctic,” International Policy Digest, 24 January 2016, <http://intpolicydigest.org>

³²⁴ “Northern Fleet”, GlobalSecurity.Org, last modified 21 September 2014, <http://www.globalsecurity.org/military/world/russia/mf-north.htm>

³²⁵ Bodner, Matthew, Eremenko, Alexey, “Russia Starts Building Military Bases in the Arctic,” The Moscow Times, 8 September 2014, <http://www.themoscowtimes.com/>

³²⁶ Staalesen, Atle, “New Arctic military base is declared ready for operation,” The Barents Observer, 14 December 2016, <https://thebarentsobserver.com>

Cape Schmidt

- Located in Cape Schmidt in the eastern Chukotka region³²⁷
- The autonomous base is shaped like a five-point star and built in environmentally protected territories³²⁸
- According to Lt. Col. Sergei Surovikin, plans for construction of a drone detachment and an airport on the cape were to be completed by 2015³²⁹
- According to a press release issued in December of 2014 by Russia's Federal Ministry of Special Construction, the facility was to include the following: a "sauna, psychological evaluation room and sports facilities, as well as eating, sleeping and medical quarters."³³⁰
- In November of 2015, it was announced by Russian company Rusaliance Stroy that the federal Agency for Special Construction has halted funding, and therefore construction, of the Cape Schmidt base upgrade.³³¹
- In the midst of significant build-up. 68 new bases to be built on Wrangle Island and Cape Schmidt by end of 2017.³³²

Franz Joseph Land 2016 – "Arctic Trefoil"

- Located at 80 degrees north on Alexandra Land Island in Nagurskoye³³³
- Known as the "Arctic Trefoil" complex³³⁴
- The complex is the largest building in the high Arctic and the largest human made structure so far north³³⁵
- With 14,000 square metres and will provide living and working conditions for 150 servicemen to live for one-and-a-half years without outside support.³³⁶
- As of December 2016, the base was reported to be 98 percent finished, according to news source Spetsstroy . "According to new Northern Fleet Commander Nikolay Yevmenov, the new base will house a fleet of either MiG-31 or Su-34 fighter aircrafts, as well as refuelling tankers Il-78."³³⁷
- Building of an airfield to receive aircraft has entered an active phase. The project includes a landing strip and airfield service facilities.³³⁸

Kuril Islands 2016

Barneo (temporary ice base)

- Annual temporary base for scientific research, Arctic expeditions and tourism
- Set up each spring "89° N – 100 kilometers from the North Pole" and is usually operation for one month³³⁹
- For the first time in modern Russian history, paratroopers landed on a drifting floe in the Arctic Ocean, Barneo.
 - In early April 2014, "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 Barneo 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

³²⁷ Bodner, Matthew, Eremenko, Alexey, "Russia Starts Building Military Bases in the Arctic," The Moscow Times, 8 September 2014, <http://www.themoscowtimes.com/>

³²⁸ Bodner, Matthew, Eremenko, Alexey, "Russia Starts Building Military Bases in the Arctic," The Moscow Times, 8 September 2014, <http://www.themoscowtimes.com/>

³²⁹ "Russian Military Opens 2nd Arctic Base," The Moscow Times, 27 November 2014, <http://www.themoscowtimes.com/>

³³⁰ "Russia Builds New Arctic Military Base," The Moscow Times, 8 December 2014, <http://www.themoscowtimes.com/>

³³¹ Staalesen, Atle, "Arctic army base construction put on hold," The Barents Observer, 6 November 2015, <http://www.thebarentsobserver.com>

³³² Staalesen, Atle, "New Arctic military base is declared ready for operation," The Barents Observer, 14 December 2016, <https://thebarentsobserver.com>

³³³ Thomas Nilsen, "Russia erects huge military trefoil on Franz Joseph Land," The Barents Observer, 20 October 2015, <http://www.thebarentsobserver.com>

³³⁴ Thomas Nilsen, "Russia erects huge military trefoil on Franz Joseph Land," The Barents Observer, 20 October 2015, <http://www.thebarentsobserver.com>

³³⁵ Thomas Nilsen, "Russia erects huge military trefoil on Franz Joseph Land," The Barents Observer, 20 October 2015, <http://www.thebarentsobserver.com>

³³⁶ "Take a glimpse inside Russia's high-tech Arctic army base," Press TV, 19 April 2016, <http://presstv.ir>

³³⁷ Staalesen, Atle, "Fighter jets for Russia's new Arctic base," The Barents Observer, 22 April 2016, <http://thebarentsobserver.com>

³³⁸ "Spetsstroy starts construction of airfield on Franz Josef Land," The Arctic, 26 October 2016, www.arctic.ru

³³⁹ Pettersen, Trude, "Russian paratroopers conquer North Pole," The Barents Observer, 10 April 2014, <http://barentsobserver.com>

drop on Barneo comes only three week after Russia dropped 350 paratroopers from the 98th Airborne Division over the far northern New Siberian Islands.”³⁴⁰

Novaya Zemlya (Rogachevo Air Base)

Anderma 2020³⁴¹

- New military unit to be stationed in Anderma near the Kara Sea by 2020, said Russian Deputy Defense Minister Army General Dmitry Bulgakov in February 2016

Counterterrorism Headquarters in Murmansk³⁴²

- “In December 2015, plans were announced to found a counterterrorism headquarters in Murmansk.”

Forward Military Infrastructure³⁴³

- 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.”³⁴⁴

Forward Military Base – Kotelny Island

- A federal nature reserve that is now hosting a new military base with an airfield able to accommodate Ilyushin Il-76 aircraft all year long³⁴⁵
- A September 2016 military rehearsal took place at new military complex on Kotelny Island.³⁴⁶
 - The Rubezh missile complex fired two Termit cruise missiles, firing was made from Pantsir-S1, and destroyer *Vice Admiral Kulakov* launched its short-range surface-to-air missile system Kinzhal and its artillery complexes AK-100 and AK-630.
- Base now stands ready for use³⁴⁷

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.”³⁴⁸

Forward Military Base – Alakurtti Village

- “The 80th Independent Motorized Infantry Brigade was established in Alakurtti in 2015, near the Finnish border. In addition, two electronic warfare units, the 331st and 332nd Radio-Technical Regiments, have also been placed in Alakurtti.”³⁴⁹

Forward Arctic Sea Defence Base (Severnaya Zemlya)

- 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.³⁵⁰

³⁴⁰ ³⁴⁰ Pettersen, Trude, “Russian paratroopers conquer North Pole,” The Barents Observer, 10 April 2014, <http://barentsobserver.com>

³⁴¹ “Military Unit to Be Deployed in Russia’s Kara Sea in Arctic by 2020,” Sputnik News, 26 February, 2016, <http://sputniknews.com>

³⁴² Korpela, Aleks, “Of fire and ice: Russia’s militarization of the Arctic,” The Nato Association of Canada, 4 February 2016, <http://natoassociation.ca>

³⁴³ “A military infrastructure will be created in the Arctic archipelagos of Russia,” Arctic Info, 21 May 2014, <http://www.arctic-info.com/>

³⁴⁴ “Russia to create united naval base system for ships. Subs in Arctic-Putin,” RT News, 22 April 2014, <http://rt.com>

³⁴⁵ “Russian Military Opens 2nd Arctic Base,” The Moscow Times, 27 November 2014, <http://www.themoscowtimes.com/>

³⁴⁶ Staaleson, Atle, “Shooting cruise missiles from Arctic archipelago,” The Barents Observer, 20 September 2016, <http://barentsobserver.com>

³⁴⁷ Staaleson, Atle, “New Arctic military base is declared ready for operation,” The Barents Observer, 14 December 2016, <https://thebarentsobserver.com>

³⁴⁸ “Russian Arctic island to serve as base for military transport planes,” ITAR TASS Russia News Agency, 2014, <http://en.itar-tass.com>

³⁴⁹ Korpela, Aleks, “Of fire and ice: Russia’s militarization of the Arctic,” The Nato Association of Canada, 4 February 2016, <http://natoassociation.ca>

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.³⁵¹ Russian pilots discovered the location of the island early in October, and the location has been confirmed by the Admiral Vladimirsky research ship.³⁵²

Construction of nine airfields³⁵³

- Russia's Federal Agency for Special Construction (Spetsstroy) told the press on 21 July 2016 that they are currently building nine airfields and other infrastructural facilities in the Arctic for the Defense Ministry. Current building projects include:
 - Severomorsk-1 and Nagurskoye airfields on the Alexandra Land Island of the Franz Josef archipelago
 - Rogachyovo aerodrome in the Arkhangelsk Region
 - Tiksi airfield in the Sakha Republic
 - Temp aerodrome on Kotelny Island
- Design and survey work is being carried out on the following:
 - Severomorsk-3 airfield in Murmansk
 - Naryan-Mar airfield in the Arkhangelsk region
 - Vorkuta aerodrome in the Komi Republic
 - Alykel aerodrome in the Krasnoyarsk Territory
 - Anadyr aerodrome in the Chukotka Autonomous District
- "According to the press office, the reconstructed Nagurskoye airfield will be able to receive Ilyushin Il-78 (NATO reporting name: Midas) aerial refueling planes."

New FSB Arctic Complex in Sabetta³⁵⁴

- The new complex includes "a housing block for several tens of specialists, garages for special equipment, as well as a separate building for accessories".
- The new border guard office is meant to bolster security along Russia's Arctic frontiers, according to regional leaders of the FSB in a press release.
- Built by Yamal LNG company along with regional authorities

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.³⁵⁵

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 that was abandoned in 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.³⁵⁶

³⁵⁰ "Russia Setting Up Another Arctic Sea Defence Base," MarineLink, 2014, <http://www.marinelink.com>

³⁵¹ Rogoway, Tyler, "Russia Annexes and Deploys Forces to Tiny but Strategic Arctic Island," Foxtrot Alpha blog, 22 October 2014, <http://foxtrotalpha.jalopnik.com>

³⁵² Su, Reissa, "Russia to Reactivate Former Soviet Union Bases in Arctic Border in Response to NATO," International Business Times, 22 October 2014, <http://www.ibtimes.com>

³⁵³ "Russia's Spetsstroy to build 9 airfields in Arctic," TASS, 21 July 2016, www.rbth.com

³⁵⁴ Staalesen, Atle, "FSB opens new military complex," The Barents Observer, 9 August 2016, <http://barentsobserver.com>

³⁵⁵ Staalesen, Atle, "Airships for Russian Arctic patrol," The Barents Observer, 12 March 2014, <http://barentsobserver.com>

³⁵⁶ Staalesen, Atle, "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," The Barents Observer, 17 March 2014, <http://barentsobserver.com>

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.³⁵⁷

Northern Fleet Aircraft³⁵⁸

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)



³⁵⁷ Staalesen, Atle, "First Northern Fleet drones taking off," The Barents Observer, 4 April 2014, <http://barentsobserver.com>

³⁵⁸ "The Military Balance 2012," IISS, 7 March 2012, <https://www.iiss.org>

Tu-160M2 Blackjacks 2023

- “In 2015 it was announced that Russian MoD plans to relaunch production of the Tu-160. Newly build bombers will be fitted with new engines, new radars and new avionics.”³⁵⁹
- “Serial production of the Tu-160M2 is to be implemented starting from 2023,” said Russian deputy defence minister Yury Borisov in July of 2015.³⁶⁰



Photocredit: *Military-today.com*, Tu-160M2, <http://www.military-today.com>

Il-38 Maritime Patrol (14)

Il-20 Electronic Warfare and Electronic Intelligence

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



³⁵⁹ “Tupolev TU-160 Blackjack,” *Military-Today.com*, <http://www.military-today.com>

³⁶⁰ Novichkov, Nikolai, “Russia’s future PAK DA bomber to be delayed by Tu-160M2 production,” *IHS Janes Defence Weekly*, 21 July 2015, <http://www.janes.com>

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

Mil Mi-8AMTSh-VA rotorcraft

- In March 2016, the Northern Fleet accepted its first polar-optimised Mil Mi-8AMTSh-VA rotorcraft, with capability to operate in temperatures down to -40°C and fly out to 1,300km using auxiliary fuel tanks.³⁶¹
- The Russian military will reportedly receive 5 more in the coming year, which are custom-made for Arctic conditions.³⁶²
- “The contract for the helicopters was signed in February 2015 and is being fulfilled via the Ulan-Ude Aviation Enterprise, in a deal that will provide helicopter deliveries until 2020, according to Tass.”³⁶³



Photo Credit: Mark Agnor, Sputnik News, Mil Mi-8AMTSh-VA rotorcraft, <http://sputniknews.com/russia/20160319/1036576005/russia-helicopter-arctic.html>

Tu-142 and Il-38 maritime Reconnaissance Aircraft resumed regular missions near or over the Arctic in 2007³⁶⁴

- Long-range Tu-22 bombers resumed patrols beyond Russia in 2007³⁶⁵, currently 100-120 in service in Northern Fleet.³⁶⁶
- 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 Island³⁶⁷
 - These plans were later modified – earlier plans to base MiG-31 aircraft in Novaya Zemlya were reversed in February 2013.³⁶⁸
- A squadron of Mig-31 long-range fighter interceptors are to be stationed on the Novaya Zemlya archipelago in the Arctic.³⁶⁹

Forward S-400 Triumph

- A new regiment of air defense missile systems for the newly-created Arctic Command
- Deployed in 2015 on the Novaya Zemlya archipelago:
 - An officer from the Russian General Staff told TASS during the 5th Arctic Today and Tomorrow International Forum that, "Two S-400 regiments have been activated and deployed to the Novaya Zemlya Archipelago and

³⁶¹ Stevenson, Beth, "Russian military accepts Arctic Mi-8" <https://www.flightglobal.com/news/articles/russian-military-accepts-arctic-mi-8-rotorcraft-419559/>

³⁶² Ziezulewicz, Geoff, "Russia getting helicopters for Arctic operations," 25 May 2016, United Press International, <http://www.upi.com>

³⁶³ Ziezulewicz, Geoff, "Russia getting helicopters for Arctic operations," United Press International, 25 May 2016, <http://www.upi.com>

³⁶⁴ Wezeman, Siemon, T., "Military Capabilities in the Arctic," SIPRI Background Paper, March 2012, p. 9.

³⁶⁵ Huebert, Rob, Exner-Pirot, Heather, Lajeunesse, Adam, and Gullledge, Jay, "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>

³⁶⁶ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

³⁶⁷ "Russia to Reopen Arctic Airbases," RIANOVOST, 30 May 2012. http://en.rian.ru/military_news/20120530/173757083.html

³⁶⁸ Pettersen, Trude, "Russia drops Arctic air force plans," The Barents Observer, 4 February 2013, <http://barentsobserver.com>

³⁶⁹ Kislyakov, Andrei, "Russia deploys Arctic troops," RBTH, 2 November 2012, <http://rbth.ru>

the city of Tiksi in Yakutia this year under the program on reinforcing the 2014-formed Arctic force, with the program dubbed Northern Fleet - Unified Strategic Command.”³⁷⁰

- It has been reported that early in 2014 an air defense unit based in the Kola Peninsula was equipped with S-400 systems³⁷¹
- Two S-400 anti-aircraft missile systems have been moved towards the Finnish border “to replace the older S-300 rockets”.³⁷²

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 in the urban settlement of Tiksi in northernmost Sakha Republic, Commander Col. Gen. Viktor Bondarev said Wednesday.”³⁷³



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

SA-22 Pantsir-S1 Short-range air defence system

- As of August 2015, TASS reported that Russia is building up, and already operating, an advanced tracking system to monitor air and water movement. The system is already widely used by Russian military but has been modified to withstand extreme Arctic conditions.³⁷⁴
 - "By the end of this year [2016] already the first samples of the new Pantsir-SA self-propelled anti-aircraft complex designed for combat actions in the Arctic conditions will become operational in the Aerospace Forces and the Northern Fleet," Lt. Gen. Viktor Gumenny told the Russian News Service radio station.³⁷⁵
- Range of 19 miles and able to function in temperatures as low as -58F³⁷⁶
- “The newly modified system will likely be mounted on a new chassis developed for [Russia](#)’s third-generation Armata tank”, FMSO reported.³⁷⁷

³⁷⁰ “Russia deployed two S-400 air defence missile regiments in Arctic in 2015 – General Staff,” TASS, 8 December 2015, <http://tass.ru>

³⁷¹ “Russia to deploy regiment of S-400 launchers on Novaya Zemlya 2015,” TASS, 30 December 2014, <http://tass.ru>

³⁷² “Russia moves missiles to Finnish border,” RCINet, 23 September 2016, <http://www.rcinet.ca/>

³⁷³ Ballaban, Michael, “Russia is Deploying Its Fastest Interceptors To The Arctic Full-Time,” Foxtrot Alpha blog, 16 October 2014, <http://foxtrotalpha.jalopnik.com/>

³⁷⁴ Howell, Kellen, “Russia planting new anti-aircraft missiles in Arctic,” The Washington Times, 19 August, 2015, <http://www.washingtontimes.com>

³⁷⁵ “Russian army to get Pantsir-SA systems for Arctic in late 2016,” TASS, 20 August 2016, <http://tass.com>

³⁷⁶ Howell, Kellen, “Russia planting new anti-aircraft missiles in Arctic,” The Washington Times, 19 August, 2015, <http://www.washingtontimes.com>

³⁷⁷ Howell, Kellen, “Russia planting new anti-aircraft missiles in Arctic,” The Washington Times, 19 August, 2015, <http://www.washingtontimes.com>



Photocredit: military-today.com, SA-22 Pantsir-S1, <http://www.military-today.com/missiles/pantsyr.htm>

Arctic version of Tor short-range air defense missile system

- Russia is developing, and already operating, an advanced tracking system to monitor air and water movement. The system, developed by Russian defense manufacturer Almaz-Antey, specializes in short-range counterattacks on air and sea missiles.³⁷⁸ Radio-radar units and an air defense [missile regiment](#) equipped with S-300 missile systems were put on combat duty on the Franz Joseph Land, Novaya Zemlya, Severnaya Zemlya and New Siberian Islands archipelagos.³⁷⁹

Complex Arctic monitoring and control system by 2025³⁸⁰

- RTI Systems Corporation developing a system that can monitor air, water, underwater and land.
- Cost of system estimated at \$93M

Sukhoi T-50s

- "...while flight-testing is not yet complete, UAC expects to sign a contract with the Russian Aerospace Forces to begin serial production of the T-50 in the fall of this year," according to the Russian-language daily *Izvestia*.
- Deliveries of 12 new stealth fighters are set to begin in 2017. Depending on the results of operational testing for these 12, Moscow may decide to invest in more.

Over-the-horizon (OTH) radar technology

- "In 2017, the Russian Defense Ministry plans to buy several radar units for the Navy. They will be deployed in the Arctic, as well as in southern and western Russia," said RTI CEO Sergei Boyev."³⁸¹
- "...simultaneously detects, tracks and identifies up to 300 naval and 100 air targets in automatic mode, calculates their coordinates and guides ship-borne weapons and air defense systems toward them."³⁸²
- "It is immune to stealth technology and uses a gigantic antenna array up to five kilometers long and five meters tall, to identify aerial targets 500 kilometers away and sea targets up to 400 kilometers away."³⁸³

1.2.2 Land

Russian Defense Minister Sergei Shoigu has ordered increased numbers of new vehicles to the Arctic armed forces. As of April 2016, the ministry has announced "the beginning of shipments of a number of modern and advanced vehicles, including the Taifun, the Bulava, the Bulat, the Volk, and the Tigr-M military multipurpose vehicles."³⁸⁴

Airfield Reconstruction

- March 2016 - Six airfields in the Arctic will be reconstructed and upgraded by year 2016-2017. Among them are the airfields of Tiksi and Yamal. The latter will be developed in cooperation with Gazprom. By year 2018, Russia

³⁷⁸ "Russia building new Tor missile for Arctic defence, TASS reports," Radio Free Europe, 3 March 2016, <http://www.rferl.org>

³⁷⁹ Staalesen, Atle, "Russia deploys S-300 in Novaya Zemlya," The Barents Observer, 9 December 2015, <http://www.thebarentsobserver.com>

³⁸⁰ "Drones and satellites: Russia to create Arctic complex monitoring system by 2025," RT News, 7 August 2015, <https://www.rt.com>

³⁸¹ "Russian Defense Ministry to deploy Arctic radar in 2017," 27 June 2016, The Arctic, <http://arctic.ru/>

³⁸² "Russian Defense Ministry to deploy Arctic radar in 2017," 27 June 2016, The Arctic, <http://arctic.ru/>

³⁸³ "All Seeing Eye: Russia Builds Gigantic Military Radar in Arctic," Sputnik News, 29 October 2016, <https://sputniknews.com/>

³⁸⁴ "Heavy-duty" A look at Russia's Arctic Forces' Military Vehicles," Sputnik News, 10 April 2016, <http://sputniknews.com/>

intends to have a total of nine operative Arctic airfields, some of which are under modernization, some under total reconstruction.³⁸⁵

Anti-Missile Radar System in Vorkuta

- Construction of an anti-missile early warning radar station began in September of 2015, and is set to be completed by 2020.
- Can detect any launch from any direction, according to Chief of Staff of the Main Centre for Missile Warning of the Russian Aerospace Forces, Colonel Viktor Tymoshenko³⁸⁶
- To supplement stations in Pechora and Olenegorsk³⁸⁷

The Frigate (UAV)³⁸⁸

- “The Frigate unmanned aerial vehicle (UAV), being developed by the St. Petersburg-based Kronshtadt Group, is expected to become part of the Russian aviation force, which will be deployed in the Arctic region.”
- Currently undergoing trials, and went through first test flight in Moscow region

Possible new Russian Tanks stationed in the Arctic

- The T-14 Armata tank is currently in production in Russia.³⁸⁹ The battle tank is “equipped with a special blend of steel to extremely low temperatures” and is equipped with 44S-SV-SH armor.³⁹⁰ The Russian Defense Ministry has not openly declared to locate the tanks in the Arctic, though considering the tank’s technology and the competition for Arctic resources increasing, there is reason to believe they will be deployed there.

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.”³⁹¹

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...”³⁹² 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.”³⁹³
- November 2015 – “Orlan-10 and Forpost (Outpost) unmanned aerial vehicles are already deployed close to the regional capital of Chukotka, said chief spokesman of the Eastern Military District Alexander Gordeyev.”
 - “The unit will be soon replenished with new airborne devices capable of performing tasks at a distance of more than 1,500 kilometres,” he told TASS.”³⁹⁴

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.”³⁹⁵
- February 2016 – 6 of the 13 airbases have been operational since December 2015. “These are the Nagurskoye and Rogachevo airbases in Russia’s western Arctic, and Sredny Ostrov, Temp, Mys Shmidta, and Zvyozdny airbases in eastern parts.”³⁹⁶

³⁸⁵ Atle Staalesen, “Russian military builds four more Arctic bases,” The Barents Observer, 23 October 2015, <http://www.thebarentsobserver.com>

³⁸⁶ “Russian missile warning system can detect mass launch of ballistic missiles,” Sputnik News, 15 August 2015, <http://sputniknews.com>

³⁸⁷ “Russia begins construction of Anti-Missile Radar in Arctic,” Sputnik News, 3 October 2015, <http://sputniknews.com>

³⁸⁸ “Flight model of Russia’s heavy duty transformer drone undergoes trials,” RT News, 16 May 2016, <https://www.rt.com>

³⁸⁹ Majumdar, Dave, “Surprise: Russia’s lethal T-14 Armada tank is in production,” The National Interest, 13 March 2016, <http://nationalinterest.org>

³⁹⁰ Denis Kungurov (14 November 2014), “Secret new Russian tank could be deployed to Arctic zones,” Russia Beyond the Headlines, <http://rbth.com/>

³⁹¹ Su, Reissa, “Russia to Reactivate Former Soviet Union Bases in Arctic Border in Response to NATO,” International Business Times, 22 October 2014, <http://www.ibtimes.com>

³⁹² “Russia to deploy drone grouping in Arctic region by yearend,” TASS, 27 November 2014, <http://itar-tass.com>

³⁹³ “Russia’s Arctic group to get Orlan-10 drones by year end,” TASS, 29 December 2014, <http://itar-tass.com>

³⁹⁴ “New drone squadron protects Russian interest in the Arctic,” The Siberian Times, 23 November 2016, <http://siberiantimes.com>

³⁹⁵ Nilsen, Thomas, “Arms the Arctic with 13 new airfields,” The Barents Observer, 29 October 2014, <http://barentsobserver.com>

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.

“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.”³⁹⁷

In April of 2016, commander-in-chief of Russia’s Navy, Admiral Vladimir Korolyov, stated that, “the total strength of Russia’s naval forces in the Arctic and the World Ocean currently stands at 100 combat and logistics ships.”³⁹⁸

Naval vessels assigned to the Northern Fleet³⁹⁹

Submarines

Vice Admiral Clive Johnstone, Commander of NATO's Maritime Command, reported in February 2016 that NATO is seeing Russian submarine activity in the North Atlantic return to Cold War levels. NATO’s top naval commander also noted that Russian submarines have made a major jump in technical capability.⁴⁰⁰

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.⁴⁰¹

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

³⁹⁶ Korpela, Aleks, “Of fire and ice: Russia’s militarization of the Arctic,” The Nato Association of Canada, 4 February 2016, <http://natoassociation.ca>

³⁹⁷ Staalesen, Atle, “Russian military builds four more Arctic bases,” The Barents Observer, 23 October 2015, <http://www.thebarentsobserver.com>

³⁹⁸ “Russian Naval Presence in the Arctic, World Ocean goes up to 100 ships – commander,” TASS, 21 April 2016, <http://tass.ru>

³⁹⁹ “The Military Balance 2012”, 7 March 2012, IISS, p. 198, <https://www.iiss.org>

⁴⁰⁰ De Larrinaga, Nicholas, “Russian submarine activity topping Cold War level,” 2 February 2016, IHS Jane’s Deference Weekly, <http://www.janes.com>

⁴⁰¹ Pugliese, David, “Capability of Russia’s Ballistic Missile Submarine Force Questioned,” Ottawa Citizen, 18 May 2013, <http://ottawacitizen.com/>

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.⁴⁰²

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. 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."⁴⁰³

Strategic nuclear warheads based in the Arctic (192)

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.⁴⁰⁴

According to TASS, "Podmoskovye (NATO reporting name Delta-IV) was launched on 11 August 2015 after undergoing "in-depth modernization" at the Zvezdochka shipyard in Severodvinsk since 1999."⁴⁰⁵

- "Podmoskovye" will probably be used as carrier for the "Losharik" deep diving titanium submarine.⁴⁰⁶



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)⁴⁰⁷

⁴⁰² Kefferputz, Roderick, "On Thin Ice? (Mis)interpreting Russian Policy in the High North," CEPS Policy Brief, February 2010, <http://www.ceps.eu>

⁴⁰³ Borger, Julian, "US and Russia in danger of returning to era of nuclear rivalry," The Guardian, 4 January 2015, <http://www.theguardian.com/>

⁴⁰⁴ "Russian strategic nuclear forces: Current Status", RussianForces.org, last modified March 2012, <http://russianforces.org/navy/>

⁴⁰⁵ Pettersen, Trude, "Russian nuclear submarine launched after modernization," The Barents Observer, 13 August 2015, <http://barentsobserver.com>

⁴⁰⁶ Pettersen, Trude, "Russian nuclear submarine launched after modernization," The Barents Observer, 13 August 2015, <http://barentsobserver.com>

- 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.⁴⁰⁸
 - 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 missiles⁴⁰⁹
 - Each to carry 16 to 20 missiles⁴¹⁰

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 submarines⁴¹¹
- In December 2012 the first of its new Yasen Class cruise missile SSN's undertook a new round of sea trials⁴¹²
 - Can potentially carry nuclear armed missiles
 - Will likely be one of the vessels equipped with the new Futlyar torpedo Russia is testing⁴¹³
- Sea trials to date have disclosed extensive flaws in a ship experiencing missed deadlines and cost over-runs⁴¹⁴
- The operational radius of the northern submarine fleet has been expanded to include much of the Arctic Ocean⁴¹⁵

“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.”⁴¹⁶ September 2016 - Vladimir Monomakh, the third ballistic missile submarine of the Project 955 class, “was expected to conduct a salvo launch of Bulava missiles in June 2016, but it has left without launching the missiles. It is possible that it will launch the missiles from the Pacific, but maybe it won't - at the time Alexander Nevskiy arrived in the Pacific it was reported that it will conduct a launch from there, but it didn't.”⁴¹⁷ The first November 2015 launch was not successful as one of the missiles was reported to have malfunctioned.⁴¹⁸

Russia has increased the operational radius of its Northern Submarine Fleet by 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*.⁴¹⁹

⁴⁰⁷ Huebert, Rob; Exner-Pirot, Heather; Lajeunesse, Adam; Gullede, Jay, “Climate Change and International Security: The Arctic as a Bellwether,” Center for Climate and Energy Solutions, May 2012, p. 18, <http://www.c2es.org/docUploads/arctic-security-report.pdf>

⁴⁰⁸ Pettersen, Trude, “Two new nuclear-powered submarines to Northern Fleet, The Barents Observer, 3 January 2013, <http://barentsobserver.com>

⁴⁰⁹ Litovkin, Viktor, “Russian Navy plans further expansion,” Russia and India Report, 14 January 2013, <http://indrus.in>

⁴¹⁰ Digges, Charles, “Launch of new Russia sub class to put more nuclear missiles at sea, The Bellona Foundation, 14 January 2013, <http://www.democraticunderground.com>

⁴¹¹ Bodner, Matthew, Eremenko Alexey, “Russia Starts Building Military Bases in the Arctic,” The Moscow Times, 8 September 2014, <http://www.themoscowtimes.com/>

⁴¹² Huebert, Rob; Exner-Pirot, Heather; Lajeunesse, Adam; Gullede, Jay, “Climate Change and International Security: The Arctic as a Bellwether,” Center for Climate and Energy Solutions, May 2012, p. 32, <http://www.c2es.org/docUploads/arctic-security-report.pdf>

⁴¹³ Staalesen, Atle, “Navy takes on new torpedo,” 30 June, 2016, The Barents Observer, <http://thebarentsobserver.com/>

⁴¹⁴ Digges, Charles, “Shaky Severodvinsk nuclear sub sets to sea for trials – again,” The Bellona Foundation, 5 November 2012, <http://www.bellona.org>

⁴¹⁵ Huebert, Rob; Exner-Pirot, Heather; Lajeunesse, Adam; Gullede, Jay, “Climate Change and International Security: The Arctic as a Bellwether,” Center for Climate and Energy Solutions, May 2012, p. 32, <http://www.c2es.org/docUploads/arctic-security-report.pdf>

⁴¹⁶ Pettersen, Trude, “Russia to resume Bulava tests,” The Barents Observer, 15 April 2014, <http://barentsobserver.com>

⁴¹⁷ “Vladimir Monomakh begins transfer to the Pacific,” Russian Strategic Nuclear Forces, last modified 16 August 2016, <http://russianforces.org>

⁴¹⁸ “Salvo Bulava launch from Vladimir Monomakh - second attempt expected in June,” Russianforces.org, 11 March 2016, <http://russianforces.org>

⁴¹⁹ Staalesen, Atle, “Moving 3000 intelligence officers to Finnish border,” The Barents Observer, 14 March 2014, <http://barentsobserver.com>

For more information see 'Forward Military Base – Alakurtti Village'.

Underwater Drones

*Klavesin-2R-PM*⁴²⁰

- Russia's new underwater drone for Arctic waters announced in Rubin Central Design Bureau of Marine Technology's 2015 annual report
- Can dive 6,000 meters and is intended for research
- "6,5 m long, 1 metre diameter, has a weight of 3,7 tons and a maximum cruising range of 50 km from its mother vessel," according to a livejournal blog discussing Russian military news.
- Rubin Director Igor Villeneuve says Klavesin-2R-PM has "increased autonomy and depth in addition to surveillance and search functions."



Photocredit: Rubin Design Bureau, <http://thebarentsobserver.com>

Surface Ships

Aircraft Carriers

- Russia's Navy currently only has one aircraft carrier, *Admiral Kuznetsov*, which will be part of the Northern Fleet
 - Will be getting upgrades in 2017 and these may last 2-3 years
 - "Negotiations on contract details for the planned upgrade goes on and will be signed in the near future, [TASS](#) reports referring to a source in the military industrial complex."⁴²¹
- There are plans for "five or six carrier battle groups," most of which would be based in northern waters⁴²²
- These new carriers are to be smaller than Russia's current ship, a more versatile combat ship, say some reports, that could include drones⁴²³
 - *Admiral Gorshkov* is one example of these new aircraft carriers. She weighs 500 tons and is 135 meters long, and is about to enter duty in the Northern Fleet.⁴²⁴

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 France⁴²⁵
- Designated Vladivostok Class by the Russians, each of the ships is to carry:
 - 30 helicopters
 - Anti-missile cannons

⁴²⁰ Nilson, Thomas, "This is Russia's new unique underwater drone for Arctic waters," The Barents Observer, 12 July 2016, <http://thebarentsobserver.com>

⁴²¹ Nilson, Thomas, "Russia may be without aircraft carrier for 2-3 years," The Barents Observer, 27 May 2016, <http://www.thebarentsobserver.com>

⁴²² Huebert, Rob; Exner-Pirot, Heather; Lajeunesse, Adam; Gullledge, Jay, "Climate Change and International Security: The Arctic as a Bellwether," Center for Climate and Energy Solutions, May 2012, p. 18, <http://www.c2es.org/docUploads/arctic-security-report.pdf>

⁴²³ Litovkin, Viktor, "Russian Navy plans further expansion," Russia and India Report, 14 January 2013, <http://indrus.in>

⁴²⁴ Staalesen, Atle, "Rogozin: Aircraft carrier will be ready for long-distance mission," The Barents Observer, 10 March 2016,

<http://www.thebarentsobserver.com>

⁴²⁵ "Russia postpones building 2 Mistral class amphibious assault ships locally," Defense Update Blog, 26 December 2012, <http://defenseupdates.blogspot.ca>

- Anti-aircraft missiles
- Grenade launchers
- 450 marines⁴²⁶
- The two ships are expected to be delivered in October 2013 and October 2014.⁴²⁷
- As of 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 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."⁴²⁸



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

Kirov-Class Battlecruiser

Kirov Class (1144.2)⁴²⁹

- 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

Yuri Andropov⁴³⁰

- Heavy missile cruiser and flag ship of Russians Northern Fleet
- Ship part of naval patrols to monitor shipping routes in Russian territory
- In 2016, it re-entered service in the Barents Sea after 2 years of reparations. A source from the Russian shipbuilding industry reported that Pyotr Velicky should undergo armament modernization in 2019-2022⁴³¹.

⁴²⁶ "The Vladivostok Class," The Strategy Page, 2 April 2013, <http://www.strategypage.com>

⁴²⁷ "Russia's first Mistral-class ship stern launched," RT.Com, 26 June 2013, <http://rt.com/news/mistral-ship-stern-russia-261/>

⁴²⁸ "Ukraine crisis: France halted warship delivery to Russia," BBC News, 3 September 2014, <http://www.bbc.com>

⁴²⁹ "Kirov Class (Tye 1144.2) (Peter the Great), Russia," NavalTechnology.com, no date listed, <http://www.naval-technology.com>

⁴³⁰ Kramer, Andrew, "Russia Preparing Patrols of Arctic Shipping Lanes," New York Times, 14 September 2013, <http://www.nytimes.com/>

⁴³¹ Pettersen, Trude, "Battle cruiser "Pyotr Veliky" is back in the Barents Sea," Barents Observer, 18 May 2016, <http://www.thebarentsobserver.com>



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

*Admiral Nakhimov*⁴³²



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

Admiral Grigorovich-class frigate

- The lead ship of Russia's Project 11356M frigate class, *Admiral Grigorovich*, was commissioned into service March 11 2016.
- Expected to be shipped from the Yantar Shipyard in Kaliningrad to join the Black Sea Fleet in Sevastopol.
- Igor Ponomarev, vice president of United Shipbuilding Corporation (Yantar's parent company), said that the second and third ships of the class, *Admiral Essen* and *Admiral Makarov*, will also be commissioned in 2016. A total of six Admiral Grigorovich-class frigates have been ordered by the Russian Navy, but construction on the final three has been suspended because they rely on Ukrainian-built turbines.⁴³³



Photo Credit: United Shipbuilding Corporation,
<http://www.janes.com/article/58801/russian-navy-receives-first-admiral-grigorovich-class-frigate>

⁴³² "Russia Begins Nuclear Powered Missile Cruiser Overhaul," Sputnik News, 24 January 2014, <http://sputniknews.com>

⁴³³ De Larrinaga, Nicholas, "Russian Navy receives first Admiral Grigorovich-class frigate," IHS Jane's Defence Weekly, 16 March 2016, <http://www.janes.com>

Yury Ivanov⁴³⁴

- Russia's biggest information-gathering ship successfully transferred from Baltic to Northern Fleet in 2015.
- Permanently stationed at Severomorsk naval base, it is 312 feet (95 meters) long and 53 feet (16 meters) wide, with a displacement of 4,000 tons.
- Most important function is to penetrate US missile defence system.



Photocredit: GlobalSecurity.org, <http://www.globalsecurity.org>

Project 22120 Purga-Class Patrol Ship⁴³⁵

- "The Russian Federal Security Service (FSS) has ordered a new Arctic patrol ship to assist in its northern operations with the vessel expected to be delivered at the end of October 2018."
- vessel is tailored for patrolling icy waters and is able to cut through 0.5m of sea ice with its strengthened hull.
- Likely to be based in Murmansk, whereas two previous existing Project 22120 vessels stationed in the Russian far east.

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."⁴³⁶
 - Russia is the only country producing nuclear powered icebreakers.
- Only the Northern Fleet is capable of breaking thick ice.⁴³⁷
- More than 20 civilian icebreakers operate in Arctic⁴³⁸

Heavy

- One large "50 Let Pobedy" icebreaker (thick ice-breaking capacity) belongs to the Northern Fleet⁴³⁹
- The LK-2, Project 22600 will be the world's most powerful diesel-engined icebreaker, at 146,8 meters long and 22258 tons.⁴⁴⁰ The project has experienced delays and the launch has been pushed from 2015 to late 2017/early 2018.⁴⁴¹
- In 2012, Russia began the construction of a new record-breaking icebreaker:⁴⁴²
 - 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."

⁴³⁴ Rusakova, Tatyana, "Spy ship to track US missile defence system in Arctic," Russia Beyond the Headlines, 19 November 2016, <http://rbth.com>

⁴³⁵ Mladenov, Alex & Grozev, Krassimir, "Russia orders new patrol ship," 7 november 2016, Shephard Media, <https://www.shephardmedia.com>

⁴³⁶ Conan, Eve, "Breaking the Ice: Russian Nuclear-Powered Ice-Breakers," Scientific American Blog, 8 September 2012, <http://blogs.scientificamerican.com>

⁴³⁷ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁴³⁸ Staalesen, Atle, "New icebreakers open way for Russia in Arctic," The Barents Observer, 5 May 2015, <http://barentsobserver.com>

⁴³⁹ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁴⁴⁰ Staalesen, Atle, "New icebreakers open way for Russia in Arctic," The Barents Observer, 5 May 2015, <http://barentsobserver.com>

⁴⁴¹ "Baltiysky Zavod to deliver 25MW icebreaker Victor Chernomyrdin (Project 22600) in late 2017 – early 2018," Port News, 17 June 2016, <http://portnews.ru/>

⁴⁴² Conan, Eve, "Breaking the Ice: Russian Nuclear-Powered Ice-Breakers," Scientific American Blog, 8 September 2012, <http://blogs.scientificamerican.com>

- Other reports say it will go through 3 meters of ice and will be able to escort vessels through the Northern Sea Route year-round⁴⁴³
- More recently, in 2016, design for an icebreaker-class more powerful than ever was announced.⁴⁴⁴
 - Project 10510 was announced by Deputy Prime Minister Dmitry Rogozin at a conference entitled International Cooperation in the Arctic: New Challenges and Vectors of Development
 - Icebreaker would have 110 MW power unit and could navigate ice 4-5 meters thick, making the Northern Sea Route accessible year round.
 - According to Rogozin, “The decision to launch its construction will be taken soon.”
 - “Russia’s Ministry of Transport hopes for the first icebreakers of the class to be put into operation by 2024.”⁴⁴⁵
- The Arktika, Project 22220
 - Russia has set forth the first of three Arktika-class nuclear powered icebreakers, ahead of its planned 2017 launch, according to Sputnik News and the shipyard where the Arktika was built.⁴⁴⁶
 - First of three “new generation of ‘super modern’ universal-use icebreakers” built St. Petersburg’s Baltic Shipyard at a tender of \$2.3 billion.⁴⁴⁷ The Arktika is the lead ship of “Project 22220” and it is expected that at least two of its kind will be built by 2020.⁴⁴⁸ Project 22220 vessels will be capable of breaking through 13 feet of ice⁴⁴⁹ and will be 173 meters long and 34 meters wide.⁴⁵⁰



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>

Medium / Light Icebreakers

- Four small “Project 97” icebreakers (thin ice-breaking capability)⁴⁵¹
- Ilya Muromets, Project 21180
 - “Russia’s first ice-capable patrol ship to be deployed to the Arctic will be laid down this year and is planned to be commissioned in 2019 at the latest”, said the Russian Defense Ministry’s Chief of the State Defense Order Implementation Department I rank Capt. Andrei Vernigora.⁴⁵²
 - “The Ilya Muromets is an 85-meter (280-foot) long electric-diesel powered icebreaker with a deadweight of 6,000 tons and is designed to help the deployment of the navy in icy conditions as well as escort or tow other ships.”⁴⁵³
 - Launched on 10 June 2016⁴⁵⁴

⁴⁴³ Pettersen, Trude, “Three new nuclear icebreakers in the pipeline,” The Barents Observer, 4 November 2012, <http://barentsobserver.com>

⁴⁴⁴ “Russia starts designing a super-icebreaker,” The Arctic, 13 October 2016, <http://arctic.ru/>

⁴⁴⁵ Nilsen, Thomas, “Announces tender for fantasy-giant icebreakers,” The Barents Observer, 16 September 2016, <http://thebarentsobserver.com>

⁴⁴⁶ Domanoske, Camila, “Russia Launches World’s Biggest, Most Powerful Icebreaker”, NPR, 16 June 2016, www.npr.org

⁴⁴⁷ Staalesen, Atle, “World’s biggest icebreaker on the water,” The Barents Observer, 16 June 2016, <http://thebarentsobserver.com>

⁴⁴⁸ Charled Digges (9 May 2014), “Russia trumpets victory in new ‘super modern’ nuclear icebreaker project,” <http://bellona.org/>

⁴⁴⁹ Domanoske, Camila, “Russia Launches World’s Biggest, Most Powerful Icebreaker”, NPR, 16 June 2016, www.npr.org

⁴⁵⁰ Staalesen, Atle, “World’s biggest icebreaker on the water,” The Barents Observer, 16 June 2016, <http://thebarentsobserver.com>

⁴⁵¹ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁴⁵² “Russian Navy to launch first Arctic patrol ship in 2018,” Sputnik News, 10 June 2016, <http://sputniknews.com>

⁴⁵³ “Russia unveils new Navy icebreaker in Arctic military focus,” Defence News, 11 June 2016, <http://www.defensenews.com>

⁴⁵⁴ “Russia unveils new Navy icebreaker in Arctic military focus,” Defence News, 11 June 2016, <http://www.defensenews.com>

- “Polyarnaya Zvezda” is the first of two vessels of Project 22100 Okean-class ice-going patrol vessels. It is undergoing sea trials in the Baltic Sea and will be based in the Eastern Arctic region.⁴⁵⁵ Both vessels are expected to be delivered in Murmansk by December 2019.⁴⁵⁶
- “In 2016, two Project 23550 patrol ships were ordered for delivery by 2020 and they are also capable of operating in up to 1.5-metre-thick ice.”⁴⁵⁷
- The first of [four icebreakers of the 21180 project](#) for the Ministry of Defence was launched in 2016 and will be commissioned in 2017.⁴⁵⁸
- “Four Project-03182 ‘Small Arctic Sea Tanker’ icebreaking support ships for use in the Arctic were ordered in 2015 and production of the first two started in October 2015.”⁴⁵⁹
- Two of three diesel-engined Project 21900 vessels are in service. This project was developed for large-scale oil tanker assistance, as well as towing, transportation and rescue missions in icy waters.⁴⁶⁰

Soveitsky Soyuz, Arktika-class twin-reactor icebreaker⁴⁶¹

- Could be new Arctic headquarters, offered to the Ministry of Defence by Rosatom State Atomic Energy Corporation.
- The vessel has been undergoing modernization work after being laid-up at Atomflot north of Murmansk since 2006.
- Was expected to be ready for service by end of 2016.

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.⁴⁶²

Bastion-P Coastal Defence System

- Russian Defense Minister Sergei Shoigu plans to equip the Northern Fleet with four systems annually, as part of a plan to re-equip their coastal missile units by 2021.⁴⁶³
- Bastion systems, designed for coastal defense, have the capacity to engage various surface ships at ranges out to 300 kms.⁴⁶⁴
- August 2016: “The Russian Navy’s Pacific Fleet is set to formally deploy the K-300P Bastion-P (SSC-5 ‘Stooge’) mobile coastal defence missile system in the Kuril Islands, following live firing trials of the system at a training range in the Primorye Territory in July.”⁴⁶⁵

1.3 Organizations and Operational Units (personnel)

- According to SIPRI’s 2016 Background Paper:⁴⁶⁶
 - “Russia’s ground forces in the Arctic region include naval infantry and an army brigade on the Kola Peninsula.”
 - The brigade on the Kola Peninsula was established in January 2015 and are “winter-trained but are organized and equipped for operations in the north of Russia, not in the more inhospitable regions of the Arctic”.

⁴⁵⁵ Pettersen, Trude, “New Vessels for Russia’s Coast Guard,” The Barents Observer, 2 June 2015, <http://barentsobserver.com>

⁴⁵⁶ “Project 21100 Okean,” GlobalSecurity.Org, last modified 21 September 2016, www.globalsecurity.org

⁴⁵⁷ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁴⁵⁸ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁴⁵⁹ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁴⁶⁰ Staalesen, Atle, “New icebreakers open way for Russia in Arctic,” The Barents Observer, 5 May 2015, <http://barentsobserver.com>

⁴⁶¹ “Russian icebreaker could be Arctic HQ,” MarEx, 1 February 2016, <http://www.maritime-executive.com>

⁴⁶² “Russia to Deploy Four New Warships By 2020 to Protect Nation’s Arctic Zone,” RIA Novosti, 28 May 2013, <http://en.ria.ru>

⁴⁶³ “Russian Navy to receive five bastion missile defense systems in 2015,” Sputnik News, 9 September 2015, <http://sputniknews.com>

⁴⁶⁴ Novichkov, Nikolai, “Russia Navy Pacific Fleet deploys Bastion-P to Kuril Islands,” IHS Jane’s 360, 4 August 2016, <http://www.janes.com>

⁴⁶⁵ Novichkov, Nikolai, “Russia Navy Pacific Fleet deploys Bastion-P to Kuril Islands,” IHS Jane’s 360, 4 August 2016, <http://www.janes.com>

⁴⁶⁶ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

- In addition to the brigade on the Kola Peninsula, there is another currently being established in Yakutia. Plans for both brigades were announced 2011, a few years after Russia announced a plan for a special military force to protect Arctic interests in March 2009.
- In October 2015, Russian defence minister Sergei Shoigu announced that a Russian military unit will be permanently stationed in the Arctic by 2018.⁴⁶⁷

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'."⁴⁶⁸
- 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.⁴⁶⁹
- "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."⁴⁷⁰
- "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."⁴⁷¹
- In 2012 the Brigade became part of the Northern Fleet.⁴⁷²
- 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."⁴⁷³
- The Russian Arctic Brigade was formally established in early 2015, says the *Barents Observer*. "The brigade is based partly on the 80th Independent Motor Rifle Brigade in Alakurtti and the 200th Independent Motor Rifle Brigade in Pechenga, both of them located near the borders to Norway and Finland."⁴⁷⁴

200th Independent Motor Rifle Brigade⁴⁷⁵

- Became part of the Northern Fleet's ground forces in December 2012 and is based in Pechenga.

80th Independent Rifle Brigade⁴⁷⁶

- The *Barents Observer* reports that, "the unit in Alakurtti was [established in January](#) 2015 as part of Russia's increased Arctic ambitions".

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

⁴⁶⁷ "Russia to station military unit in Arctic by 2018," The Associated Press, 22 October 2015, <http://www.armytimes.com>

⁴⁶⁸ Pettersen, Trude, "Russia to establish Polar Spetsnaz on border to Norway," The Barents Observer, 16 March 2011, <http://barentsobserver.com>

⁴⁶⁹ Pettersen, Trude, "Testing equipment for Arctic Brigade," The Barents Observer, 19 March 2013, <http://barentsobserver.com>

⁴⁷⁰ Wezeman, Siemon, T., "Military Capabilities in the Arctic," SIPRI Background Paper, SIPRI, March 2012, p. 9.

⁴⁷¹ Huebert, Rob; Exner-Pirot, Heather; Lajeunesse, Adam; Gullede, Jay, "Climate Change and International Security: The Arctic as a Bellwether," Center for Climate and Energy Solutions, May 2012, p. 32, <http://www.c2es.org/docUploads/arctic-security-report.pdf>

⁴⁷² Pettersen, Trude, "Motorized infantry brigade to Northern Fleet," The Barents Observer, 26 November 2012, <http://barentsobserver.com>

⁴⁷³ Pettersen, Trude, "Testing equipment for Arctic Brigade," The Barents Observer, 19 March 2013, <http://barentsobserver.com>

⁴⁷⁴ Staalesen, Atle, "Arctic Brigade on snow," The Barents Observer, 22 February 2016, <http://thebarentsobserver.com>

⁴⁷⁵ Pettersen, Trude, "Northern Fleet plans large Arctic exercise in 2015," The Barents Observer, 3 June 2015, <http://barentsobserver.com>

⁴⁷⁶ Pettersen, Trude, "Northern Fleet plans large Arctic exercise in 2015," The Barents Observer, 3 June 2015, <http://barentsobserver.com>

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...⁴⁷⁷

The 45th Air Force and Air Defense Army of the Northern Fleet

- Formed in December 2015, reported by Russian Defense Minister Sergey Shoigu.⁴⁷⁸

Russian Coast Guard division to be deployed in Chukotka region 2018⁴⁷⁹

- Will be equipped with all-terrain vehicles to patrol the coast.
- Will fulfill “a number of tasks aimed at patrolling the Chukotka’s coast and defending from possible enemy’s troops landed in the northeastern Russia’s region”.
- A revival of a motorized rifle division deployed in Chukotka in the 1980s that was disbanded after collapse of the Soviet Union.

Arctic Joint Strategic Command

- Established on December, 1st, 2014.
- The Northern Fleet is the mainstay of the new strategic formation.
- Area of responsibility includes Russian territories in the Arctic.⁴⁸⁰
- It is comprised of Russian ground, naval, and air forces, and its headquarters are located in Arkhangelsk.⁴⁸¹

2. Recurring Operations and Exercises

Military Exercises

- In 2016, Russian Defense Minister Sergei Shoigu called for Russian armed forces to take part in large-scale multinational military drills throughout the summer.⁴⁸²

Testing of Ballistic Missiles

- October 2016 testing of 3 ballistic missiles: Russia launched 3 ballistic missiles in October 2016, 2 of which were off of submarines. “Russia’s Ministry of Defense says the first launch took place from the Pacific fleet’s nuclear powered submarine Svyatoy Georgiy Pobedonosets. The missile successfully hit its target at Chizha test range on the Kanin Peninsula, one of the most remote areas in the European Russian north. Another missile was launched from the Northern fleet’s Delta-IV class submarine Novomoskovsk from a submerged position in the Barents Sea. The missile hit the Kura test range in the Far East after a flight across the Arctic.”⁴⁸³
- November 2014 Nuclear Triad Test: 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.⁴⁸⁴

Airborne Military Drills 2014

- “The Russian Airborne Troops on Thursday para-dropped 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

⁴⁷⁷ The Moscow Times (1 October 2014), “Russia to Form Arctic Military Command by 2017,” <http://www.themoscowtimes.com>

⁴⁷⁸ Petterson, Trude, “Northern Fleet gets own air force, air defence forces,” The Barents Observer, 1 February 2016, <http://www.thebarentsobserver.com>

⁴⁷⁹ “Russian division in Chukotka will be equipped with all-terrain vehicles,” Sputnik News, 26 August 2016, <http://sputniknews.com>

⁴⁸⁰ Petterson, Trude, “Northern Fleet gets own air force, air defence forces,” The Barents Observer, 1 February 2016, <http://www.thebarentsobserver.com>

⁴⁸¹ Korpela, Aleks, “Of fire and ice: Russia’s militarization of the Arctic,” The Nato Association of Canada, 4 February 2016, <http://natoassociation.ca>

⁴⁸³ “Russia tests ballistic missiles in Arctic,” Maritime executive, 12 October 2016, <http://www.maritime-executive.com>

⁴⁸⁴ Nilsen, Thomas, “Russia plays nuclear war-games in Barents Region,” The Barents Observer, 1 November 2014, <http://barentsobserver.com>

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."⁴⁸⁵

Naval Exercises

- October 2016 – Russia's Northern and Pacific fleets conducted first joint drills in the Arctic. This was also the first time all of Russia's Arctic archipelagos were visited in one mission.⁴⁸⁶
- May 2016 – "Russia's Northern Fleet launched an exercise in the Barents Sea, involving 10 warships and support vessels, including the flagship of the Russian Navy - Project 11442 heavy nuclear-powered missile cruiser Pyotr Veliky (Peter the Great) and planes and helicopters of the Northern Fleet's Air Force and Air Defense Army, the fleet's press service reported."
 - "The maneuvers are taking place as part of the annual practical training of students of the Russian General Staff Military Academy."⁴⁸⁷



Photo Credit: US Navy, Russian Destroyer Admiral Levchenko

http://commons.wikimedia.org/wiki/File:RFNS_Admiral_Levchenko_DDG-605.jpg

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.⁴⁸⁸ 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."⁴⁸⁹

- 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.⁴⁹⁰
- Additional tactical drills took place in the Karelia⁴⁹¹ region involving 1,000 personnel and 70 aircraft in exercises in mid-air refuelling, reconnaissance, air protection.⁴⁹²

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.⁴⁹³

- Russia notified Sweden in advance of the March 2013 simulation of air attacks on Sweden.⁴⁹⁴
- 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,⁴⁹⁵
- when Sweden was not able to respond, NATO scrambled fighter aircraft out of Lithuania, though also not in time to monitor the Russian exercise.⁴⁹⁶
- 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"⁴⁹⁷

⁴⁸⁵ "Russia Paratroops Airborne Battalion in Arctic," Sputnik News, 14 March 2014, <http://en.ria.ru>

⁴⁸⁶ Staalesen, Atle, "Northern and Pacific fleets conduct first joint drills in Arctic," The Barents Observer, 10 October 2016, <http://www.thebarentsobserver.com>

⁴⁸⁷ "Russian missile cruiser joins Northern Fleet drills in Barents Sea," TASS, 27 May 2016, <http://tass.ru>

⁴⁸⁸ "Russian Air Force conducts air defence exercises," Airforce-Technology.Com, 22 March 2013. <http://www.airforce-technology.com>

⁴⁸⁹ "Russian Air Force Readies for Massive Drills," RiaNovost, 19 March 2013. http://en.rian.ru/military_news/20130319/180118617.html

⁴⁹⁰ Staalesen, Atle, "Arctic on Russian-Finnish military agenda," The Barents Observer, 29 May 2013, <http://barentsobserver.com>

⁴⁹¹ Pettersen, Trude, "Russia starts air force drills in Karelia," The Barents Observer, 20 March 2013, <http://barentsobserver.com>

⁴⁹² "Russian Air Force conducts air defence exercises," Airforce-Technology.Com, 22 March 2013. <http://www.airforce-technology.com>

⁴⁹³ "Russians practiced attack on Sweden, but no Swedish response" Radio Sweden, 22 April 2013, <http://sverigesradio.se>

⁴⁹⁴ O'Dwyer, Gerard, "NATO Rejects Direct Arctic Presence," Deference News, 29 May 2013, <http://www.defensenews.com>

⁴⁹⁵ Bennett, Mia, "Why NATO isn't establishing an Arctic presence," AlaskaDispatch, 6 June 2013, <http://www.alaskadispatch.com>

⁴⁹⁶ "Swedish Air Force fails to counter mock Russian attack," AlaskaDispatch, 22 April 2013, <http://www.alaskadispatch.com>

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.”⁴⁹⁸

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.⁴⁹⁹

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”.⁵⁰⁰

⁴⁹⁷ O’Dwyer, Gerard, “NATO Rejects Direct Arctic Presence,” Defence News, 29 May 2013, <http://www.defensenews.com>

⁴⁹⁸ Backwell, George, “Russia Conducts High North Geophysical Surveys,” MarineLink, 20 August 2014, <http://www.marinelink.com>

⁴⁹⁹ “Russia Defense Ministry plans to send major expedition to Arctic in 2015,” TASS, 24 December 2014, <http://itar-tass.com>

⁵⁰⁰ Bodner, Matthew, “Russian Navy is Planning Summer Expeditions to Contested Arctic Region,” The Moscow Times, 21 May 2014, <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 now in Reitan, near Bodo, just north of the Arctic Circle.⁵⁰¹
- 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.⁵⁰² Army headquarters are even further north, in Bardufoss.⁵⁰³
- While Navy headquarters are south, in Bergen, Coast Guard headquarters moved to the north, in Sortland, in 2010.⁵⁰⁴
- “Norway’s Defence Minister Ine Søreide Eriksen, in her long-term plan for the Armed Forces, suggested in January 2016 that Norway close nine military bases all over the country, 2 of which are above the Arctic Circle (Harstad and Andoya). “The final proposals for a long-term plan will be delivered to the Norwegian Parliament in the beginning of June,” news source Dagens Næringsliv reports.⁵⁰⁵

Bodo⁵⁰⁶

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

Harstad⁵⁰⁷

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

Evenes (ved Harstad)

- Army garrison

Bjerkvik⁵⁰⁸

- Technical workshop
- Maintenance on Armed Forces Vehicles and Weapons

Sortland⁵⁰⁹

- Navy’s Coast Guard Squadron

Andoya/Andenes⁵¹⁰

- 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

Setermoen⁵¹¹

- Armoured battalion
- Artillery battalion

⁵⁰¹ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁵⁰² “Norwegian Military Bases,” Norwegian Armed Forces, no date listed, <http://mil.no>

⁵⁰³ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁵⁰⁴ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁵⁰⁵ Pettersen, Trude, “Norwegian military faces major cuts,” The Barents Observer, 21 April 2016, <http://www.rcinet.ca>

⁵⁰⁶ “Norwegian Military Bases: Bodo,” Norwegian Armed Forces, no date listed, <http://mil.no>

⁵⁰⁷ “Norwegian Military Bases: Harstad,” Norwegian Armed Forces, no date listed, <http://mil.no>

⁵⁰⁸ “Norwegian Military Bases: Bjerkvik,” Norwegian Armed Forces, no date listed, <http://mil.no>

⁵⁰⁹ “Norwegian Military Bases: Sortland,” Norwegian Armed Forces, no date listed, <http://mil.no>

⁵¹⁰ “Norwegian Military Bases: Andoya/Andenes,” Norwegian Armed Forces, no date listed, <http://mil.no>

⁵¹¹ “Norwegian Military Bases: Setermoen,” Norwegian Armed Forces, no date listed, <http://mil.no>

- Medical battalion
- Intelligence battalion
- Training centre

Skjold⁵¹²

- Army 2nd battalion
- Army Engineer battalion

Bardufoss⁵¹³

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

Sorreisa⁵¹⁴

- 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)

Porsanger⁵¹⁵

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

Sor-Varanger/Kirkenes⁵¹⁶

- Guards the 196 km border with Russia
- Employs boats, snowmobiles, skies, and foot patrols
- Parliament member Frank Bakke-Jensen, representing the Conservative Party in Norway's coalition government, announced in June 2016 that Norway will place a new Ranger Company with the Garrison of Sør-Varanger
 - Annual budget of about 180 million kroner is expected to increase with 50 million kroner when the new Ranger Company becomes operative⁵¹⁷

Possible re-opening of Olavsvern⁵¹⁸

- A study group that has looked into the new challenges arising from Russia's growing submarine presence in the Arctic has presented the suggestion to re-open Olavsvern base.
 - "The former Royal Norwegian Navy base at Olavsvern is ideal for supporting submarine operations in the extreme North Atlantic and Arctic Seas," reads the recommendation made in July 2016.
- State Secretary Øistein Bø disapproves any current possibilities to reopen Olavsvern.

⁵¹² "Norwegian Military Bases: Skjold," Norwegian Armed Forces, no date listed, <http://mil.no>

⁵¹³ "Norwegian Military Bases: Bardufoss," Norwegian Armed Forces, no date listed, <http://mil.no>

⁵¹⁴ "Norwegian Military Bases: Sorreisa," Norwegian Armed Forces, no date listed, <http://mil.no>

⁵¹⁵ "Norwegian Military Bases: Porsanger," Norwegian Armed Forces, no date listed, <http://mil.no>

⁵¹⁶ "Norwegian Military Bases: Sor-Varanger/Kirkenes," Norwegian Armed Forces, no date listed, <http://mil.no>

⁵¹⁷ Nilsen, Thomas, "Norway creates new Army unit on border to Russia," The Barents Observer, 17 June 2016, <http://thebarentsobserver.com>

⁵¹⁸ Nilsen, Thomas, "Report encourages Norway to reopen Olavsvern submarine support base," The Barents Observer, 28 July 2016, <http://thebarentsobserver.com>

1.2 Equipment

1.2.1 Air⁵¹⁹

F-16 Fighters

- Approximately 60 in operation⁵²⁰
- Based at Bodo, on 24/7 alert⁵²¹
- 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.⁵²²



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

F-35 Fighters

- Defence chief Adm Haakon Bruun-Hanssen revealed a strategic defence review in October 2015 that committed to full requisition of 52 F-35 joint strike fighters.⁵²³
- To be based mainly at Ørland Main Air Station in central Norway, but with a Forward Operating base at Evenes in northern Norway.⁵²⁴ The first of the aircraft were expected to be delivered to Norway in 2017, and Norway plans to have all 52 delivered by 2025.⁵²⁵
- SIPRI reports that without air refuelling they will have no capability beyond Norwegian airspace⁵²⁶
- No plans for air-to-air refuelling



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

⁵¹⁹ "Norwegian Military Bases: Sor-Varanger/Kirkenes," Norwegian Armed Forces, no date listed, <http://mil.no> and "The Military Balance 2012," IISS, 7 March 2012, p. 142, <https://www.iiss.org>

⁵²⁰ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁵²¹ "New Fighter Jets Lack Arctic abilities," News in English, 27 October 2011, <http://www.newsinenglish.no>

⁵²² "New Fighter Jets Lack Arctic abilities," News in English, 27 October 2011, <http://www.newsinenglish.no>

⁵²³ Stevenson, Beth, "Oil price, weak currency challenge Norwegian F-35 buy", Flightglobal, 21 January 2016, <https://www.flightglobal.com>

⁵²⁴ "F-35 Lightning II Wins Norway's (Fake) Competition," Defense Industry Daily, 17 June 2012, <http://www.defenseindustrydaily.com>

⁵²⁵ Nilsen, Thomas, Lockheed Martin unveils Norway's first F-35," The Barents Observer, 22 September 2015, <http://barentsobserver.com>

⁵²⁶ Wezeman, Siemon, T., "Military Capabilities in the Arctic," SIPRI Background Paper, March 2012, p. 7.

P-3C and P-3N Anti-Submarine Warfare and Long-Range Patrol⁵²⁷ (6)

- Peacetime surveillance and intelligence gathering
- Wartime anti-submarine warfare and anti-surface ship warfare
- Orion reconnaissance UAV P-3N can carry a pay load of up to 660 pounds and travel for at least 24 hours.⁵²⁸
- 26 years old and due for modernizing. According to SIPRI's 2016 Background Paper, these are to be retired between 2017 and 2028 and replaced by "satellite-based sensors, four new surveillance aircraft and six long-range UAVs. The new aircraft and UAVs are to be operational by 2024."⁵²⁹



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

Boeing CO P-8A

- "Norway plans to order five Boeing Co P-8A Poseidon maritime patrol planes to maintain its surveillance capacity and meet future security challenges, the NATO country's Defence Ministry said."⁵³⁰
- Ordered in November 2016, "the submarine-hunting patrol planes will replace Norway's current fleet of six P-3 Orion and three DA-20 Jet Falcon aircraft and are expected to be delivered in 2021 and 2022."⁵³¹

Falcon 20C electronic warfare (3)

C-130J Hercules Transport (4)

MFI-15 Safari Training



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

⁵²⁷ Smol, Robert (4 April 2014), "The Norwegian juggernaut," National Post, <http://www.nationalpost.com/index.html>

⁵²⁸ "Warriors of Steel: Meet Russia's robot army," Sputnik News, 29 May 2016, sputniknews.com

⁵²⁹ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁵³⁰ Dagenborg, Joachim, "Norway plans \$1.15 billion order for five Boeing Poseidon military aircraft," Reuters, 28 November 2016, www.reuters.com

⁵³¹ "Norway in \$A1.54b military aircraft order," Gold Coast Bulletin, 28 November 2016, <http://www.goldcoastbulletin.com.au/>

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

Army⁵³²

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 destroyers⁵³³ (last of which was delivered in Jan 2011)⁵³⁴

- Five new Frigates or destroyers
- Fridjof Nansen class
- New Arctic capability
- Have the US Aegis combat system
- Will host NH90 helicopters⁵³⁵

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
- As of September 2016 Norway's Coast Guard has ordered new patrol vessels to be built three at a time and costing €221 million each.^{536 537}

Marjata IV, 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, entered into service in April 2016⁵³⁸. The Marjata IV will be

⁵³² "About," Norwegian Armed Forces, date not listed, <http://mil.no>

⁵³³ The Military Balance 2012 counts them as destroyers.

⁵³⁴ 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.

⁵³⁵ Wezeman, Siemon, T., "Military Capabilities in the Arctic," SIPRI Background Paper, March 2012, p. 8.

⁵³⁶ Nilsen, Thomas, "Vanishing sea ice gives Norway more waters to patrol, orders new Coast Guard vessels," The Barents Observer, 29 September 2016, <http://thebarentsobserver.com>

⁵³⁷ See "Coast Guard" section for more details.

⁵³⁸ Nilsen, Thomas, "Norway's new Arctic giant spyship," The Barents Observer, 17 March 2014, <http://barentsobserver.com>

substantially larger than the others, being 126 meters (413 feet) long and 23.5 meters (77 feet) wide, and will have costed Norwegian military approximately \$170 million.⁵³⁹ Norway will keep the Marjata IV's predecessors in service, doubling Norway's capability, and *IHS Jane's 360* reports that this vessel "has already deployed to take up surveillance and reconnaissance duties, alongside other NATO vessels, in and around the Arctic region".⁵⁴⁰



Photocredit: Atle Staalesen/The Independent Barents Observer, Marjata IV at port in Kirkenes, <http://www.rcinet.ca>

Submarines

- Six Ula class (SIPRI) to be replaced starting in mid-2020⁵⁴¹ 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 yacht⁵⁴²
- Planning a large logistic support ship to be available by October 2016 (HNoMS Maud)⁵⁴³
- "...operates a large 'research ship' with electronic and signals intelligence equipment, which is capable of operations in thin ice. A replacement was ordered in 2010."⁵⁴⁴
- "None of Norway's warships or patrol ships can break ice."⁵⁴⁵

Combat support ship⁵⁴⁶

- "A large combat support ship, the first ever for Norway, was ordered in 2013 and is to be delivered in 2016. It will give the [Nansen] frigates a substantial increase in range and endurance."

1.2 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."⁵⁴⁷

Coast Guard

- Ministry of defence says Coast Guard has 13 vessels of various size⁵⁴⁸

⁵³⁹ "Vikings Striking: Norway to Double its Warships to Track Russian Fleet", Sputnik News, 4 April 2016, <http://sputniknews.com>

⁵⁴⁰ Jones, Bruce, "Norway's new surveillance ship arrives, deploys quickly to support NATO operations," *IHS Janes 360*, 22 April 2016, <http://www.janes.com>

⁵⁴¹ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁵⁴² "The Military Balance 2012," IISS, 7 March 2012, p. 142., <https://www.iiss.org>

⁵⁴³ https://en.wikipedia.org/wiki/Royal_Norwegian_Navy

⁵⁴⁴ Wezeman, Siemon, T., "Military Capabilities in the Arctic," SIPRI Background Paper, March 2012.

⁵⁴⁵ Wezeman, Siemon, T., "Military Capabilities in the Arctic," SIPRI Background Paper, March 2012.

⁵⁴⁶ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁵⁴⁷ "About," Norwegian Armed Forces, no date listed, <http://mil.no>

- IISS says Norway's Coast Guard has 14 Patrol and Coastal Combatant ships
- The ice capable Svalbard 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."
- The Coast Guard operates ice-capable ships equipped with anti-ship and anti-air weapons.
- "Prime Minister Erna Solberg and Defence Minister Ine Eriksen Søreide proudly announced that Norway will not only order one, but three at a time, new Coast Guard vessels."⁵⁴⁹
 - Vessels will have ice-breaking capabilities as well as helicopter and longer sailing range.
 - "Will replace the 30 years old North Cape class today consisting of the vessels "Nordkapp", "Senja" and "Andenes".

Brigade Nord⁵⁵⁰

- 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, though one of its two heavy battalions is stationed near Oslo. It is winter-trained but is organized as a heavy mechanized unit and is equipped for operations in Norway.
- Currently its tanks and armored vehicles are being modernized and there are plans to both modernize and expand the brigade's air defence.
- Norway's 2015 strategic defence review noted plans to base part of the brigade at Porsanermoen Camp.

Home Guard-17 District⁵⁵¹

- Located in Finnmark
- According to Norway's 2015 Strategic Defence Review, the Norwegian Home Guard-17 District will be "reinforced to safeguard territorial responsibility and receive reinforcements. The district will also be given capacity for anti-tank and electronic warfare. Rapid response units will be reinforced from 3 000 to 3 250 and will be able to mobilise rapidly to other parts of the country."

MARPART project⁵⁵²

- Maritime Preparedness and International Partnership in the High North (MARPART project)
- Financed by the Norwegian Ministry of Foreign Affairs, with participation from approximately 20 organizations from Norway, Russia, Iceland and Greenland
- "MARPART emphasizes the responsibility of the governments for preparedness as to safety, security and environmental protection in the High North. The main purpose of this project is to assess the risk of the increased maritime activity in the High North and the challenges this increase may represent for the preparedness institutions in this region."

2. Recurring Operations and Exercises

Military Exercises⁵⁵³

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

⁵⁴⁸ Wezeman, Siemon, T., "Military Capabilities in the Arctic," SIPRI Background Paper, March 2012.

⁵⁴⁹ "Norway orders new Coast Guard vessels as vanishing sea ice increases areas needing patrol," RCINet, 30 September 2016, www.rcinet.ca

⁵⁵⁰ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁵⁵¹ Admiral Haakon Bruun-Hanssen, "Norwegian Armed Forces in Transition," Norwegian Armed Forces, 2015.

https://forsvaret.no/en/ForsvaretDocuments/Strategic_Defence_Review_2015_abridged.pdf

⁵⁵² "Maritime Preparedness and International Partnership in the High North (MARPART project)," The University of the Arctic, 20 May 2016,

<http://www.uarctic.org>

⁵⁵³ "Cold Response 2012," Norwegian Armed Forces, no date listed, <http://mil.no>

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
- Last occurred in March 2016

*Dynamic Mongoose*⁵⁵⁴

- Largest annual anti-submarine warfare exercise
- Last occurred in May 2015
 - More than a dozen surface vessels and four submarines participated

Arctic Challenge (ACE)

- Norwegian run biennial exercise with significant NATO participation, including “forces from Germany, Britain, France, the Netherlands and the United States, as well as non-Nato allies Finland, Sweden and Switzerland.”⁵⁵⁵
- “Largest of its kind” aviation exercise, with approx. 100 aircraft and 4,000 servicemen taking part⁵⁵⁶
- Biennial, held in May⁵⁵⁷

⁵⁵⁴ “Anti-submarine warfare exercise ‘Dynamic Mongoose’ starts off Norwegian coast,” NATO, 4 May 2015, <http://www.nato.int>

⁵⁵⁵ Oliphant, Roland, “Russia and NATO launch rival war games,” The Telegraph, 26 May 2015, <http://www.telegraph.co.uk>

⁵⁵⁶ Oliphant, Roland, “Russia and NATO launch rival war games,” The Telegraph, 26 May 2015, <http://www.telegraph.co.uk>

⁵⁵⁷ “Sweden, Norway and Finland will participate in Europe’s largest fighter jet drills, dubbed the Arctic Challenge Exercise 2015 (ACE 2015),” Sputnik News, 25 May 2015, <http://sputniknews.com>

DENMARK

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, headquartered in Nuuk, Greenland⁵⁵⁸
 - Headquarters has about 85 personnel & coordinates Danish military unit deployments across the Arctic and North Atlantic
- 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 Greenland)

Thule Air Base (North-Western Greenland)

- Currently dormant⁵⁵⁹

Island Command Faroes

- Near Torshavn⁵⁶⁰

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
- Thule Air Base, now dormant, could be used again
- 27 F-35A combat aircraft were selected in 2016 to replace the 30 currently operational F-16s after 2020.⁵⁶¹



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

⁵⁵⁸ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁵⁵⁹ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁵⁶⁰ "Tasks in the Arctic and the Northern Alliance," Forsvarsministeriet Ministry of Defence, 27 March 2015, <http://www.fmn.dk>

⁵⁶¹ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

C-130J Hercules 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)

Surveillance Nanosatellite Ulloriaq⁵⁶²

- The Danish Defence Acquisition and Logistics Organization (DALO), the Technical University of Denmark (DTU) and GomSpace signed an agreement on June 10 to develop and deploy a nanosatellite as part of a surveillance demonstration for the Arctic. The satellite, measuring 30x20x10 cm, is expected to launch by the end of 2017.

1.2.2 Land

Not available

⁵⁶² "Gomspace ApS: Nanosatellite from GomSpace for Surveillance Demonstration for the Arctic," BusinessWire, 10 June 2016, <http://www.businesswire.com>

1.2.3 Sea

Destroyer (1)

- 2 more on order⁵⁶³

Thetis class (300 ton) Multi-Role OPV/Frigates (4)⁵⁶⁴

- Commissioned in the early 1990s, designed for patrols in the North Atlantic and off Greenland, capable of breaking ice up to 1 metre thick
- Larger MH-60R helicopters are replacing the Lynx helicopters used on Thetis class frigates

Ice-Capable Patrol Vessels (5)

- 2 Abasalon- and 3 Iver Huitfeldt-class
- 2 Absalon vessels are the largest ever built by the Royal Danish Navy and are considered both command and support ships⁵⁶⁵
- Can travel through ice up to a meter thick, equipped with 76mm guns, and could add Harpoon and Sea Sparrow anti-air and anti-ship missiles and anti-submarine torpedos. For patrols in North Atlantic and off Greenland.⁵⁶⁶

Patrol and coastal combatant ships DIANA Class (6)⁵⁶⁷ Arctic Patrol Ships Knud Rasmussen class (2)

- Dedicated for patrols off Greenland
- “A third Rasmussen OPV was ordered in late 2013 and is to enter service in 2017 or 2018.”⁵⁶⁸

Ice-strengthened AGDLEK class large patrol craft (1)⁵⁶⁹

- Only, HDMS Tulugaq, remains active, operates from Greenland
- Being replaced by larger Knud Rasmussen class patrol ships

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 Greenland⁵⁷⁰

1.3 Organizations and Operational Units (personnel)

Fromandskorps (Frogman Corps)

- Navy SEAL- like unit made up of armed divers⁵⁷¹
- Special forces unit based in Greenland⁵⁷²
- Can operate in Arctic and expanding from 130 – 150 troops⁵⁷³

⁵⁶³ “The Military Balance 2012,” IISS, 7 March 2012, <https://www.iiss.org>

⁵⁶⁴ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016

⁵⁶⁵ “Absalon L16,” MilitaryFactory.com, last modified in 2016, <http://www.militaryfactory.com>

⁵⁶⁶ Huebert, Rob; Exner-Pirot, Heather; Lajeunesse, Adam; Gullede, Jay, “Climate Change and International Security: The Arctic as a Bellwether,” Center for Climate and Energy Solutions, May 2012, p. 18, <http://www.c2es.org/docUploads/arctic-security-report.pdf>

⁵⁶⁷ “Facts and Figures: The Danish Armed Forces,” Danish Defence, 2011, <http://forsvaret.dk>

⁵⁶⁸ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016

⁵⁶⁹ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016

⁵⁷⁰ “North Atlantic,” Danish Defence, no date listed, <http://forsvaret.dk>

⁵⁷¹ “Denmark’s Arctic Assets and Canada’s Response – Sovereignty and Strategic Resources of the High Arctic,” CASR, May 2005, <http://www.casr.ca>

⁵⁷² Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁵⁷³ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

Jaeger special forces⁵⁷⁴

- Based in Denmark
- Available for Arctic duties and expanding from 200 – 300 troops

Small Sledge Patrol (Slaedepatrulje Sirius) in Greenland⁵⁷⁵

- 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)

2. 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
 - USA⁵⁷⁶

⁵⁷⁴ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁵⁷⁵ “North Atlantic,” Danish Defence, no date listed, <http://forsvaret.dk>

⁵⁷⁶ “Greenland Command/ISCOMGREENLAND: Search and Rescue Exercise Greenland Sea 2012, Final Exercise Report,” Island Commander Greenland, 2012, 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.

Exercise Amalgam Dart⁵⁷⁷

“Amalgam Dart is a NORAD training exercise in aerospace detection and defence.” Taking place in May and June of 2015, the operation “involved Canadian and American aircraft (fighter aircraft, air-to-air refuelling tankers, and AWACS airborne warning and control aircraft) operating out of Canadian forward operating locations and US air bases in Alaska, as well as a mobile radart system out of Resolute.”

Operation Arctic Anvil

A major Pacific joint training effort between US and Canada.⁵⁷⁸

- Arctic Anvil 2016⁵⁷⁹
 - Hosted in Alaska for the first time from July 22 – Aug 3 2016
 - Consisted of live-fire and force-on-force training
 - Canadian participation included 100 members from the 1st Battalion, Princess Patricia’s Canadian Light Infantry
 - Total participation reached 8, 000 troops

Operation Arctic Chinook

This joint SAR exercise sponsored by both the U.S. Coast Guard and Alaska Command occurred for the first time from 22-25 August, 2016. The exercise, which was open to all Arctic Council nations, took place in Kotzebue, Alaska. Rear Adm. Michael F. McAllister, commander, 17th Coast Guard District reported that, “this is one of the first opportunities we’ve had to exercise our International Maritime Search and Rescue Agreement forged between the Arctic Council nations”. Coast Guard Alaska’s official blog described the exercise as the following: “a scenario consisting of an adventure-class cruise ship with approximately 250 passengers and crew that experiences an incident which degrades to become a catastrophic event. The exercise simulated a decision to abandon ship resulting in passengers and crew with a mix of critical, serious and minor injuries, as well as the deployment of life rafts.”⁵⁸⁰

Before the exercise began, Alaska Native News reported that the 17th Coast Guard District, Alaska National Guard, State of Alaska agencies, Alaska Native organizations, and Canadian Forces were all to be involved in the exercise.⁵⁸¹

Communications technology known as the Next Generation Incident Command System (NICS), a web-based system developed by the Department of Homeland Security Science and Technology Directorate in collaboration with Massachusetts Institute of Technology’s Lincoln Laboratory and the Coast Guard R&D Center, was tested and evaluated during this exercise. This technology will continue to be helpful for SAR operations in remote locations, like the Arctic, during large-scale maritime incidents.⁵⁸²

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

⁵⁷⁷ Regehr, Ernie, “When Bears Still Fly: Responding to Russian Bomber Patrols in the Arctic”, The Simons Foundation, 10 November 2016, <http://thesimonsfoundation.ca>

⁵⁷⁸ Pugliese, David, “Canadian troops headed to Alaska for Exercise Arctic Anvil,” Ottawa Citizen, 22 July 2016, <http://ottawacitizen.com>

⁵⁷⁹ Pugliese, David, “Canadian troops headed to Alaska for Exercise Arctic Anvil,” Ottawa Citizen, 22 July 2016, <http://ottawacitizen.com>

⁵⁸⁰ Colclough, Bill, “Arctic Chinook 2016,” Coast Guard Alaska Official Blog, 2 September 2016, <http://alaska.coastguard.dodlive.mil/>

⁵⁸¹ Colclough, Bill, “USCG to participate with AK Command in Arctic Chinook Exercises,” Alaska Native News, 23 August 2016, <http://alaska-native-news.com>

⁵⁸² U.S. Coast Guard Research and Development Center, “Coast Guard Research and Development Center Completes Arctic Communications and Next Generation Incident Command System Evaluation,” Defence Media Activity, 2 September 2016, www.dvidshub.net

areas of responsibility, an international response is needed.”⁵⁸³ 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.⁵⁸⁴

Exercise Barents Rescue

Barents Rescue is a biennial cross-boundary emergency exercise for the Barents Euro-Arctic Region and has been held since 2001. 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.⁵⁸⁵

- June 2016: Exercise Barents 2014 was carried out successfully⁵⁸⁶, and a photo gallery posted by *The Barents Observer* confirms that the exercise occurred again in 2015, despite its normal routine of occurring every second year.⁵⁸⁷
 - “The Finnish Ministry of the Interior will host a multi-sectoral Barents Rescue 2015 Exercise in Kittilä, Finland. The objective of the exercise is multi-sectoral co-operation in the field of emergency prevention, preparedness and response between the four countries of the Barents region: Finland, Norway, Russia and Sweden. The co-operation and the bi-annual exercise are based on the Barents Agreement on Emergency Prevention, Preparedness and Response in the Euro-Arctic Region between these four countries.”⁵⁸⁸

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.⁵⁸⁹

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.”⁵⁹⁰ The focus of the exercise is “to improve and practise capabilities in high intensity and multi-threat operations during cold weather conditions.”⁵⁹¹ 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.⁵⁹²

- Cold Response 2016 included activities ranging from land, to sea, to air.⁵⁹³ As noted in *The Barents Observer* in March 2016, “this year’s Cold Response includes around 15,000 troops from 14 countries, 40 helicopters, 30 fighter jets and 10 other aircrafts, among them three B-52 bombers. On the maritime side, 30 vessels will participate, while 1000 vehicles will be present on land.”⁵⁹⁴ A Russian inspection took place again this year, which was expected according to the Norwegian Defence Ministry representative, as Russia has requested inspections at all recent major Norwegian exercises with allied participation.⁵⁹⁵

⁵⁸³ “Arctic Council Search and Rescue Table Top Exercise,” Foreign Affairs and International Trade Canada, no date listed, <http://www.international.gc.ca>

⁵⁸⁴ “Are We Ready,” OpenCanada.Org, 6 May 2013. <http://opencanada.org>

⁵⁸⁵ “Barents Rescue Exercise: Making the Barents Region a safer place,” BarentSaga, no date listed, <http://www.beac.st/?DeptID=20413>

⁵⁸⁶ “Multifunction MPSV07 salvage vessel “Spasatel Kavdeikin” took part in the international SAR exercise “Barents 2014”, Marine Engineering Bureau, 6 September 2016, www.meb.com.ua

⁵⁸⁷ “Exercise Barents 2015,” *The Barents Observer*, last modified 9 June 2016, <http://barentsobserver.com>

⁵⁸⁸ “Barents Rescue Exercise 2015: September 30 – October 1,” The Arctic Council, last modified 9 June 2016, <http://arctic-council.org>

⁵⁸⁹ “Whole World,” CBTO, last modified 17 June 2016, <http://www.ctbto.org/map/#ims>

⁵⁹⁰ Lundquist, Edward H., “Exercise Cold Response Participants Get Chilly Reception in Norway,” 22 March 2012, <http://www.defensemecanetwork.com>

⁵⁹¹ “Press Release: Exercise Cold Response 2012,” Norwegian Joint Headquarters Public Affairs Office, no date listed,

<http://www.norge.fi/PageFiles/591341/IEPR%20-%20Exercise%20Cold%20Response%202012.pdf>

⁵⁹² “NATO Exercise ‘Cold Response 2012’: A Crisis Response Operation or a Provocation to Russia?” NATO Watch, 3 May 2012, <http://www.natowatch.org>

⁵⁹³ “CR-16,” Danish Defence, no date listed, <http://forsvaret.dk>

⁵⁹⁴ Staalesen, Atle, “Russian inspectors at Cold Response,” *The Barents Observer*, 3 March 2016, <http://thebarentsobserver.com>

⁵⁹⁵ Staalesen, Atle, “Russian inspectors at Cold Response,” *The Barents Observer*, 3 March 2016, <http://thebarentsobserver.com>

Operation FRUKUS

Operation FRUKUS is took place in 2013, with four vessels of the Russian Northern Fleet joining French, Norwegian and US navies in exercise linked to Partnership for Peace⁵⁹⁶, but was said to be cancelled in 2014 due to tensions with Russia.⁵⁹⁷

- “The U.S. administration plans to cancel participation in the Northern Eagle and FRUKUS naval exercises as part of political and economic measures against Russia following the recent events in Ukraine.”⁵⁹⁸

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

There were plans for a joint Navy exercise summer 2014, which would include the United States, Russia and Norway.⁵⁹⁹ June 2016: There is no evidence of this occurring.

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.”⁶⁰⁰

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 USA⁶⁰¹

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 meet Iceland’s peacetime preparedness needs.”⁶⁰² 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. The operation was dubbed “Operation Ignition.”⁶⁰³ When deployed, Canada’s Task Force Iceland consists of about 160 Canadian Armed Forces personnel, including a detachment of up to six CF-188 Hornet fighter aircraft and a support element located in the security zone at Keflavik International Airport, about 50 km from Reykjavik, Iceland.⁶⁰⁴

Past deployments include Task Force Iceland 2013 and Task Force Iceland 2011. There are currently no forces deployed on Operation Ignition.⁶⁰⁵

⁵⁹⁶ U.S. Naval Forces Europe-Africa/U.S. 6th Fleet Public Affairs, “Frukus 2013 wraps up,” Navy News Service, 3 July 2013, <http://www.navy.mil>

⁵⁹⁷ Pettersen, Trude, “USA cancels joint exercises with Russia,” The Barents Observer, 5 March 2014, <http://barentsobserver.com>

⁵⁹⁸ Pettersen, Trude, “USA cancels joint exercises with Russia,” The Barents Observer, 5 March 2014, <http://barentsobserver.com>

⁵⁹⁹ “U.S. Navy eyes greater presence in the Arctic,” Reuters, 2014, <http://www.reuters.com/>

⁶⁰⁰ Fonesca, Joseph R., “Report on Rosneft Arctic Projects,” Marline Link, 19 December 2014, <http://www.marinelink.com>

⁶⁰¹ “Greenland Command/ISCOMGEENLAND: Search and Rescue Exercise Greenland Sea 2012, Final Exercise Report,” Island Commander Greenland, 21 August 2012, http://www.institutenorth.org/assets/uploads/attachments/SAREX_Greenland_Sea_2012_Final_Exercise_Report.pdf

⁶⁰² “Iceland’s ‘Peacetime Preparedness Needs,’” NATO, no date listed, <http://www.aco.nato.int/icelands-peacetime-preparedness-needs.aspx>.

⁶⁰³ “CF-18s to Patrol Iceland’s Airspace,” Defence Watch, 26 March 2013, <http://blogs.ottawacitizen.com>

⁶⁰⁴ “Operation Ignition,” National Defence and the Canadian Armed Forces, 21 November 2014, <http://www.forces.gc.ca>

⁶⁰⁵ “Operation Ignition,” National Defence and the Canadian Armed Forces, 21 November 2014, <http://www.forces.gc.ca>

Joint Tabletop Review for Crystal Serenity's Arctic voyage

An international rescue tabletop exercise was conducted in Iceland April 6-7 2016 to test and evaluate coordinated response procedures to a simulated incident aboard a luxury cruise ship. 56 participants took part in the exercise, including members of the U.S. Coast Guard and Canadian Coast Guard who were heavily involved. According to the Arctic Journal, "The exercise was aimed at strengthening the cooperation and exchange of knowledge between the Arctic cruise industry and SAR service providers, and focused on mass rescue operations relative to potential passenger ship accidents in Arctic waters."⁶⁰⁶

Operation NANOOK

Operation Nanook is a Canadian-led arctic sovereignty operation. It 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 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 1,250.⁶⁰⁷

According to CBC in 2016, "Operation Nanook is viewed as the most important for asserting Canadian sovereignty over its northern reaches while giving the military and other federal departments experience operating in the region."⁶⁰⁸

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.⁶⁰⁹

- 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. As of June 2016, the exercise has not restarted.⁶¹⁰

Exercise Polar Roar

An American-led joint exercise to demonstrate and test their "long-range global-strike capability". In July 2016, it involved 10 different NATO allies⁶¹¹ as well as B-52 and B-2 bomber training flights to the Arctic, Northern Pacific, and the Baltic Sea. NORAD reported that Canadian CF-18 aircraft and other American aircraft trained in intercept and safe passage procedures as part of the overall exercise.⁶¹²

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."⁶¹³ 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."⁶¹⁴

⁶⁰⁶ Association of Arctic Expedition Cruise Operators, "Arctic cruise industry and rescuers participate in joint search and rescue exercise," The Arctic Journal, 17 April 2016, <http://arcticjournal.com>

⁶⁰⁷ <http://www.cjoc-coic.forces.gc.ca/cont/rec-eng.asp>

⁶⁰⁸ Berthiaume, Lee, "Trudeau ends Harpers tradition of attending Arctic military exercise," 29 August 2016, CBC, www.cbc.ca

⁶⁰⁹ "The Russian Navy held joint military exercises with Norway and the US in the Norwegian Sea, 21 August 2012," Arctic Info, 21 August 2012, <http://www.arctic-info.com>

⁶¹⁰ Nilsen, Thomas, "Crimea crisis puts Barents naval exercise on hold," The Barents Observer, 14 March 2014, <http://barentsobserver.com>

⁶¹¹ Swartz Phillip, "Air Force refueling sorties on top of the world: They're 'like an organized chaos'," 7 August 2016, Air Force Times, <http://www.airforcetimes.com>

⁶¹² Pugliese, David, "US shows off its strategic muscle with bomber flights to Arctic and Baltic Sea, CF- 18s involved," Ottawa Citizen, 01 August 2016. <http://ottawacitizen.com>

⁶¹³ <http://mil.no/exercises/pomor2011/Pages/default.aspx>

⁶¹⁴ Pettersen, Trude, "POMOR-2012 starts in one month," The Barents Observer, 15 April 2012, <http://barentsobserver.com>

Due to Norway suspending military cooperation with Russia, Operation POMOR was cancelled in 2015 and has not occurred since.⁶¹⁵

US Air National Guard exercise in Finland

The first instance of US military aircraft using Finnish bases to conduct exercises, approved in November 2015, will occur in May 2016. A wing of F-15 fighter jets from the US Air National Guard will run drills mainly out of Rissala air base in central Finland. Approximately 100 US service personnel and 8 unarmed F-15s will participate in the drills, which are expected to last 2 weeks. Finnish Foreign Minister Soini stated that the request to hold the exercise came from the US and not Finland, yet Finnish Defence Ministry official Mika Varvikko describes the US as “the most important bilateral companion” of Finland’s Air Force.⁶¹⁶

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.”⁶¹⁷ 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.⁶¹⁸

- Operation Vigilant Eagle suspended in 2014 due to tensions between Canada/US and Russia and, as of June 2016, has not restarted.⁶¹⁹

Operation Vigilant Shield 17

Vigilant Shield is an annual Canada-US exercise to practice joint responses to various scenarios positing threats to North America, including in the high Arctic. Most recently, from October 17-2 2016, the exercise involved deployment of Canadian CF-18s to Inuvik and American F-15s to Yellowknife.⁶²⁰ According to the Canadian DND, “The exercise provides valuable and concrete field training, involving multiple NORAD regions and the deployment of air assets to locations in northern Canada and the United States, allowing NORAD to maintain a credible, flexible, and ready capability to respond to a variety of threats and situations.”⁶²¹

⁶¹⁵ Pettersen, Trude, “[Norway suspends military cooperation with Russia until end of 2015](#),” RCI Net, 12 December 2014, <http://www.rcinet.ca>

⁶¹⁶ Staalesen, Atle, “U.S. Fighter Jets over Finnish Laplands,” The Barents Observer, 9 February 2016, <http://www.thebarentsobserver.com>

⁶¹⁷ “OPERATION VIGILANT EAGLE: Air Terror Drill Intercepts, Investigates Hijacking in Simulated Air Terrorist Operation”, GlobalConflictMaps.Com, 3 January 2011. <http://www.globalconflictmaps.com>

⁶¹⁸ Pugliese, David, “Selling Canada on the need for fighters,” Ottawa Citizen, 12 December 2010, <http://www2.canada.com>

⁶¹⁹ Carpenter, Dan, “Joint Russia-U.S. Military Training Mission on Hold,” KTUU-TV, 9 September 2016, <http://www.ktuu.com>

⁶²⁰ Thatcher, Chris, “NORAD exercise puts defence of northern airspace to the test,” SKIES, 26 October 2016, <http://skiesmag.com>

⁶²¹ Canadian Department of National Defence, “NORAD begins annual Vigilant Shield exercise,” Government of Canada, 17 October 2016, <http://news.gc.ca>

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)⁶²² 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.⁶²³

- Iqaluit hosted the 2015 Arctic Council ministerial gathering in April 2015. The meeting set the objectives for 2015-2017. Canada's position as the chair of the Arctic Council came to an end in 2015.⁶²⁴

The Arctic Circle⁶²⁵

"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."⁶²⁶

The 2016 Assembly was held October 7-9 in Reykjavik, Iceland⁶²⁷ and the 2017 Assembly will take place in Reykjavik from October 13-15.⁶²⁸

Arctic Coast Guard Forum

- Officially established in 2015⁶²⁹
- "...an operationally-focused, consensus-based organization with the purpose of leveraging collective resources to foster safe, secure and environmentally responsible maritime activity in the Arctic. Membership includes Canada, Denmark, Finland, Iceland, Norway, Sweden, the Russian Federation and the United States."⁶³⁰
- Despite growing tensions between Russia and NATO in Eastern Europe, the heads of the eight Arctic nations' coast guards met in June 2016 and to deepen their collaboration in the north.⁶³¹

Arctic Economic Council

"The Arctic Economic Council is an independent organization that facilitates Arctic business-to-business activities and responsible economic development through the sharing of best practices, technological solutions, standards and other information. The Arctic Economic Council held its first meeting in Iqaluit, Nunavut on September 2-3, 2014."⁶³²

⁶²² Exner-Pirot, Heather, "The Arctic Circle, Wayne Gretzky, and the Future of Arctic Cooperation," Eye on the Arctic, 19 April 2013, <http://eyeontheartctic.rcinet.ca>

⁶²³ "NATO has 'no intention' to up presence in Arctic," The Local: Norway's News in English, 8 May 2013. <http://www.thelocal.no>

⁶²⁴ "2015 Arctic Council ministerial meeting," Global Affairs Canada, 4 November 2015, <http://www.international.gc.ca>

⁶²⁵ Arctic Circle - <http://www.theartcticcircle.org>

⁶²⁶ Zabarenko, Deborah, "China, India, Singapore could join new Arctic Circle forum," Reuters, 16 April 2013, <http://in.reuters.com>

⁶²⁷ "About," Arctic Circle, last modified 9 June 2016, <http://arcticcircle.org>

⁶²⁸ "2017 Arctic Circle Assembly", UArctic, no date listed, <http://www.uarctic.org/>

⁶²⁹ Braynard, Katie, "Establishment of the Arctic Coast Guard Forum," Coast Guard Compass, 30 October 2015, <http://coastguard.dodlive.mil>

⁶³⁰ Braynard, Katie, "Establishment of the Arctic Coast Guard Forum," Coast Guard Compass, 30 October 2015, <http://coastguard.dodlive.mil>

⁶³¹ Sevunts, Levon, "Arctic nations deepen Coast Guard cooperation," RCINet, 10 June 2016, <http://www.rcinet.ca>

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.⁶³³

The AEC has “three thematic working groups on Arctic Stewardship, Responsible Resource Development and Maritime Transportation. Additionally, AEC representatives have delivered more than 40 outreach presentations around the world and met with business leaders seeking partnerships to promote responsible economic development in the Arctic” said Canadian Tom Paddon, the outgoing Chair of the AEC.⁶³⁴

Arctic Five

The five Arctic coastal states (Canada, Greenland, Norway, Russia, United States) met in Ilulissat 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.”⁶³⁵ A second meeting, in Chelsea in 2010,⁶³⁶ 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,⁶³⁷ 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.”⁶³⁸ 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.”⁶³⁹

They met again in June 2013 in Ilulissat, Greenland. According to *defensenews.com*,⁶⁴⁰ 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.”

⁶³² “Backgrounder,” Arctic Economic Council, last modified in 2016, <http://arcticeconomiccouncil.com>

⁶³³ Arctic Economic Council,” Arctic Council, 28 January 2014, <http://www.arctic-council.org>

⁶³⁴ “Arctic Economic Council selects new Chair and establishes Secretariat,” Arctic Economic Council, 23 April 2015, <http://arcticeconomiccouncil.com>

⁶³⁵ “The Ilulissat Declaration”, Arctic Ocean Conference, 27 – 29 MAY 2008, http://www.oceanlaw.org/downloads/arctic/Ilulissat_Declaration.pdf

⁶³⁶ Cannon, Lawrence, “Arctic Ocean Coastal States meeting, Chelsea: Summary,” Foreign Affairs Minister of Canada, 29 March 2010, <http://www.arctic-report.net/wp-content/uploads/2012/01/2010.03-Arctic-Ocean-Coastal-States-meeting-Chelsea-Canada-March-2010.pdf>

⁶³⁷ Staalesen, Atle, “Formalizing the Arctic G5,” The Barents Observer, 30 March 2010, <http://barentsobserver.com>

⁶³⁸ “Outcome of the Second Ministerial Meeting of the Arctic Ocean Coastal States, Chelsea, Canada, Press Release,” The Embassy of the Russian Federation in Canada 1 April 2010, <http://www.rusembassy.ca>

⁶³⁹ “General Natynczyk and fellow northern Chiefs of Defence discuss shared Arctic interests”, DND News Release, 13 April, 2012, <http://www.forces.gc.ca>

⁶⁴⁰ O’Dwyer, Gerard, “Arctic Nations Set Cooperation Guidelines,” Defence News, 27 June 2013, <http://www.defensenews.com>

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.”

Arctic Frontiers⁶⁴¹

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.

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 2017.⁶⁴²

International Cooperative Engagement Program for Polar Research (ICE-PPR)⁶⁴³

“Defense officials and scientists from partner nations with Arctic and Antarctic interests, including the United States, Canada, Denmark, Finland, Norway and Sweden met in Helsinki to advance collaboration on polar research that could prove pivotal to not only scientific understandings but also U.S. and international naval operations.”

“The meeting answers the recent call from Chief of Naval Operations Adm. John Richardson to rapidly accelerate learning and provide new capabilities to the fleet. The "Design for Maintaining Maritime Superiority" specifically calls for expanding and strengthening the Navy and Marine Corps network of partners, including a directive to "prioritize key international partnerships through information sharing, interoperability initiatives and combined operations.”

This meeting represents “a first-ever gathering of senior defense officials to coordinate science and technology research in high latitudes.”

Northern Forum⁶⁴⁴

Founded⁶⁴⁵ 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,

⁶⁴¹ Arctic Frontiers - <http://www.arcticfrontiers.com>

⁶⁴² “Home,” Arctic Frontiers, last modified 9 June 2016, [arcticfrontiers.com](http://www.arcticfrontiers.com)

⁶⁴³ Haun, Eric, “Senior Defence Officials discuss Polar priorities,” MarineLink.com, 1 March 2016, <http://www.marinelink.com>

⁶⁴⁴ Northern Forum - <http://www.northernforum.org>

⁶⁴⁵ “The founding members included: Yukon Territory, Canada; Heilongjiang Province, Peoples' Republic of China; Lapland, Finland; Hokkaido, Japan; Dornod, Mongolia; Trondelag and Tromsø, Norway; Chukotka Autonomous Okrug, Kamchatka Oblast', Magadan Oblast', Russian Federation; Republic of Korea; and the state of Alaska, U.S.A.”

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.

OTHER PROJECTS INVOLVING THE ARCTIC

Arctic Fibre⁶⁴⁶

“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.”

China and the Arctic

China is one of the most important rising powers, displaying an increasing interest in the Arctic. Chinese Rear 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.⁶⁴⁷

March 2016: During the 2015 Arctic Circle conference, **Wang Yi**, China’s foreign minister, delivered a message via live stream emphasising China’s felt investment as a “**near-Arctic state**” and its strong historical ties as a result of the **Svalbard Treaty** in 1925.⁶⁴⁸

China: “Chinese Icebreaker Set for Sixth Arctic Expedition”

Chinese icebreaker Xuelong, or Snow Dragon, embarked on its sixth expedition in July 2014.

“It is estimated that the vessel, capable of breaking ice 1.2 meters thick, will travel over 11,057 nautical miles during its 76-day voyage, said Qu Tanzhou, the team leader and head of the Chinese Arctic and Antarctic Administration.”⁶⁴⁹

At the moment the Snow Dragon is the only Chinese icebreaker although, “bidding for construction of China’s second polar research ship will start by the end of April, says Hu Keyi, technical director at Jiangnan Shipyard. The ship’s estimated budget will be more than one billion yuan (\$154 million) and construction is expected to take about two years.”⁶⁵⁰

European Union: “France wants EU Empire to Expand into Arctic Circle”⁶⁵¹

“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.’”

In 2016, the European Commission released *An Integrated EU Policy for the Arctic*, which “contains 39 actions to further develop the EU’s policy towards the Arctic”.⁶⁵²

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

⁶⁴⁶ Arctic Fibre - <http://arcticfibre.com/>

⁶⁴⁷ Humberto Zorro Cuervo, Mario, “China and the Arctic: The Ice Dragon,” The News Hub, 29 November 2014, <https://www.the-newshub.com>

⁶⁴⁸ Kjetland Fjeldsbø, Tore Andre, “Peripheral Kingdom,” The Arctic Journal, 2 December 2015, <http://arcticjournal.com>

⁶⁴⁹ “Chinese icebreaker heads for 6th Arctic expedition,” Xinhuanet News, 11 July 2014, <http://news.xinhuanet.com>

⁶⁵⁰ “Bidding to start on China’s new ice breaker,” Maritime Executive, 13 March 2016, <http://www.maritime-executive.com>

⁶⁵¹ Synon, M.E., “France wants EU Empire to Expand into Arctic Circle,” Breitbart News Network, 18 July 2014, <http://www.breitbart.com>

⁶⁵² “An Integrated EU Policy for the Arctic,” European Commission, 27 April 2016, <http://europa.eu>

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.⁶⁵³

IMO Arctic Training

The International Maritime Organization (IMO) has finalized training requirements for mariners traveling to the Arctic and Antarctic. This means that “masters and navigating officers must complete special training in order to navigate ships in ice.”⁶⁵⁴

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.”⁶⁵⁵

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

Japan and the Arctic:

Japan released its first Arctic Policy in October 2015, which advocated a key role in the future formulation of international rules for Arctic development.⁶⁵⁶

Japan: Independent underwater vehicle Urashima developed by JAMSTEC⁶⁵⁷

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.”

Robot Army to Study the Arctic

The U.S. Navy funds robots to be used to study the Arctic Ocean. The robot, a seaglider, can “surf the ocean currents for up to a year at a time.” For example, the robots are used to study how quickly the ice is melting, water temperature, and general changing conditions. This will help the Navy to prepare its crew and equipment, with the plan to be fully operational in the Arctic by 2030.⁶⁵⁸

⁶⁵³ Keefe, Joseph, “IMO adopts Polar Code Safety Requirements,” Marline Link, 9 December 2014, <http://www.marinelink.com>

⁶⁵⁴ Fonesca, Joseph R., “IMO Training for Mariners in the Arctic Finalised,” MarineLink, 10 February 2015, www.marinelink.com

⁶⁵⁵ Turander, Elinor, “DNV GL launches interactive Arctic Risk Map to communicate region’s complex risk picture,” DNVGL, 26 August 2014, <http://www.dnvgl.com/>

⁶⁵⁶ Lakshmi, Aiswarya, “Japan, Finland Cooperation for Arctic,” MarineLink.com, 14 March 2016, www.marinelink.com

⁶⁵⁷ “Unmanned Vessel to Explore Arctic,” The Japan News, 11 July 2014, <http://the-japan-news.com/>

⁶⁵⁸ Brumfiel, Geoff, “Navy Funds A Small Robot Army To Study The Arctic,” NPR, 15 February 2015, www.npr.org