

CIRCUMPOLAR MILITARY FACILITIES OF THE ARCTIC FIVE

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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., ordered from west to east)

Whitehorse, Yukon

- Joint Task Force North detachment⁵

Yellowknife, Northwest Territories

- Joint Taskforce North (JTFN)⁶
 - 440 Transport Squadron;
 - The Yellowknife Company;
 - 1st Canadian Ranger Patrol Group; and
 - Area Support Unit (North)
- 366 DND personnel: 52 rangers, 314 military members from Joint Task Force North⁷
- “Canada’s Department of National Defence [DND] is planning on spending over \$50 million to build a 7,600 square metre facility in Yellowknife, Northwest Territories, though the location has not yet been selected.” The site is set to be fully operational in 2024, but construction beginning in 2020. “Area Support Unit (North) Joint Task Force North and 1 Canadian Ranger Patrol Group will be moving into the new building.”⁸

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”.⁹
- 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 Operation NANOOK.^{10 11}

Eureka, Nunavut

- Hosts a high Arctic weather station¹²
- A link between Alert, Nunavut and Ottawa for the High Arctic Data Communications System II (HADCS II) 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.¹³

⁵ “Detachments and Units” National Defence and the Canadian Armed Forces, last modified 6 January 2014, <http://www.forces.gc.ca>

⁶ “Joint Task Force North,” National Defence and the Canadian Armed Forces, last modified 5 April 2016, <http://www.forces.gc.ca>

⁷ “\$50M military defence building expected in Yellowknife by 2024”, Canadian Broadcasting Corporation, 24 September, 2018, <https://www.cbc.ca/>

⁸ “Canadian military to build multi-million dollar facility in Northern city”, Eye on the Arctic, 24 September 2018, <http://www.rcinet.ca>

⁹ “Backgrounder - Canadian Armed Forces Arctic Training Centre,” Department of National Defence, last modified 15 August 2013, <http://www.forces.gc.ca>

¹⁰ Pryce, Paul, “Resolute Bay: A chilly response in Ottawa,” The Nato Association of Canada, 1 March 2016, <http://natoassociation.ca>

¹¹ “Battle for the Arctic: Canada Boosts Military Presence in the Far North,” Sputnik News, 29 May 2016, <http://sputniknews.com>

¹² Regehr, E., “Arctic Security and the Canadian Defence Policy Statement of 2017,” The Simons Foundation, 31 August 2017, http://www.thesimonsfoundation.ca/sites/default/files/Arctic%20Security%20and%20the%20Canadian%20Defence%20Policy%20Statement%20of%202017%20-%20DAS%2C%20August%2031%202017_2.pdf

¹³ “Canadian Forces Station Alert,” Royal Canadian Air Force, last modified 23 January 2014, <http://www.rcaf-arc.forces.gc.ca>

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 further delayed until 2018¹⁶.
 - Is now expected for first fuel delivery in 2020 with construction finishing in 2019¹⁷
 - 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 2015.¹⁸
 - In March 2012 DefenceWatch reported a major scaling back of plans for the facility, which was confirmed in September 2014¹⁹, and again in 2016. SIPRI's 2016 Background Paper noted it would be downsized to a refuelling base and delayed by several years.²⁰

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.²¹

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
- Will support operations of the new Arctic Offshore Patrol Ships, and other government maritime vessels²²

Alert, Nunavut²³

- Canadian Forces Station (CFS) Alert, open since the late 1950s
- "CFS Alert maintains signals intelligence facilities to support Canadian military operations. Personnel at CFS Alert also maintain a geolocation capability to support operations and High Frequency and Direction Finding facilities to support Search and Rescue and other operations, and to provide support to Environment and Climate Change Canada researchers. Alert also plays a key role in projecting Canadian sovereignty in the Arctic."
- Usually approximately 25 Canadian Forces personnel stationed there, plus 30 civilian support personnel and up to four Environment Canada staff. Most Personnel spend 6 months at Alert.
- "Canadian Armed Forces (CAF) personnel, Department of National Defence (DND) employees, Environment and Climate Change Canada (ECCC) employees, and contracted employees comprise the entire population of CFS Alert."
- 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.²⁴

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 Lajeunesse, Adam, "Defence update: Arctic offshore and patrol vessels and the Nanisivik Naval Facility", The Hill Times, 27 May, 2019, <https://www.hilltimes.com>

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

¹⁹ 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/>

²⁰ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

²¹ "Plans for Arctic Naval Base scaled back after costs soared," The Prince George Citizen, 8 September 2014, <http://www.princegeorgecitizen.com>

²² "Strong, Secure, Engaged: Canada's Defence Policy," Ministry of National Defence, 2017, p. 79, <http://dgpaapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf>

²³ "Canadian Forces Station Alert," Royal Canadian Air Force, last modified 27 February, 2019, <http://www.rcaf-arc.forces.gc.ca>

²⁴ Ruskin, Brett, "Canadian Forces to invest at least \$100M in green infrastructure," CBC News, 25 April 2016, <http://www.cbc.ca/>

Iqaluit, Nunavut

- JTFN detachment²⁵
- Coast Guard MCTS Centre²⁶ (Maritime Communication and Traffic Services)
 - A hub for the Coast Guard's Arctic operations while open from May – December, monitoring Arctic vessel traffic.
 - Starting in mid-July 2018, a new new small-craft harbor and deep-sea port is being built in Iqaluit. The small craft harbor is scheduled for completion November 2018. The deep sea port is scheduled for completion in November 2019.²⁷ "It will be the first and only port in the Canadian Arctic. This asset will augment the federal capabilities significantly."²⁸
- A new Iqaluit deep sea port and small craft harbour is expected to be built by 2020. The project is expected to cost \$85-million. In addition to its use by oil and cargo tankers, the port will likely be used by northern Coast Guard and military vessels.²⁹
- Arctic National Aerial Surveillance Program Complex, Iqaluit
 - It was announced by Canada's transport minister in August 2017 that, as part of Canada's \$175 million Oceans Protection Plan, Canada will be devoting \$29.9 million to the construction of an aerial surveillance program complex in Iqaluit, Nunavut.³⁰

Forward Operating Locations (FOLs) for CF-18s

- Inuvik
 - CBC reports on a new highway that allows year-round access between Inuvik Tuktoyaktuk.³¹ "The new road from Inuvik to Tuktoyaktuk will allow supplies, equipment, and personnel to be moved by road all the way to the Arctic Ocean in case of an emergency. It provides one more option for federal agencies to deploy assets and resources to the western Arctic."³²
- Yellowknife
- Iqaluit
- Rankin Inlet
 - Canada's first Arctic inshore rescue boat station
 - Station with a six person crew opening in June 2018 with the goal of expanding search and rescue coverage and reducing response times. Will operate out of an existing building and will be open seasonally.³³
- Goose Bay

Forward Transportation Hubs

Since 2011, there has been some public discussion regarding the development of forward operating bases:

Canadian Military Journal: "Defence must develop a greater capacity to operate in the Arctic for extended periods. This can be done by acquiring the necessary infrastructure in key locations that can be used as either a hub or as temporary forward operating bases. Such a capability would allow the CF to better deal with rapid response operations, including such matters as Search and Rescue. Moreover, it would allow the government to have better situational awareness, and to project key national elements anywhere within the Arctic region on very short notice."³⁴

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).³⁵

²⁵ "Detachments and Units" National Defence and the Canadian Armed Forces, last modified 6 January 2014, <http://www.forces.gc.ca>

²⁶ "Marine Communications and Traffic Services MCTS," Canadian Coast Guard, last modified 10 June 2016, <http://www.ccg-gcc.gc.ca>

²⁷ "Construction on Iqaluit's small-craft harbour, deep-sea port starts in July", Nunatsiak News, 25 June, 2018, <http://nunatsiak.com>

²⁸ "Is the Canadian Arctic More Secure Now?" The Maritime Executive, 30 October, 2018, <http://www.maritime-executive.com>

²⁹ Van Dusen, John, "Iqaluit's deep sea port inches forward," CBC News, 28 September 2016, <http://www.cbc.ca>

³⁰ Quinn, Ellis, "Canada announces \$175 million investment in Arctic waters protection," Radio Canada International, 28 August 2017, <http://www.rcinet.ca>

³¹ "New Arctic coast highway opens up remote Tuktoyaktuk", CBC, 23 October, 2017, <https://www.cbc.ca>

³² "Is the Canadian Arctic More Secure Now?", The Maritime Executive, 30 October, 2018, <https://www.maritime-executive.com>

³³ "Rankin Inlet selected as new location for Arctic search and rescue station," CBC News, 5 January 2018, www.cbc.ca

³⁴ Balasevicius, Tony, "Towards A Canadian Forces Arctic Operating Concept," Canadian Military Journal, 2011, <http://www.journal.forces.gc.ca>

³⁵ Woods, Allan, "Canada looking at building military bases in Arctic," The Star, 14 July 2011, <http://www.thestar.com>

1.2 Equipment

1.2.1 Air

CC-138 Twin Otters³⁶

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>

- 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
- The CC-138 Twin Otter Life Extension Project
 - *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 2020.³⁷
 - *Defence Acquisition Guide 2015*: Final delivery date adjusted to 2022.³⁸ The 2016 *Defence Acquisition Guide* confirmed this date.³⁹

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."⁴⁰
- February 2019: "Canada confirmed that it has submitted an official bid to acquire a high-altitude surveillance UAV prototype from Germany...According to Canada's Department of National Defence the existing Arctic surveillance system, which covers 75 percent of the country's coastline, will require significant upgrades and replacements by 2025"⁴¹

"...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.

³⁶ "CC-128 Twin Otters," Royal Canadian Air Force, last modified 17 April 2015, <http://www.rcaf-arc.forces.gc.ca>

³⁷ "Defence Acquisition Guide 2014," National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

³⁸ "Defence Acquisition Guide 2015," National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

³⁹ "Defence Acquisition Guide 2016," National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

⁴⁰ Bob Weber, "Transport Canada wants drones to watch Arctic waters," The Canadian Press, 9 March 2016, <http://www.metronews.ca>

⁴¹ Humpert, Malte, "Canada and Russia are looking to deploy surveillance drones in the Arctic", Nunatsiaq News, 5 March, 2019 <https://nunatsiaq.com>

Canadian Air Defence Identification Zone (CADIZ)⁴²

- Canada is planning to expand the CADIZ to cover the entire Canadian Arctic archipelago.
- Exists as part of an effort to provide effective aerospace warning and control for all of North America.
- According to Canada's 2017 Defence Policy, "An expanded CADIZ will increase awareness of the air traffic approaching and operating in Canada's sovereign airspace in the Arctic."

1.2.2 Land

Canadian Forces Station Alert⁴³ (See 'Alert' under 'Bases' for more information)

- Collects signal intelligence
- High Frequency and Direction Finding (HFDF) facilities to support search and rescue

North Warning System⁴⁴ (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 elements 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)⁴⁵
 - 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 and air space 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."⁴⁶
- 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 - 2014.⁴⁷ As of April 2014, Raytheon Canada, an Ottawa-based company, was awarded a 5-year contract to carry out the job.⁴⁸
 - 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 – 2036.⁴⁹
- The 2017 Canadian Defence Policy made clear that updates will be made but no clarity is given in this report on how. According to the report, the NWS is approaching "the end of its life expectancy from a technological and functional perspective," and announced that, "Canada and the United States have already launched bilateral collaboration to seek an innovative technological solution to continental defence challenges including early warning. Studies are ongoing to determine how best to replace this important capability as part of the overall NORAD modernization."⁵⁰
 - "The replacement timeline will extend over at least two decades: research and analysis into options to be completed by 2020; the chosen system to be approved in 2021; from that is to follow a request for proposals from industry to be completed by 2023; with the final contract to be awarded in 2024," and delivery/installation to take a least a decade after that.⁵¹

⁴² "Strong, Secure, Engaged: Canada's Defence Policy," Ministry of National Defence, 2017, <http://dgpapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf>

⁴³ "Canadian Forces Station Alert," Royal Canadian Air Force, last modified 23 January 2014, <http://www.rcaf-arc.forces.gc.ca>

⁴⁴ "North Warning System," National Defence and the Canadian Armed Forces, last modified 17 December 2012, <http://www.forces.gc.ca>

⁴⁵ "The Canada-U.S. Defence Relationship," National Defence and the Canadian Armed Forces, last modified 10 February 2015, <http://www.forces.gc.ca>

⁴⁶ 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>

⁴⁷ 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>

⁴⁸ "Raytheon wins 5-year North Warning System contract," CBC News, 1 April 2014, www.cbc.ca

⁴⁹ "Defence Acquisition Guide 2016," National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

⁵⁰ "Strong, Secure, Engaged: Canada's Defence Policy," Ministry of National Defence, 2017, <http://dgpapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf>

⁵¹ Regehr, Ernie, "Replacing the North Warning System: strategic competition or Arctic confidence building?" The Simons Foundation, 1 March 2018.

All Domain Situational Awareness Science and Technology Program

- Will be managed by Defence Research and Development Canada (DRDC).
- “Includes plans to spend \$133 million over five years on research and analysis in support of enhancements to monitoring the air and maritime (surface and subsurface) approaches to Canada, with a particular emphasis on the Arctic. The effort will include international cooperation with the Five Eyes states (Canada, Australia, New Zealand, United Kingdom, US), with a focus on four areas:
 - Strategic surveillance of airborne traffic and aerospace warning;
 - Awareness of maritime traffic in Canadian approaches and Arctic littoral regions;
 - Awareness of sub-surface activity approaching or in Canada’s North; and
 - Analysis of sensor mixes and information integration and sharing for all domain awareness to enable detection of modern threats beyond the threshold of the current systems.”⁵²

All-Terrain Vehicles

David Pugliese:

- “The Army has an Arctic capability project underway called the medium all-terrain vehicle. Canada already operates the Hägglunds Bv206, a tracked armoured vehicle built by a Swedish subsidiary of Britain’s BAE Systems.
- “We have a re-life package for that or separately we have the BvS10,” said Jim Reid, BAE’s business development director for Canada.
- Reid said such vehicles could play more than just a role in the Arctic.
- “It’s not just about the snow. It actually gives you a capability to do other things,” he said, noting that the BvS10 has been used in Afghanistan and Sierra Leone.
- General Dynamics Land Systems-Canada and ST Kinetics, a Singapore firm, also have their eye on the Army project. They’ve joined forces to promote the Bronco New-Generation Marginal Terrain Vehicle.
- No cost details or timelines have been released on the Army project.”⁵³

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 2023.⁵⁴

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.⁵⁵

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.”⁵⁶
 - 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.”⁵⁷

⁵² Regehr, Ernie, “Replacing the North Warning System: Strategic competition or Arctic confidence building?,” The Simons Foundation, 1 March 2018, <http://www.thesimonsfoundation.ca>

⁵³ Referred to by David Pugliese, “Canada Ramps Up Arctic Arsenal,” Defense News, 25 January 2012, <http://www.defensenews.com>

⁵⁴ 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

⁵⁵ Richard Tomkins, “Cold war prep: Canadian tests Army vehicles in the Arctic,” United Press International, 4 March 2016, <http://www.upi.com>

⁵⁶ Referred to by David Pugliese, “Canada Ramps Up Arctic Arsenal,” Defense News, 25 January 2012, <http://www.defensenews.com>

⁵⁷ Blatchford, Andy, “Canadian Forces test ‘Loki,’ a stealth snowmobile for covert Arctic ops,” Globe and Mail, 18 August 2014, <http://www.theglobeandmail.com>

- 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.⁵⁸

1.2.3 Sea

- The Canadian Arctic Underwater Sentinel Experiment, or CAUSE, costing approximately \$16 million, consists of “developing and testing a number of new technologies at a remote military station in Gascoyne Inlet”.⁵⁹
- Technology is currently being tested for the purpose of autonomously monitoring and patrolling Arctic waters while analyzing the data received by sensors.⁶⁰

1.3 Organizations and Operational Units (personnel)

Command Centres: JTFN (including locations of headquarters and detachments)⁶¹

- Joint Taskforce North (JTFN)
- 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 Squadron⁶² (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 Centre⁶³
- 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

⁵⁸ Brewster, Murray, “Army scrambles to buy snowmobiles for Arctic units amid spending deep freeze,” Globe and Mail, 18 August 2013, <http://www.theglobeandmail.com>

⁵⁹ Thomson, Jimmy, “Canadian military developing surveillance system to monitor Arctic waters,” CBC News, 2 August 2017, <http://www.cbc.ca>

⁶⁰ Thomson, Jimmy, “Canadian military developing surveillance system to monitor Arctic waters,” CBC News, 2 August 2017, <http://www.cbc.ca>

⁶¹ 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>

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

⁶³ “Backgrounder - Canadian Armed Forces Arctic Training Centre,” Department of National Defence, 15 August 2013, <http://www.forces.gc.ca>

- 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. In 2013, then 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.”*⁶⁴

- 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.”⁶⁵

CC-138 Twin Otters Aircrew⁶⁶

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

Canadian Forces Station Alert Personnel⁶⁷ (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)⁶⁸

- Headquartered in Yellowknife⁶⁹
- Encompasses Nunavut, Yukon, Northwest Territories, and Northern British Columbia⁷⁰
- 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 Indigenous.⁷¹
 - “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.”⁷²
 - 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.⁷³ The website of the Canadian Army includes an interactive map showing all locations along with brief descriptions of each unit’s activities.⁷⁴
 - 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.”⁷⁵
- Ranger tasks include:

⁶⁴ “Ottawa opens scaled-back Arctic training facility in Nunavut’s Resolute Bay,” Nunatsiaq Online, 15 August 2013, <http://www.nunatsiaqonline.ca>

⁶⁵ Pugliese, David, “Canadian military looks to expand Arctic footprint,” 23 May 2016, Defence News, <http://www.defensenews.com>

⁶⁶ “CC-128 Twin Otters,” Royal Canadian Air Force, last modified 17 April 2015, <http://www.rcaf-arc.forces.gc.ca>

⁶⁷ “Canadian Forces Station Alert,” Royal Canadian Air Force, last modified 23 January 2014, <http://www.rcaf-arc.forces.gc.ca>

⁷⁰ “1st Canadian Ranger Patrol Group,” Canadian Army, last modified 8 April 2016, <http://www.army-armee.forces.gc.ca>

⁷¹ “1st Canadian Ranger Patrol Group,” Canadian Army, last modified 8 April 2016, <http://www.army-armee.forces.gc.ca>

⁷² “About the Canadian Rangers,” Canadian Army last modified 6 June 2014, <http://www.army-armee.forces.gc.ca>

⁷³ “1st Canadian Ranger Patrol Group,” Canadian Army, last modified 12 July 2013, <http://www.army-armee.forces.gc.ca/en/1-crpg/index.page>

⁷⁴ “1st Canadian Ranger Patrol Group,” Canadian Army, last modified 8 April 2016, <http://www.army-armee.forces.gc.ca>

⁷⁵ “Patrols,” Canadian Army, last modified 4 January 2016, <http://www.army-armee.forces.gc.ca>

⁷⁵ “Patrols,” Canadian Army, last modified 4 January 2016, <http://www.army-armee.forces.gc.ca>

- 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.”⁷⁶
- “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.”⁷⁷
 - 2013, 4,990 Rangers are serving in 178 patrols
 - 2015, the replacement of Lee-Enfield rifles is to begin with new rifles phased in over three years to 2018.⁷⁸
- 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.⁷⁹
 - Canada’s Defence Policy Report in 2017 notes plans to, “enhance and expand the training and effectiveness of the Canadian Rangers to improve their functional capabilities within the Canadian Armed Forces”.⁸⁰
- 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.”⁸¹

Re-replacement of Lee-Enfield rifles

- In 2015, the Canadian Army “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 rifles were supposed to be delivered in 2014, but “the army acknowledges the purchase won’t happen until 2017-2021.”⁸²
- As of April 2018, DnD reported that Colt will produce 6,820 of the new .308 calibre C19 rifles by 2019.⁸³
 - “The Canadian Ranger Rifle production deliveries from Colt Canada commenced in March 2018 and will continue until they are completed in late 2019.”

⁷⁶ DND - BG #09.002a - 17 April 2009. The Canadian Forces in the North. <http://www.cfna.dnd.ca/nr-sp/09-002a-eng.asp>

⁷⁷ 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>

⁷⁸ “Building the North: Project List, Canada’s Economic Action Plan,” Government of Canada, date not available, <http://actionplan.gc.ca/>

⁷⁹ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁸⁰ “Strong, Secure, Engaged: Canada’s Defence Policy,” Ministry of National Defence, 2017, <http://dgpapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf>

⁸¹ 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>

⁸² “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

⁸³ Pugliese, David, “New rifles for the Canadian Rangers now being delivered,” Ottawa Citizen, 5 April 2018, <http://ottawacitizen.com>

Canadian Coast Guard Auxiliary expansion to the Arctic

- Creation of a Coast Guard Auxiliary in the Arctic was promised as part of Canada's \$1.5 billion oceans protections plan, unveiled in November 2016 by three federal government departments. The Auxiliary is expected to contribute to "improvements in safety, especially in increased protection from oil spills and other marine emergencies".⁸⁴
- The CCG Auxiliary expanded to Nunavik in November 2016, and there are now 24 members in six communities, with¹³ more members expected to join by the end of 2017. "The CCGA's goal is to have 12 members per community by the end of 2018."⁸⁵ They hope to have members in each of the region's 14 villages by the end of 2018, as well.⁸⁶
- Expanding Coast Guard Auxiliary units in all coastal Inuit communities will aid the Coast Guard significantly in their aim to bolster SAR programs in the Arctic.⁸⁷
- In 2018, the Canadian Coast Guard and the Department of Fisheries and Oceans announced that a new arctic-specific region will be created; this is the first time a federal government department has used this structure. The Arctic region headquarters will be based out of Rankin Inlet, Nunavut and the Coast Guard will be in Yellowknife.⁸⁸

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/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.⁸⁹ The compulsory reporting reinforces Canada's sovereignty claims but, on the other hand, draws attention to the lack of enforcement capacity.⁹⁰ 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."⁹¹

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.⁹²

⁸⁴ "Arctic will share in Canada's new \$1.5 billion oceans protection plan," Nunatsiaq News, 8 November 2016, <http://www.nunatsiaqonline.ca>

⁸⁵ "Canadian Coast Guard Auxiliary grows to six Nunavik communities," Nunatsiaq News, 9 November 2017, <http://www.nunatsiaqonline.ca>

⁸⁶ "Canadian Coast Guard Auxiliary grows to six Nunavik communities," Nunatsiaq News, 9 November 2017, <http://www.nunatsiaqonline.ca>

⁸⁷ Sevunts, Levon, "Canadian Coast Guard wraps up busy Arctic season," RCI, 17 October 2017, <http://www.rcinet.ca>

⁸⁸ "DFO, Canadian Coast Guard create new Arctic region", CBC, 24 October, 2018, <https://www.cbc.ca>

⁸⁹ "Vessel Traffic Reporting Arctic Canada Traffic Zone (NORDREG)," Canadian Coast Guard, last modified 24 June 2016, <http://www.ccg-cc.gc.ca>

⁹⁰ Exner-Pirot, Heather, "What's In a Name? NORDREG Becomes Mandatory," Eye on the Arctic, 12 July 2010, <http://eyeontheartctic.rcinet.ca>

⁹¹ 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>

⁹² Peter Varga, "Iqaluit Coast Guard office maintains pan-Arctic vigil," Nunatsiaq Online, 26 July 2013, <http://www.nunatsiaqonline.ca>

The Arctic Security Working Group⁹³

- 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.”⁹⁴ 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.”⁹⁵

Pan Arctic Inuit Logistics (PAIL)⁹⁶

- PAIL⁹⁷ is wholly owned by the Inuit through organizations linked to the four territories delineated by land claims agreements: Inuvialuit (within the NWT), Nunavut, Nunavik (Northern Quebec), and Nunatsiavut (Northern Labrador).
- PAIL formed in order to attain the contract to operate and manage the North Warning System (NWS). The NWS work is done through a joint venture between PAIL and ATCO Structure and Logistics,⁹⁸ 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.”⁹⁹

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

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

Not available

⁹³ “Marine Communications and Traffic Services MCTS,” Canadian Coast Guard, last modified 10 June 2016, <http://www.ccg-gcc.gc.ca>

⁹⁴ 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>

⁹⁵ ASWG Staff, “16th Meeting of the Arctic Security Working Group,” 16 May 2007, Security Innovator, <http://securityinnovator.com>

⁹⁶ 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>

⁹⁷ Pan Arctic Inuit - <http://www.pail.ca>

⁹⁸ ATCO Structure and Logistics - <http://www.atcosl.com/en-ca/>

⁹⁹ 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>

2.2 Equipment

2.2.1 Air

Aircraft¹⁰⁰

In response to Canada's updated defence policy report in June 2017, CBC reported that, "Ottawa has unveiled a plan to boost military spending by more than \$30-billion over the next decade – much of it to pay for the ballooning cost of new warships and fighter jets..."¹⁰¹ Canada's Defence Policy Report also notes the plan to "align the Canadian Air Defence Identification Zone (CADIZ) with our sovereign airspace".¹⁰² However, no information on how this will be made feasible is disclosed.

CP-140 (P-3C) Aurora



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

- 18 in operation
- Capable of 17 hour flights and a range of almost 10,000 km (patrols average 10 hours and 5,000 km) without refuelling, and are primarily used for northern maritime surveillance and patrol.
- 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)
- Canada is in the process of updating and extending the life of 14 of these 18 CP-140 Auroras, with the intention to operate only 10 at once in a rotation of 14 in order to achieve a life expectancy to 2030.¹⁰³
 - Initially, the 18 CP-140 patrol aircraft was planned to be replaced by 10-12 new aircraft from 2020.¹⁰⁴ "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 (AIMP), the Aurora Structural Life Extension Project (ASLEP) and the Aurora Extension Proposal (AEP)."¹⁰⁵
 - AIMP and ASLEP are currently in implementation phase, with close out occurring in 2020 and 2019 respectively.¹⁰⁶
- "Next year, the CP-140s will receive a Block IV upgrade which will include new infrared counter measures, a tactical data link 16 to complement link 11 and full motion video, imagery, email, chat, and VOIP."¹⁰⁷

¹⁰⁰ "Aircraft," Royal Canadian Armed Forces, last modified 19 August 2015, <http://www.rcf-arc.forces.gc.ca>

¹⁰¹ ¹⁰¹ LeBlanc, Daniel, Chase, Stephen, "Ottawa lays out \$62-billion in new military spending over 20 years," The Globe and Mail, 7 June 2017, www.theglobeandmail.com

¹⁰² "Strong, Secure, Engaged: Canada's Defence Policy," Ministry of National Defence, 2017, <http://dgpapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf>

¹⁰³ Pugliese, David, "Canada needs to boost Aurora fleet now, start purchase of new surveillance aircraft," Ottawa Citizen, 5 May 2017, <http://ottawacitizen.com>

¹⁰⁴ Wezeman, Siemon, T., "Military Capabilities in the Arctic," SIPRI Background Paper, SIPRI, March 2012.

¹⁰⁵ "Expanding the CP-140 Modernized Aurora Fleet", Royal Canadian Airforce, last modified 20 March 2014, <http://www.rcf-arc.forces.gc.ca/>

¹⁰⁶ "CP-140 Aurora fleet modernization and life extension," National Defence and the Canadian Armed Forces, 10 January 2017, <http://www.forces.gc.ca>

¹⁰⁷ Laird, Robbin, "NATO allies and North Atlantic maritime threats," Vol. 14, No. 4, FrontLine Defence, 30 September, 2017, <http://www.sldinfo.com>

CF-18 Fighter Aircraft



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

- Based in Cold Lake, Alberta and Bagotville, Quebec
- Controlled out of Canadian Air Defence Sector (CADS) in North Bay
- Modernization completed in 2010 extended their operational life to at least 2020¹⁰⁸
- 77 operational CF-18s (59 CF-18AM or F/A-18A, and 18 CF-18BM or F/A 18B) regularly deployed to the Arctic region¹⁰⁹
- Throughout 2016, the Harper government made plans to make upgrades that would push the lifespan of the aircrafts to 2025, until they could replace all the F/A-18s with 65 F-35s.¹¹⁰ About 1/3 of the fleet was upgraded. However, the Trudeau government changed the plan, announcing that they would replace F/A 18s with a cheaper alternative, possibly F/A 18Cs.¹¹¹
- In February 2017, the Canadian government announced it was buying 18 Boeing Super Hornets as “interim” fighter jets to ease pressure on the aging fleet of CF-18s until a permanent replacement can be bought.¹¹² The deal was to be official by end of 2017.¹¹³
 - However, the Liberal government’s plan to buy new Super Hornets was stalled when the Super Hornets’ manufacturing company, Boeing, filed a trade complaint against Canadian aerospace firm Bombardier.¹¹⁴
- Also in 2017, within the government’s “Strong, Secure, Engaged” plan to increase military spending by over \$30 billion over the next 10 years, the government committed to increasing spending on fighter planes. CBC reported that, “the long-term replacement fleet for Canada’s aging CF-18 warplanes will consist of 88 aircraft at a cost of up to \$19-billion.”¹¹⁵ According to an announcement by Public Services and Procurement Canada, “On Sept. 29, 2017, Canada submitted an expression of interest, formally marking Canada’s interest in the Australian equipment. Canada expects to receive a response by the end of this year that will provide details regarding the availability and cost of the aircraft and associated parts that Canada is considering.”¹¹⁶
- Also in the wake of the decline of the U.S.-made Super Hornets, “Lockheed Martin has officially offered its F-35 as an interim aircraft to supplement the RCAF’s aging CF-18 jets.”¹¹⁷
- By the end of 2017, the Canadian government confirmed the purchase of Australian F-18s.¹¹⁸
- As of January 2018, the plan is that 18 used Australian F-18s will be distributed across 2 bases. According to a senior Canadian government official, “The aircraft will be employed at 3 Wing Bagotville and 4 Wing Cold Lake. DND is currently reviewing infrastructure requirements to accommodate the additional aircraft. Any modifications are expected to be minimal as the supplemental jets are of similar age and design to the CF-18.”¹¹⁹

¹⁰⁸ “CP-140 Aurora fleet modernization and life extension,” National Defence and the Canadian Armed Forces, 10 January 2017, <http://www.forces.gc.ca>

¹⁰⁹ Laird, Robbin, “NATO allies and North Atlantic maritime threats,” Vol. 14, No. 4, FrontLine Defence, 30 September, 2017, <http://www.sldinfo.com>

¹¹⁰ “The Military Balance 2012,” IISS, 7 March 2012, p. 52., <https://www.iiss.org>

¹¹¹ “The Military Balance 2012,” IISS, 7 March 2012, p. 52., <https://www.iiss.org>

¹¹² Pugliese, David, “Time running out to upgrade Canada’s aging CF-18 jets,” Ottawa Citizen, 14 April 2016, <http://news.nationalpost.com>

¹¹³ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A new Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016, p. 4.

¹¹⁴ Pugliese, David, “Liberal MPs sideline Conservative motion to study purchase of 18 Super Hornets,” Defense Watch, 10 February 2017, <http://ottawacitizen.com/news/national/defence-watch/liberal-mps-sideline-conservative-motion-to-study-purchase-of-18-super-hornets>

¹¹⁵ Pugliese, David, “Liberal MPs sideline Conservative motion to study purchase of 18 Super Hornets,” Defense Watch, 10 February 2017, <http://ottawacitizen.com/news/national/defence-watch/liberal-mps-sideline-conservative-motion-to-study-purchase-of-18-super-hornets>

¹¹⁶ Pugliese, David, “Liberal MPs sideline Conservative motion to study purchase of 18 Super Hornets,” Defense Watch, 10 February 2017, <http://ottawacitizen.com/news/national/defence-watch/liberal-mps-sideline-conservative-motion-to-study-purchase-of-18-super-hornets>

¹¹⁷ LeBlanc, Daniel, Chase, Stephen, “Ottawa lays out \$62-billion in new military spending over 20 years,” The Globe and Mail, 7 June 2017, www.theglobeandmail.com

¹¹⁸ Pugliese, David, “Canada takes first official step to buying used fighter jets from Australia,” Ottawa Citizen, 10 October 2017, <http://ottawacitizen.com>

¹¹⁹ Pugliese, David, “Lockheed Martin offers F-35 to Canada as ‘interim’ fighter jet,” National Post, 7 August, 2017, <http://nationalpost.com>

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

*CC-177 Globemaster III*¹²⁰



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

- 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)¹²¹

CC-115 Buffalo



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

- “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.”¹²²
- As of December 2016, the Airbus C-295 was announced as Canada's next fixed-wing search-and-rescue plane to replace the nearly 50 year-old CC-115 Buffalo aircraft.¹²³

¹²⁰ “CC-177 Globemaster III,” Royal Canadian Air Force, last modified 23 April 2014, <http://www.rcaf-arc.forces.gc.ca>

¹²¹ “CC-115 Buffalo,” Royal Canadian Air Force, last modified 1 August 2013, HYPERLINK "<http://www.rcaf-arc.forces.gc.ca/en/aircraft-current/cc-115.page>"
<http://www.rcaf-arc.forces.gc.ca>

¹²² “CC-115 Buffalo,” Royal Canadian Air Force, last modified 1 August 2013, <http://www.rcaf-arc.forces.gc.ca>

¹²³ Brewster, Murray, “Airbus chosen to build Canada's new search planes, ending 12-year procurement odyssey,” 7 December 2016, CBC News, www.cbc.ca

Airbus C-295



Photo Credit: C-295 Airbus, Airbus

<http://www.cbc.ca/news/politics/fixed-wing-search-planes-1.3885653>

- 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.¹²⁴
- 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”.¹²⁵

CC-130 Hercules



Photo Credit: CC-130 Hercules, Royal Canadian Air Force

<http://www.rcf-arc.forces.gc.ca/en/aircraft.page>

- 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.”¹²⁶
- The last CC-130E Hercules took final flight on April 6 2016.¹²⁷
- March 2019: 60 C-130H Hercules aircrafts have been taken out of service “to examine and replace engine propeller blades that inspectors deemed risky because the blades were manufactured before 1971.”¹²⁸

¹²⁴ Brewster, Murray, “Airbus chosen to build Canada's new search planes, ending 12-year procurement odyssey,” 7 December 2016, CBC News, www.cbc.ca

¹²⁵ Brewster, Murray, “Airbus chosen to build Canada's new search planes, ending 12-year procurement odyssey,” 7 December 2016, CBC News, www.cbc.ca

¹²⁶ CC-130 Hercules - <http://www.rcf-arc.forces.gc.ca/en/aircraft-current/cc-130.page>, last modified 16 August 2013

¹²⁷ Pugliese, David, “Last RCAF C-130E Hercules flies into history,” Ottawa Citizen, 6 April 2016, <http://ottawacitizen.com>

¹²⁸ Pawlyk, Oriana, “Air Force Takes C-130s Out of Service to Examine Suspect Propeller Blades”, Military.com, 15 March 2019, <https://www.military.com>

CC-130J Hercules



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

- 17 new CC-130J Super Hercules
 - All delivered by 2012
 - Made first landing in Alert in Sept 2010¹²⁹
 - “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”¹³⁰
- “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.”¹³¹
- *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 2025.¹³²
 - 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.”¹³³
- *Defence Acquisition Guide 2015*: Final delivery estimated for 2025.¹³⁴

CC-150 Polaris



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

- “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

¹²⁹ “CC-130J Hercules (Cargo Aircraft),” Royal Canadian Air Force, last modified 23 April 2014, <http://www.rcaf-arc.forces.gc.ca>

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

¹³¹ “CC-130J Hercules (Cargo Aircraft),” Royal Canadian Air Force, last modified 23 April 2014, <http://www.rcaf-arc.forces.gc.ca>

¹³² “Defence Acquisition Guide 2014,” National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

¹³³ IMP Group International Inc., “Cascade Aerospace begins Block 7.0 Upgrade on Canada’s CC-130J Hercules,” 9 February 2016, <http://www.impgroup.com>

¹³⁴ “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, March 2015, <http://www.forces.gc.ca>

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.”¹³⁵

- 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.¹³⁶
- *Defence Acquisition Guide 2016*: With final delivery expected by 2025, DND plans to install a missile approach warning and infrared countermeasures system in the CC-150 fleets.¹³⁷

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.”¹³⁸
- “The RCAF has plans to replace its CC-150 Polaris refuelling tankers but is holding off until the Liberal government makes its decision on what type of aircraft will be selected to replace the CF-18s.”¹³⁹

*Fixed-Wing Search and Rescue Aircraft Replacement Project*¹⁴⁰

- The Government of Canada is buying 16 C295W aircraft equipped with advanced technology systems to support Canada’s search and rescue operations.”¹⁴¹
- These aircraft are replacing the ageing fleet of six CC-115 Buffalo aircraft and 13 CC-130 Hercules aircraft that have been used for SAR duties over the past 20 to 40 years.¹⁴²
- The contract was awarded to Airbus Defence and Space on December 1, 2016.¹⁴³
- The first aircraft are expected to be delivered by 2019 with the last delivered in 2022 and “the contract for the initial period of 11 years is valued at \$2.4 billion”.¹⁴⁴ This is ahead of the estimated schedule made by the government during the project definition process.¹⁴⁵

¹³⁵ “CC-150 Polaris,” Royal Canadian Air Force, last modified 22 May 2014, <http://www.rcaf-arc.forces.gc.ca>

¹³⁶ “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

¹³⁷ “Defence Acquisition Guide 2016,” National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

¹³⁸ “CC-150 Polaris,” Royal Canadian Air Force, last modified 22 May 2014, <http://www.rcaf-arc.forces.gc.ca>

¹³⁹ Pugliese, David, “Polaris replacement will have to wait until decision on new fighter jet, says RCAF commander,” *Ottawa Citizen*, 2 May 2016, <http://ottawacitizen.com>

¹⁴⁰ 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.

¹⁴¹ “Fixed-Wing Search and Rescue Aircraft Replacement Project,” Public Services and Procurement Canada, last modified 19 January 2017, <http://www.tpsgc-pwgsc.gc.ca>

¹⁴² “Fixed-Wing Search and Rescue Aircraft Replacement Project,” Public Services and Procurement Canada, last modified 19 January 2017, <http://www.tpsgc-pwgsc.gc.ca>

¹⁴³ “Fixed-Wing Search and Rescue Aircraft Replacement Project,” Public Services and Procurement Canada, last modified 19 January 2017, <http://www.tpsgc-pwgsc.gc.ca>

¹⁴⁴ “Fixed-Wing Search and Rescue Aircraft Replacement Project,” Public Services and Procurement Canada, last modified 19 January 2017, <http://www.tpsgc-pwgsc.gc.ca>

¹⁴⁵ “Defence Acquisition Guide 2014,” National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

Helicopters

CH-146 Griffon Helicopter (Bell 412) – 15 in service¹⁴⁶



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

- 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.”¹⁴⁷
- In May 2013 the three Griffons at Canadian Forces Base Goose Bay were all grounded for repairs.¹⁴⁸
- 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.¹⁴⁹

Bell 429 – seven in service

- Canadian Coast Guard states both Bell 412 and Bell 429 provide “timely and accurate information to Coast Guard icebreaking planners and the shipping industry to update ice charts and assist in ice routing for commercial ships.”¹⁵⁰

CH-149 Cormorant



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

- 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 system¹⁵¹
- *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

¹⁴⁶ Wolfe, Frank, “Canadian Coast Guard Praises Modern Helos for Icebreaking Mission”, Rotor & Wing International, 12 March, 2019, <https://www.rotorandwing.com>

¹⁴⁷ “CH-149 Cormorant,” Royal Canadian Air Force, last modified August 2013, <http://www.rcaf-arc.forces.gc.ca>

¹⁴⁸ 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>

¹⁴⁹ “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

¹⁵⁰ Wolfe, Frank, “Canadian Coast Guard Praises Modern Helos for Icebreaking Mission”, Rotor & Wing International, 12 March, 2019, <https://www.rotorandwing.com>

¹⁵¹ “CH-149 Cormorant,” Royal Canadian Air Force, last modified 1 August 2013, <http://www.rcaf-arc.forces.gc.ca>

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 2017.¹⁵²

- *Defence Acquisition Guide 2016*: The request for proposal release has been pushed to 2018.¹⁵³

CH-124 Sea King



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

- 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 Cyclone¹⁵⁴

CH-148 Cyclone



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

- 28 are on order from Sikorsky, but has been a highly troubled program
 - More than 5 years behind schedule and cost over-runs
 - Canadian forces now have at least six interim versions of the Cyclone for pilot training.¹⁵⁵
- DND is expecting a fully capable CH-148 Cyclone delivered in 2018.¹⁵⁶
- 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.”¹⁵⁷
- As of March 2017, the project is now in implementation stage, having accepted 11 Cyclones, and plans are to reach full operational capacity (28) by 2025.¹⁵⁸

¹⁵² “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, March 2015, <http://www.forces.gc.ca>

¹⁵³ “Defence Acquisition Guide 2016,” National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

¹⁵⁴ “CH-124 Sea King,” Royal Canadian Air Force, last modified 1 August 2013, <http://www.rcf-arc.forces.gc.ca>

¹⁵⁵ “CH 148 Cyclones delivered to Halifax airbase,” CBC News, 19 June 2015, <http://www.cbc.ca>

¹⁵⁶ Department of National Defence, “Archived - Maritime Helicopter Project: Status (Fact Sheet),” Government of Canada, last modified June 2014, <http://news.gc.ca>

¹⁵⁷ “CH-148 Cyclone,” Royal Canadian Air Force, last modified 18 September 2013, <http://www.rcf-arc.forces.gc.ca>

¹⁵⁸ “CH-148 Cyclone procurement project,” National Defence and the Canadian Armed Forces, 9 March 2017, <http://www.forces.gc.ca>

- “The cost is \$3.2 billion for acquisition project management, infrastructure and contingency costs. The cost for major in-service support until 2038 is \$5.8 billion.”¹⁵⁹

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.”¹⁶⁰
- “April 2015: Two Chinooks were deployed for the first time to Kapuskasing as a response to flooding.”¹⁶¹
- “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.”¹⁶²
- “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.”¹⁶³

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 1995¹⁶⁴
- 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.¹⁶⁵ 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”.

¹⁶⁶

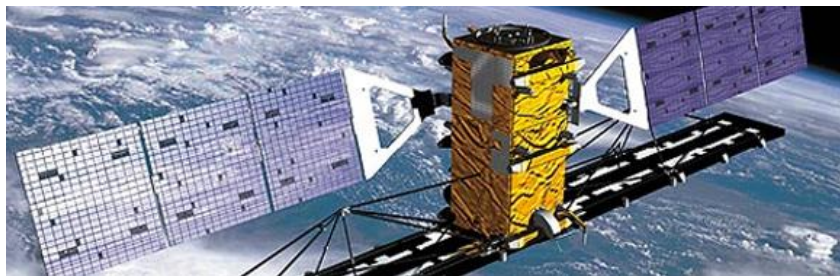


Photo Credit: RADARSAT 2, Canadian Space Agency, <http://www.asc-csa.gc.ca/eng/satellites/radarsat2/>

¹⁵⁹ “CH-148 Cyclone procurement project,” National Defence and the Canadian Armed Forces, 9 March 2017, <http://www.forces.gc.ca>

¹⁶⁰ “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>

¹⁶¹ “Medium-to-heavy lift helicopter project: status,” National Defence and the Canadian Armed Forces, last modified 25 June 2015, <http://www.forces.gc.ca>

¹⁶² The Role And Capabilities of the Chinook F Model

¹⁶³ “Canada’s newest generation of Chinook helicopters,” FlightGlobal/Airspace Forum, 13 January 2013, <http://www.flightglobal.com>

¹⁶⁴ “RADARSAT-1,” Canadian Space Agency, last modified 21 March 2014, <http://www.asc-csa.gc.ca>

¹⁶⁵ “RADARSAT-1,” Canadian Space Agency, last modified 21 March 2014, <http://www.asc-csa.gc.ca>

¹⁶⁶ “Canadian satellites ‘on target’ to revolutionize maritime domain awareness,” Defence IQ, 2014, <http://www.defenceiq.com>

RADARSAT Constellation

- Objectives:
 - “The evolution of the RADARSAT Program with the objective of ensuring C-band data continuity, enhanced operational use of SAR data and improved system reliability over the next decade.”¹⁶⁷
 - To provide complete coverage of Canada's land and oceans.
 - 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.”¹⁶⁸
- Launches first planned for 2016 and 2017, but now “launch of the three satellites is targeted for the third quarter of 2018”.¹⁶⁹
- Plans for three new RADARSAT satellites were awarded in Jan 2013¹⁷⁰
- 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.
 - Building on technology that MDA has developed through the Radarsat-1 and Radarsat-2 missions.
 - The launch of the satellites is planned for November 2018¹⁷¹

Maritime Monitoring and Messaging Micro-Satellite (M3MSat)



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

- Objectives:
 - 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.¹⁷²
 - Overall, M3MSat's mission aims to “improve Canada's space-based capabilities to detect ships and manage marine traffic. It is also testing a device that could change the way we monitor the health and safety of satellites.”¹⁷³
- 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.¹⁷⁴ The launch was re-scheduled for June 2016 and launched successfully from a facility in Sriharikota, India.¹⁷⁵

¹⁶⁷ “RADARSAT Constellation,” Canadian Space Agency, last modified 30 March 2017, <http://www.asc-csa.gc.ca>

¹⁶⁸ “MDA awarded \$706 million contract to build three radar satellites,” MDA Information Systems website, 9 January 2013, <http://www.mdacorporation.com>

¹⁶⁹ “Building the North: Project List, Canada's Economic Action Plan,” Government of Canada, date not available, <http://actionplan.gc.ca/>

¹⁷⁰ The Canadian Press, “MacDonald, Dettwiler and Associates sign \$706M Radarsat deal,” CBC News, 9 January 2013, <http://www.cbc.ca>

¹⁷¹ LeBlanc, Pierre, “Is the Canadian Arctic More Secure Now?,” The Maritime Executive, 30 October, 2018, <https://www.maritime-executive.com>

¹⁷² Pugliese, David, “Russian sanctions have killed Canadian satellite launch,” Ottawa Citizen, 24 April 2014, www.ottawacitizen.com

¹⁷³ “Maritime Monitoring and Messaging Microsatellite (M3MSat),” 22 June 2016, Canadian Space Agency, <http://www.asc-csa.gc.ca>

¹⁷⁴ “Maritime Monitoring and Messaging Microsatellite (M3MSat),” 11 May 2016, National Defence and the Canadian Armed Forces, <http://www.forces.gc.ca>

¹⁷⁵ “Canada's M3MSat Successfully Launch,” 22 June 2016, Government of Canada, www.news.gc.ca

Project Polar Epsilon

- Objectives:
 - *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 2019.¹⁷⁶
- Polar Epsilon vs. Polar Epsilon 2
 - “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.”¹⁷⁷
 - Polar Epsilon 2 will use data from the next generation of Canadian Earth-observation satellites, known as the RADARSAT Constellation Mission, which is set to launch in 2018. “The data obtained from the RADARSAT Constellation Mission will be used for various surveillance needs ranging from monitoring of ice flows within Canada’s coastal waters, providing surveillance of Canada’s ocean approaches; monitoring environmental conditions, such as floods and forest fires; and managing and mapping natural resources in Canada and around the world.”¹⁷⁸
- Current stage of Polar Epsilon went fully operational in August 2011.¹⁷⁹
- 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.”¹⁸⁰

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 and could cost about \$2.4 billion Canadian dollars, said Col. Jeff Dooling, director of space requirements for the Canadian Department for National Defence.”¹⁸¹
- Research for the program has been drawn from an incomplete Canadian Space Agency study that started in 2010.¹⁸²
- “The program would feature X-band and Ka-band communications as well as ultra-high frequency narrowband communications over the North Pole.”¹⁸³
- According to the Canadian *Defence Acquisition Guide 2016*, this project will complete the CAF’s SATCOM Roadmap.¹⁸⁴

*Development of quantum illumination sensing to support radar*¹⁸⁵

- “DND, through Public Services and Procurement Canada, has awarded a contract to the Institute for Quantum Computing at the University of Waterloo to study new quantum technology to contribute to improving remote sensing methods in the Arctic. This \$2.7 million contract is being awarded under the 2016 Innovation Call for Proposals for the All Domain Situational Awareness (ADSA) Science & Technology (S&T) program.”
- “A new sensing technique – quantum illumination – will allow radar operators to cut through heavy background noise and isolate objects, including stealth aircraft, with unparalleled accuracy.”

¹⁷⁶ “Defence Acquisition Guide 2014,” National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

¹⁷⁷ “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.”

¹⁷⁸ “Polar Epsilon 2 Project,” Government of Canada, 17 June 2016, <http://news.gc.ca>

¹⁷⁹ “Polar Epsilon keeps watch over Canada’s coastal waters,” MDA Information Systems website, date not available, <http://www.mdacorporation.com>

¹⁸⁰ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

¹⁸¹ Gruss, Mike, “Canada eyes \$2.4 billion Arctic satellite communications constellation,” Space News, 30 June 2016, <http://spacenews.com>

¹⁸² Gruss, Mike, “Canada eyes \$2.4 billion Arctic satellite communications constellation,” Space News, 30 June 2016, <http://spacenews.com>

¹⁸³ Gruss, Mike, “Canada eyes \$2.4 billion Arctic satellite communications constellation,” Space News, 30 June 2016, <http://spacenews.com>

¹⁸⁴ “Defence Acquisition Guide 2016,” National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

¹⁸⁵ National Defence and the Canadian Armed Forces, “Government of Canada announces contract award to the University of Waterloo for research and development in support of Arctic surveillance,” Government of Canada, 12 April 2018, <https://www.canada.ca>

Uninhabited Aerial Vehicles

RQ-21A Blackjack

- The Canadian government's 2016 acquisition of 5 RQ-21A Blackjacks from the U.S. Navy brings resolution to the DND's lengthy Joint Uninhabited Surveillance and Target Acquisition System (JUSTAS) project to secure surveillance drones.¹⁸⁶ Delivery of the Blackjacks is set for 2021, and the \$14.2 million contract also includes training on how to use the new technology.¹⁸⁷
- The Blackjacks, made by Insitu, have a 16 ft wingspan, 16 hr endurance, and can reach 19 500 ft.¹⁸⁸ They are designed for surveillance purposes only.¹⁸⁹
- The Remotely Piloted Aircraft Systems (RPAS) project, formally known as JUSTAS, is currently in the definitions phase. The implementation phase is expected in 2022/2023, the initial delivery in 2024/2025, and the final delivery in 2029/2030. "It is envisioned that the RPAS capability will reduce the time between the discovery and request for precision strike and the delivery of the effect."¹⁹⁰
- 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.¹⁹¹

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"¹⁹²
- Long term plan secured in 2016 when Canadian government signed a contract with the US Navy to acquire their RQ-21A Blackjacks. See 'RQ-21A Blackjacks' for more details.

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"¹⁹³
 - 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".¹⁹⁴
- Support for Canadian Navy ships on Arctic voyages and commercial ships, and perform research
- The Coast Guard's icebreaking capabilities have been considered lacking. For instance, they are only able to provide Arctic icebreaking service during summer months (beginning in late June and going into November).¹⁹⁵
- Project Resolute: Presented on April 21 2017 as a solution to meet the Canadian Coast Guard's capability shortages. The project is a "multi-company partnership – provides Canada with the world's four most powerful, privately-owned multi-role icebreakers at a fraction of the cost of building from scratch."¹⁹⁶
 - This flexible leasing arrangement will address Canada's icebreaking and oil-spill response capability requirements.

¹⁸⁶ Ruskin, Brett, "Canada's new \$14.1M fixed-wing drones are runway free", Canadian Broadcasting Company, 15 July 2016, <http://www.cbc.ca>

¹⁸⁷ Wagner, Elise, "After a decade, Canada has drones," NATO Association of Canada, 3 September 2016, <http://natoassociation.ca>

¹⁸⁸ Wagner, Elise, "After a decade, Canada has drones," NATO Association of Canada, 3 September 2016, <http://natoassociation.ca>

¹⁸⁹ Ruskin, Brett, "Canada's new \$14.1M fixed-wing drones are runway free", Canadian Broadcasting Company, 15 July 2016, <http://www.cbc.ca>

¹⁹⁰ "Remotely Piloted Aircraft System (RPAS) Project", The Department of National Defence and the Canadian Armed Forces 30 May, 2018, <http://dgpapp.forces.gc.ca>

¹⁹¹ Levon Bond, "JUSTAS and Project Epsilon: Integrated Intelligence, Surveillance, and Reconnaissance of the Canadian Arctic," *Canadian Military Journal*, Vol. 11, No. 4, Autumn 2011, <http://www.journal.forces.gc.ca/vo11/no4/doc/Page%2024%20Bond%20Article%20English.pdf>

¹⁹² "CU-170 Heron," Canadian Forces Military, 5 June 2016, <http://canadianforcesmilitary.com>

¹⁹³ "Icebreaking Levels of Service," Canadian Coast Guard, last modified 24 June 2013, <http://www.ccg-gcc.gc.ca>

¹⁹⁴ Weber, Bob, "Canadian icebreakers head out to map Arctic sea floor," The Canadian Press, 8 August 2014, <http://www.theglobeandmail.com>

¹⁹⁵ "Icebreaking Levels of Service," Canadian Coast Guard, last modified 24 June 2013, <http://www.ccg-gcc.gc.ca>

¹⁹⁶ "Project Resolute holds the key to Canadian Coast Guard icebreaker capability shortages," PRNewswire, 21 April 2017, <https://www.benzinga.com>

- The Coast Guard fleet currently includes:
 - Two heavy icebreakers:
 - CCGS Louis S. St-Laurent
 - CCGS Terry Fox
 - Four medium icebreakers:
 - CCGS Amundsen [a research vessel¹⁹⁷]
 - CCGS Des Groseilliers
 - CCGS Henry Larsen
 - CCGS Pierre Radisson
 - In 2017, the Canadian Coast Guard expanded its hydrographic mapping capacity by including high resolution EM 712 multi-beam echo sounders on two of its medium icebreakers.¹⁹⁸
 - Seven light icebreakers (high-endurance multi-tasked vessels which can operate only in the Western Arctic).¹⁹⁹ Light icebreaker CCGS Samuel Risley made its maiden arctic journey in July 2018²⁰⁰
- 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.²⁰¹ New \$1.3 billion ship was to be delivered in 2017 for sea trials. ²⁰² Arctic performance trial and full operational capability was to be achieved in 2018.²⁰³
 - 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."²⁰⁴
 - 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. ²⁰⁵



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>

- May 2019: Trudeau announces that the Canadian Coast Guard will receive 16 new multi-purpose ships to replace the aging vessels. Trudeau states, "These new vessels will do everything from ice breaking on the great lakes, to fisheries patrol, to conducting pollution response." Many of these ships will be built and stationed in British Columbia.²⁰⁶

¹⁹⁷ Amundsen - <http://www.amundsen.ulaval.ca/index.php?url=1>

¹⁹⁸ Haun, Erin, "Canadian Coast Guard Expands Mapping Capability," Marine Technology News, 14 August 2017, <https://www.marinetechologynews.com>

¹⁹⁹ "Icebreaking Levels of Service," Canadian Coast Guard, last modified 24 June 2013, <http://www.ccg-gcc.gc.ca>

²⁰⁰ Wolfe, Frank, "Canadian Coast Guard Praises Modern Helos for Icebreaking Mission", Rotor & Wing International, 12 March, 2019, <https://www.rotorandwing.com>

²⁰¹ 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>

²⁰² 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>

²⁰³ "Building the North: Project List, Canada's Economic Action Plan," Government of Canada, date not available, <http://actionplan.gc.ca/>

²⁰⁴ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

²⁰⁵ Berthiaume, Lee, "New delay slows construction of navy supply ships, polar icebreaker," The Canadian Press, 9 December 2016, <http://www.thecanadianpress.com/>

²⁰⁶ Duran, Estefania, Recksiedler, Dean and Yuzda, Lisa, "Feds announce 16 new vessels for Canadian Coast Guard", NEWS 1130, 22 May, 2019, <https://www.citynews1130.com>

- August 2019: Government of Canada announces an Invitation to Qualify to add a third shipyard under the National Shipbuilding Strategy to procure six new icebreakers.²⁰⁷

Ships - Navy

The Canadian Navy has a fleet of 33 vessels (3 Destroyers, 12 Frigates, 2 Supply Ships, 12 Coastal Defence; 4 submarines)²⁰⁸

- While the Destroyers and Frigates are “ice-strengthened” and have the range to sail in the Arctic, they do not have icebreaking capabilities
- The home ports are Maritime Forces Atlantic (MARPLANT) in Halifax, and Maritime Forces Pacific (MARPAF) in Esquimalt, B.C.
- The Canadian Surface Combatant project surrounds a plan to build and outfit a fleet of up to 15 new warships, with construction starting in the mid 2020s.²⁰⁹ With Ottawa’s June 2017 plan unveiled to increase military spending significantly over the next decade, the project is now expected to cost between \$56-billion and \$60-billion (an increase in 15-30 billion from the previous government’s forecast).²¹⁰ The last of the vessels is expected to be built in 2040, with the ships’ overall operating life to last until 2070.²¹¹
 - “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.”

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”.²¹²

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, the Trudeau government is negotiating details of the agreement with the yards.²¹³
- 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.”²¹⁴
- The Harry DeWolf-class patrol ships will operate between June and October in the Arctic. “They will be capable of operating in first-year ice of 120-centimetre thickness. This will allow the Royal Canadian Navy to have unescorted access to areas of the Arctic that were previously inaccessible.”²¹⁵
- September 2018: “The future HMCS Harry DeWolf (ship 1) was launched to water in September 2018. The first two of three mega-blocks of the future HMCS Margaret Brooke (ship 2) were moved from inside the Halifax Shipyard’s Assembly and Ultra Hall facility to the exterior land-level construction point.”²¹⁶
- November 2018: The Government of Canada has confirmed that the Royal Canadian Navy will receive a sixth AOPS. Construction is set to begin in 2020²¹⁷
- April 2019: Canada’s Department of National Defense has announced that the fleet will be operational by 2025.²¹⁸
- The Canadian Coast Guard will receive two Off Shore Patrol Ships built by Irving Shipbuilding in Halifax. “The two new offshore patrol vessels will be built as part of a \$15.7 billion package to augment the coast guard’s aging fleet. Seaspan’s Vancouver Shipyards will also build an additional 16 multi-purpose vessels to support a variety of

²⁰⁷ “Canada to Build Six Coast Guard Icebreakers”, 6 August, 2019, Marine Link, <https://www.marinelink.com>

²⁰⁸ “Royal Canadian Navy, Fleet & Unit,” Royal Canadian Navy, last modified 19 August 2013, <http://www.navy-marine.forces.gc.ca>

²⁰⁹ Pugliese, David, “Company to be chosen by 2017 to design new navy ships,” Ottawa Citizen, 1 May 2015, <http://ottawacitizen.com/>

²¹⁰ LeBlanc, Daniel, Chase, Stephen, “Ottawa lays out \$62-billion in new military spending over 20 years,” The Globe and Mail, 7 June 2017, www.theglobeandmail.com

²¹¹ Pugliese, David, “Canadian Surface Combatant team, led by Lockheed Martin Canada, unveiled,” Ottawa Citizen, 28 November 2017, <http://ottawacitizen.com>

²¹² 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>

²¹³ Pugliese, David, “Irving facing significant offshore challenges in building Arctic Offshore Patrol Ships,” Ottawa Citizen, 8 September 2016, <http://ottawacitizen.com>

²¹⁴ “Defence Acquisition Guide 2015,” National Defence and the Canadian Armed Forces, March 2015, <http://www.forces.gc.ca>

²¹⁵ “Arctic and Offshore Patrol Ships”, National Defence and the Canadian Armed Forces, last updated 7 December, 2018, <http://www.forces.gc.ca>

²¹⁶ Ibid.

²¹⁷ Ibid.

²¹⁸ “Canada’s Arctic Offshore Patrol Ships to be Operational by 2025”, The Maritime Executive, 24 April, 2019, <https://www.maritime-executive.com>

missions, including light icebreaking, environmental response and offshore search and rescue, the government says. The two AOPS are expected to cost \$1.5 billion, and the other 16 vessels approximately \$14.2 billion.”²¹⁹

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 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.”²²⁰
- The 2014 procurement guide confirms plans to “extend the service life of the Victoria Class submarine beyond its current mid-2020s end of life,”²²¹ and the 2016 Defence Acquisition Guide estimates delivery of the project is 2026-2036.²²² The Submarine Equipment Life Extension (SELEX) Project is estimated above \$1.5 billion.²²³

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.”²²⁴

- In April 2012 Operation Nunaliut included diving operations off of Devon Island to install “undersea surveillance devices.”²²⁵
- Defence Research and Development Canada released a report on the technical results of the Northern Watch project in June 2016. The project was successful in shedding light on successes and limitations of the NW Surveillance system.²²⁶
 - The report notes that much more work needs to be done before an autonomous/remote-controlled multi-sensor surveillance system could become a reality.
 - Project shortfalls arose because the costs were beyond the reach of the project funding.

Amphibious Ship to Shore Craft

- Acquisition a matter of some discussion in early 2010s, but no formal action has taken place to acquire vessels.
- David Pugliese reported in 2012 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.”²²⁷

²¹⁹ Gunn, Andrea, “Irving to build two more Arctic patrol ships in Halifax”, The Guardian, 22 May 2019, <https://www.theguardian.pe.ca>

²²⁰ Brewster, Murray, “Navy planners trying to sell Ottawa on submarine replacement plan,” *Globe and Mail*, 20 August 2012, <http://www.theglobeandmail.com>

²²¹ “Defence Acquisition Guide 2014,” National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

²²² “Defence Acquisition Guide 2016,” National Defence and the Canadian Armed Forces, May 2016, <http://www.forces.gc.ca>

²²³ “Defence Acquisition Guide 2014,” National Defence and the Canadian Armed Forces, June 2014, <http://www.forces.gc.ca>

²²⁴ 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>

²²⁵ “It’s Arctic spring exercise season for Canada’s military: Operation Nunaliut to kick off April 10,” Nunatsiq News, April 9, 2012, <http://www.nunatsiaqonline.ca>

²²⁶ Heard, Garry, J., McArthur, Bruce, Inglis, Gary, “Overview of the technical results of the Northern Watch Project,” Defence Research and Development Canada, June 2016, http://cradpdf.drdc-rddc.gc.ca/PDFS/unc253/p804761_A1b.pdf

²²⁷ Referred to by David Pugliese, “Canada Ramps Up Arctic Arsenal,” 25 January 2012, <http://www.defensenews.com>

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”²²⁸
- “Canada also is creating a 500-member Army response capability for the Arctic”²²⁹
- Canadian reserves unit in Yellowknife to be increased to 100 by 2019²³⁰
- “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.’”²³¹“However, Major General Alan Howard, assistant chief of the land staff of the Canadian Army, complained that the Canadian Army has lost the ‘ability to operate up north in the Arctic’ because of the focus on operations in Afghanistan. The army’s capabilities for Arctic operations are to be improved after Canada’s withdrawal from Afghanistan in 2012. In addition, a special small battalion-sized (500 troops) regular army unit for Arctic operations is to be set up. Since 2008, Canadian reserve forces have included an Arctic company, based in Yellowknife, NWT, which under the Northern Strategy is planned to have a strength of 100 by 2019.”²³²
- A 2015 policy paper on the CAF’s presence in the Arctic noted that Canada is “establishing a number of small, but well trained, reserve and permanent force units designed for rapid and agile response [in the Arctic]”.²³³
 - Excerpt from the policy paper:

The Army can now, theoretically, deploy a staggered series of responders anywhere in the North to reinforce the ever capable Rangers, or deploy to an area without a Ranger patrol. This capability is limited in size but appropriate to the sorts of threats envisioned. Given the logistical and transportation difficulties inherent to Arctic operations, a small self-sufficient force is preferable, for instance, to the kinds of regiment level deployments and airdrops practiced from the 1940s to the 1980s.²³⁴

Canadian Coast Guard

- In 2016, Coast Guard activity in the Arctic included the deployment of eight CCG icebreakers.²³⁵
- Planning priorities for 2016 CCG Arctic operations included: escort and icebreaking for commercial vessel traffic, icebreaking in support of community resupply, navigational aid maintenance.²³⁶
- “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.”²³⁷
- “The Canadian Coast Guard is expanding its Arctic season in 2017-2018 and will continue to gradually increase its presence over the next several years.”²³⁸
 - In October 2017, Canadian officials reported that, “The Coast Guard is forecasting that it will add 21 additional operational days in the Arctic in coming years to fit the increasingly extended shipping season.”²³⁹

²²⁸ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012.

²²⁹ Referred to by David Pugliese, “Canada Ramps Up Arctic Arsenal,” 25 January 2012, <http://www.defensenews.com>

²³⁰ Referred to by David Pugliese, “Canada Ramps Up Arctic Arsenal,” 25 January 2012, <http://www.defensenews.com>

²³¹ 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>

²³² 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>

²³³ Lajeunesse, Adam, “The Canadian Armed Forces in the Arctic: Purpose, Capabilities, and Requirements,” Canadian Global Affairs Institute, May 2015, <http://www.cgai.ca>

²³⁴ Lajeunesse, Adam, “The Canadian Armed Forces in the Arctic: Purpose, Capabilities, and Requirements,” Canadian Global Affairs Institute, May 2015, <http://www.cgai.ca>

²³⁵ “Canadian Coast Guard Arctic Operations 2016,” Government of Canada, 29 July 2016, <http://news.gc.ca>

²³⁶ “Canadian Coast Guard Arctic Operations 2016,” Government of Canada, 29 July 2016, <http://news.gc.ca>

²³⁷ “Canadian Coast Guard Arctic Operations 2016,” Government of Canada, 29 July 2016, <http://news.gc.ca>

²³⁸ “Canadian Coast Guard 2017 Arctic season underway,” 19 June 2017, Newswire, <https://www.newswire.ca>

²³⁹ Sevunts, Levin, “Canadian Coast Guard wraps up busy Arctic season,” Radio Canada International, 17 October 2017, <http://www.rcinet.ca>

- 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.²⁴⁰ See "Canadian Coast Guard Auxiliary expansion to the Arctic" for update.

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."²⁴¹

Current Canadian National Defence Minister Harjit S. Sajjan, under the Trudeau government, has named the protection of Arctic borders as a key security priority for Canada. Training exercises enhance troops' ability to quickly respond to threats and domestic emergencies, such as natural disasters, extreme weather events and other hazards.²⁴²

Operations Occurring Annually

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.²⁴³

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

- 1st Canadian Ranger Patrol Group, a Reserve formation of the Canadian Army headquartered in Yellowknife, with 60 patrol units distributed in communities across the North, and
- 440 "Vampire" Transport Squadron, an RCAF unit based in Yellowknife, flying the CC-138 Twin Otter, a utility transport aircraft designed for short take-off and landing.²⁴⁴

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 2017 (running from 14 – 25 August 2017) involved "two separate task forces operating over 2,000 kilometres apart: the Joint Task Force North responding to a hazardous chemicals fire in Rankin Inlet, Nunavut, and Joint Task Force Atlantic responding to a more conventional security scenario in the vicinity of Goose Bay, Labrador."²⁴⁵ This was the 10th iteration of Operation NANOOK.²⁴⁶

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).²⁴⁷

²⁴⁰ "Arctic will share in Canada's new \$1.5 billion oceans protection plan," Nunatsiq News, 8 November 2016, <http://www.nunatsiaqonline.ca>

²⁴¹ Rob Huebert, "The Newly Emerging Arctic Security Environment," Canadian Defence and Foreign Affairs Institute, March 2010, <http://www.cdfai.org>

²⁴² "Canadian Army conducts training to maintain arctic readiness," army-technology.com, 10 February 2016, <http://www.army-technology.com>

²⁴³ "Operation NANOOK," National Defence and the Canadian Armed Forces, last modified 29 September 2016, <http://www.forces.gc.ca>

²⁴⁴ "Operation NANOOK," National Defence and the Canadian Armed Forces, last modified 29 September 2016, <http://www.forces.gc.ca>

²⁴⁵ Levun, Sevunts, "Arctic exercise focuses on responding to hazardous chemicals fire in Inuit hamlet," Radio Canada International, 23 August 2017, <http://www.rcinet.ca>

²⁴⁶ "Operations Update – September 2017," National Defence and the Canadian Armed Forces, 7 September, 2017, <http://www.forces.gc.ca>

²⁴⁷ "Operation NEVUS," National Defence and the Canadian Armed Forces, last modified 7 June 2016, <http://www.forces.gc.ca>

NUNALIVUT

- One of three major sovereignty operations conducted annually in Canada's North, Operation NUNALIVUT takes place in the high Arctic.
- Last occurred February 23 - March 21, 2018.²⁴⁸
- "Some 350 Canadian Forces soldiers — along with the Princess Pats, the Arctic Response Company Group from 38 Canadian Brigade Group and the 1st Canadian Ranger Patrol Group are part of the operation, which runs through March 23 — have spent the month conducting Arctic survival training, sovereignty patrols and scientific research while Royal Canadian Navy personnel tested their abilities in diving under ice."²⁴⁹
- Initiated in 2007, Operation NUNALIVUT is an annual operation in the High Arctic to provide an opportunity for the CAF to operate in northernmost regions of Canada, to demonstrate the ability to operate in the harsh winter environment in remote areas, and to enhance the CAF's capability to respond to a variety of situations in northern Canada.²⁵⁰
- The objectives of *Operation NUNALIVUT* are:²⁵¹
 - 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.

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.²⁵²

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".²⁵³

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.²⁵⁴

FIRST RUN

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.²⁵⁵ First Run usually occurs annually in January, and last occurred January 17-26, 2018.²⁵⁶

"Some of the skills that were covered over the weekend are winter navigation, taking part in ground search and rescue scenarios, basic winter survival training, and patrols both on foot and on snowmobiles. These are the skills the soldiers will be needing when they go to the Arctic," explained the 2018 exercise's Commanding Officer.²⁵⁷

²⁴⁸ "Operation NUNALIVUT 2018 begins in the High Arctic," Government of Canada, Last modified 23 February 2018, <https://www.canada.ca>

²⁴⁹ Pugliese, David, "Frostbite and fuel shortages: The logistical challenges of a military operation in Canada's Arctic," National Post, 21 March 2017, <http://nationalpost.com>

²⁵⁰ Pugliese, David, "Canadian military Arctic operation wraps up – three hunters rescued," Ottawa Citizen, 10 March 2017, <http://ottawacitizen.com>

²⁵¹ "Operation NUNALIVUT," National Defence and the Canadian Armed Forces, 16 May 2016, <http://www.forces.gc.ca>

²⁵² "Operation NUNAKPUT," National Defence and the Canadian Armed Forces, 24 November 2014, <http://www.forces.gc.ca>

²⁵³ "Operation Nunakput," National defence and the Canadian Armed Forces, 5 August 2016, <http://www.forces.gc.ca>

²⁵⁴ David Pugliese, "Soldiers from Arctic Response Company Group head to Goose Bay for winter exercises," Ottawa Citizen, 4 March 2016, <http://ottawacitizen.com>

²⁵⁵ "3rd Canadian Division Exercises and Operations," Government of Canada, <http://www.army-armee.forces.gc.ca>

²⁵⁶ "Army reservists preparing for upcoming Arctic operations," Net News Ledger, 21 January 2018, <http://www.netnewsledger.com>

²⁵⁷ "Army reservists preparing for upcoming Arctic operations," Net News Ledger, 21 January 2018, <http://www.netnewsledger.com>

Operations Occurring Biannually

BOXTOP

Usually twice a year to resupply Canadian Forces Station Alert²⁵⁸

Operations Occurring Biennially

ARCTIC BISON

Exercise Arctic Bison 2017: A biennial winter exercise that is designed to “train members of the Regular and Reserve Forces of the Canadian Army in conducting long-range patrols, ground search and rescue, and casualty evacuation in the unforgiving environment of Canada’s North.”²⁵⁹

Exercise ARCTIC BISON 2017 went from February 17-26 in Gimli, MB, including 200 soldiers in total.²⁶⁰ 100 members of the Arctic Response Company Group (ARCG) traveled by snowmobile from Gimli to Berens Island on Lake Winnipeg, with the rest remaining at headquarters in Gimli for supportive roles.²⁶¹

Exercise ARCTIC BISON 2019 took place in February in the Yukon with 75 army reservists from 38 Canadian Brigade Group, 3rd Canadian Division. According to a CAF news release, the goal of the exercise was to ensure soldiers are “able to provide a relevant, responsive, and effective task-tailored force to respond to any request for assistance by various federal, provincial, and municipal government organizations.”²⁶²

ARCTIC RAM

It is the largest and most complex Army-led exercise that takes place in the Canadian Arctic. It exists to ensure Canadian Army members are able to operate in extreme cold and harsh conditions in order to safeguard Canada’s sovereignty. Resolute Bay offers a significant high arctic location to deploy to, further testing CAF capabilities.²⁶³

Exercise ARCTIC RAM 2016, 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.²⁶⁴

NOREX

Norex is designed “to test the mobility, sustainability and survivability” of 4th Canadian Division’s Arctic Response Company Group and to maintain an Arctic response capability,” said the Canadian Department of Defense.

Occurred first in 2015²⁶⁵ and most recently in February 2018, in Resolute Bay, Nunavut.²⁶⁶

Other Exercises

See Trident Juncture for information on Canada’s participation.

²⁵⁸ “Operation Boxtop,” National Defence and the Canadian Armed Forces, last modified 11 May 2017, <http://www.forces.gc.ca>

²⁵⁹ Sevunts, Levon, “Canadian Army Exercise ARCTIC BISON 2017 challenged by winter thaw,” 18 February 2017, <http://www.rcinet.ca>

²⁶⁰ Pugliese, David, “Canadian Army’s Exercise Arctic Bison to start on Friday,” Defense Watch, 16 February 2017,

<http://ottawacitizen.com/news/national/defence-watch/canadian-armys-exercise-arctic-bison-to-start-on-friday>

²⁶¹ Sevunts, Levon, “Canadian Army Exercise ARCTIC BISON 2017 challenged by winter thaw,” 18 February 2017, <http://www.rcinet.ca>

²⁶² “CAF members train to take on Arctic conditions”, CTV News Winnipeg, 24 February, 2019, <https://winnipeg.ctvnews.ca>

²⁶³ Pugliese, David, “Canadian Army to conduct winter warfare exercises in Arctic and Quebec,” Ottawa Citizen, 20 January 2016, <http://ottawacitizen.com/>

²⁶⁴ “Army reservists test their mettle in high Arctic,” CTV Winnipeg, 13 February 2016, <http://winnipeg.ctvnews.ca>

²⁶⁵ Canadian Army “Norex 2015,” Government of Canada, last modified 20 March 2015, <http://www.army-armee.forces.gc.ca>

²⁶⁶ “Exercise Norex 2017 gets underway in Nunavut’s High Arctic,” 20 March 2017, Nunatsiaq News, <http://www.nunatsiaqonline.ca>

1. Security Assets available for Operations in the North

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

Eielson Air Force Base (near Fairbanks)²⁶⁷

- 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.”²⁶⁸
- April 2016: “The Department of Defense has asked Congress to fund seven construction projects at Eielson for fiscal 2017, which starts Oct. 1, 2016.”²⁶⁹ 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 2020.²⁷⁰ 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.²⁷¹
 - \$500 million in new construction is planned for Eielson Air Force Base alone to support the upcoming deployment of the F-35 Fighters.²⁷²
 - As of May 2017, construction of the new facilities at Eielson is well underway. For instance, “work is just getting under way on a \$22 million building...that will enable pilots of the new F-35 fighters that are coming here to train in a computer-simulated environment.”²⁷³
 - As of October 2017, “two squadrons of F-35A fighter jets are scheduled to arrive at Eielson in 2020. The aircraft are expected to bring 3,500 airmen, civilian employees, contractors and their families to the Fairbanks North Star Borough.”²⁷⁴

Elmendorf Air Force Base (near Anchorage):²⁷⁵

- Combined with Fort Richardson to form Joint Base Elmendorf-Richardson (JBER) in 1 October 2010.²⁷⁶ 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.”²⁷⁷

²⁶⁷ US Air Force - <http://www.eielson.af.mil/units/index.asp>

²⁶⁸ “Report to Congress on Arctic Operations and the Northwest Passage,” Department of Defense, May 2011, <http://www.defense.gov>

²⁶⁹ “Congress split over funding for F-35 infrastructure at Eielson Air Force Base,” The Associated Press, 15 April 2016, <http://www.adn.com>

²⁷⁰ “Congress split over funding for F-35 infrastructure at Eielson Air Force Base,” The Associated Press, 15 April 2016, <http://www.adn.com>

²⁷¹ Bross, Dan, “Congress passes bills of Alaska military projects,” Alaska Public Media, 19 May 2016, <http://www.alaskapublic.org>

²⁷² 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>

²⁷³ Ellis, Tim, “Construction at area’s Air Force installations to inject \$1.5 billion into Interior economy,” Alaska Public Media, 27 April 2017, <http://www.alaskapublic.org>

²⁷⁴ Baird, Kevin, “F-35A fighter jet arrives at Eielson, where a pilot will put it to the test,” Fairbanks Daily News-Miner, 18 October 2017, <http://www.newsminer.com>

²⁷⁵ US Air Force - <http://www.jber.af.mil/units/index.asp>

²⁷⁶ “Welcome to JBER,” Military.com, date referenced 19 May 2017, <http://www.military.com>

²⁷⁷ 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, <http://www.c2es.org/docUploads/arctic-security-report.pdf>

- From May 2011 DOD Report to Congress:

“In the Anchorage area, Joint Base Elmendorf-Richardson contains a combined military population of more than 12,000 and serves as home to a U.S. Air Force fighter wing, a C-17-equipped air transport unit, an Army Brigade Combat Team, and support units. Additionally, an active duty C-130 squadron will be established in Fiscal Year 2011, with expected initial operational capability in August 2011. The base provides significant capacity such as runways, ramp space, air space command and control, and fuel infrastructure to support throughput for aircraft, mid-air refuelling operations, aerial command and control, ISR operations, and weather forecasting. The move of the 176th Wing (Alaska Air National Guard), with its C-130s and helicopters, from Kulis Air National Guard Base in 2011 added significant search and rescue capabilities as well. The resident Air Force and Army support units provide extensive capabilities in communications, logistics, engineering, ground transportation, and medical support, including a 60-bed hospital.”²⁷⁸

Eareckson Air Station²⁷⁹

- 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, Kodiak²⁸⁰

- 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

Pacific Spaceport Complex Alaska (PSCA) (formerly known as Kodiak Launch Complex)

- “PSCA is a launch range owned and operated by AAC, an agency of the State of Alaska. PSCA 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.”²⁸¹
- An Alaska Public Media report in August 2016 announced that PSCA will be active again by end of month after a launch failure damaged the complex in 2014.²⁸²

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 capabilities²⁸³

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.”²⁸⁴ It is located 750 miles into the Arctic Circle.²⁸⁵
- 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.”²⁸⁶
- “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

²⁷⁸ “Report to Congress on Arctic Operations and the Northwest Passage,” Department of Defense, May 2011, <http://www.defense.gov>

²⁷⁹ “Eareckson Air Station,” GlobalSecurity.Org, last modified 20 July 2011, <http://www.globalsecurity.org>

²⁸⁰ US Coast Guard - http://www.uscg.mil/bsukodiak/general_info.asp

²⁸¹ “Pacific Spaceport Complex – Alaska,” Alaska Aerospace Corporation, no date, <http://akaerospace.com>

²⁸² Desroches, Kayla, “Alaska Aerospace Corporation launches into new period on island,” Alaska Public Media, 18 August 2016, <http://www.alaskapublic.org>

²⁸³ US Coast Guard - <http://www.uscg.mil/d17/airstasitka/Mission.asp>

²⁸⁴ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

²⁸⁵ “Arctic air base gets \$40 million upgrade in face of increasing missile threats,” CBS News, 30 May 2017, <http://www.cbsnews.com>

²⁸⁶ US Air Force - <http://www.peterson.af.mil/units/821stairbase/index.asp>

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, engineering, ground transportation, and medical support, including an 8-bed hospital. Thule Air Base supports military, government, and Allied missions in the eastern Arctic.”²⁸⁷

- According to CBS News in May 2017, “Thule’s \$250 million radar just received a \$40 million software upgrade— one of six early-warning systems like this around the world being improved. More than 3,500 antennas can see 3,000 miles into space.”²⁸⁸
- An upcoming consolidation effort will reduce the base by 40 percent. The U.S. Army Corps of Engineers will achieve this through, “demolishing 31 old buildings and building new structures closer together in the central area of the base where essential services are located including the airfield and hangars, dining facility and hospital.”²⁸⁹

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.²⁹⁰

1.1.2 Land

Fort Greely²⁹¹

- Hosts US BMD mid-course interceptors²⁹²
- “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.”²⁹³
- “Boasts 33 missile interceptors standing at 60ft with “kill vehicles” fixed at the tip, designed to blast enemy warheads out of the sky...The Pentagon, which has already spent more than £31billion [\$54 billion CAD] on the Ground-based Midcourse Defence system (GMD), has pledged to deploy eight additional missile interceptors at Fort Greely.”²⁹⁴
 - The Pentagon announced in 2017 that it will pump \$440 million in extra funds for missile defense, which will include “\$128 million to begin a new expansion of the missile interceptor force in Alaska. That includes \$81 million to begin increasing the number of interceptors from 44 to 64, and \$47 million to begin buying parts for 10 of the additional 20 underground silos in which the interceptors are installed.”²⁹⁵
 - “The 2018 National Defense Authorization Act, signed by President Donald Trump in mid-December, allocates \$699 billion to Defense agencies in the coming year... the NDAA calls for 20 new intercontinental ballistic missile, or ICBM, interceptors at Fort Greely... The latest round of interceptors is in addition to 14 the Pentagon decided to add in 2013 to the original 26 at Fort Greely. The last of those 14 were installed last November.”²⁹⁶ President Trump repeated this announcement in February 2019.²⁹⁷
 - The U.S. army has also begun decommissioning the Cold War-era nuclear power plant at Fort Greely that has been out of use since 1972.²⁹⁸
- The U.S. Department of Defense’s “only extreme natural cold weather test facility”.²⁹⁹

²⁸⁷ “Report to Congress on Arctic Operations and the Northwest Passage,” Department of Defense, May 2011, <http://www.defense.gov>

²⁸⁸ “Arctic air base gets \$40 million upgrade in face of increasing missile threats,” CBS News, 30 May 2017, <http://www.cbsnews.com>

²⁸⁹ Castagna, JoAnne, “Base improvements underway at northernmost missile defense post,” Homeland Security Today, 2 February 2018, www.hstoday.us

²⁹⁰ Lanteigne, Mark, “Return to Keflavik?” The Arctic Journal, 31 March 2016, <http://arcticjournal.com>

²⁹¹ Powers, Rod, “Fort Greely, Alaska,” About.com, date not available, <http://usmilitary.about.com>

²⁹² 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>

²⁹³ “Report to Congress on Arctic Operations and the Northwest Passage,” Department of Defense, May 2011, <http://www.defense.gov>

²⁹⁴ Awford, Jenny, “This World War II army base in Alaska will have to protect America against invading Russian troop AND North Korean nukes.” 31 May 2017, The Sun, www.thesun.co.uk

²⁹⁵ Burns, Robert, “Pentagon pumping millions more into missile defense,” Associated Press, 6 October 2016, <http://www.alaskajournal.com>

²⁹⁶ Brehmer, Elwood, “Missile defense gets major boost from latest bill,” Alaska Journal of Commerce, 17 January 2018, www.alaskajournal.com

²⁹⁷ “Trump makes stop, speech at Alaska military base”, The Seattle Times, 28 February, 2019, <https://www.seattletimes.com>

²⁹⁸ Ellis, Tim, “Army begins decommissioning Fort Greely’s Cold War-era nuclear powerplant,” KUAC, 5 March 2018, <http://fm.kuac.org>

²⁹⁹ Schauer, Mark, “U.S. Army Cold Regions Test Center automotive test track benefits military and civilian customers,” 26 May 2016, U.S. Department of Defense, <https://www.army.mil>

Fort Wainwright³⁰⁰

- 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.³⁰¹
- 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.”³⁰²
- 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.³⁰³
 - First Grey Eagle took inaugural flight on 11 April 2016³⁰⁴
- “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.”³⁰⁵

Fort Richardson (joint base with Elmendorf AFB)³⁰⁶

- Alaskan Command centre for 21,000 Alaskan military personnel
- US Army Alaska (USARAK)³⁰⁷
- Not specifically earmarked for Arctic operations According to numbers released by the U.S. army in 2015, Joint Base Elmendorf-Richardson is to lose 2,631 soldiers, or 59 percent of its personnel due to White House budget cuts³⁰⁸.

Northern Warfare Training Centre³⁰⁹

- Black Rapids, Alaska
- Conducts “relevant training to the leaders of USARAK units so that they can fight and win in demanding cold weather and mountain environments”³¹⁰
- The training centre has 15 instructors and 35 support personnel.³¹¹

Kotzebue (Seasonal/Forward Operating Base of the U.S. Coast Guard):

- The Coast Guard annually sets up a forward operation location here for a summer of activity, including Operation Arctic Shield.³¹²

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.

³⁰⁰ “Fort Wainwright Alaska: Units and Support,” US Army, last updated 23 February 2013, <http://www.wainwright.army.mil>

³⁰¹ Friedman, Sam, “Fort Wainwright to grow as Army shrinks,” Newsminer.com, 25 June 2013, <http://www.newsminer.com>

³⁰² “Report to Congress on Arctic Operations and the Northwest Passage,” Department of Defense, May 2011, <http://www.defense.gov>

³⁰³ Hollander, Zaz, “U.S. Army to add 9 combat drones at Fort Wainwright,” Alaska Dispatch News, 5 June 2015, <http://www.adn.com>

³⁰⁴ Sgt. Brady, Sean, “First Gray Eagle Flight Expands Army Aviation Capability in Alaska,” PACOM News, 20 April 2016, www.pacom.mil

³⁰⁵ Bross, Dan, “Congress passes bills of Alaska military projects,” Alaska Public Media, 19 May 2016, <http://www.alaskapublic.org>

³⁰⁶ US Air Force, Joint Base - <http://www.jber.af.mil/units/index.asp>

³⁰⁷ “USARAK Organizations”, U.S. Army Alaska, no date listed, <http://www.usarak.army.mil>

³⁰⁸ “Army Announces troop cuts; Alaska not spared,” Daily News-Miner, 9 July 2015, <http://www.newsminer.com>

³⁰⁹ “Northern Warfare Training Centre,” U.S. Army, <http://www.wainwright.army.mil/nwtc/>

³¹⁰ “Northern Warfare Training Centre,” U.S. Army, <http://www.wainwright.army.mil/nwtc/>

³¹¹ Robson, Seth, “Northern Warfare Training Center tests troops' mettle in harshest conditions,” Stars and Stripes, 5 March 2015, <https://www.stripes.com>

³¹² Restino, Carey, “Coast Guard sets up seasonal base in Kotzebue again,” The Arctic Sounder, 23 June 2017, <http://www.thearcticsounder.com>

- The Coast Guard’s “National Security Cutters” – it is in the process of acquiring eight of these 418 foot armed vessels – are capable of operating in open Arctic waters and are refuelled primarily at Dutch Harbor.³¹³

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.”³¹⁴

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.³¹⁵
- The US is spending \$35 million to refurbish facilities at the Keflavik Base. This budget will be used to “refurbish a hangar at Naval Air Station Keflavik to accommodate its submarine-hunting P-8A Poseidon jets”. At the height of its use, the Keflavik Base was host to 5,000 American soldiers. The base was created in the Second World War, used through the Cold War and deactivated in 2006. Navy official state that stationed soldiers in Keflavik will not follow the reinvestment in the base. “While Iceland remains a strong NATO ally, the U.S. has no plans to re-establish a permanent presence in Iceland,” says U.S. Naval Forces Europe-Africa spokesperson Cmdr. Pamela Rawe³¹⁶

1.1.3 Sea

- 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 raised³¹⁷ 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.³¹⁸ 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.³¹⁹
- 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.”³²⁰
- In February 2014 the study group pointed 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 2030.³²¹
- The US Army’s 2015 Draft Feasibility Report noted that, “The additional annual cost of operation and maintenance for the Tentatively Selected Plan is estimated at \$244,000. Estimated associated costs include \$61.0 million in non-Federal costs for development of local service facilities and \$15,700 for navigation aids (a U.S. Coast Guard expense).”³²²

³¹³ “United States Coast Guard Arctic Strategy,” United States Coast Guard, May 2013, http://www.uscg.mil/seniorleadership/DOCS/CG_Arctic_Strategy.pdf

³¹⁴ “Report to Congress on Arctic Operations and the Northwest Passage,” Department of Defense, May 2011, <http://www.defense.gov>

³¹⁵ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

³¹⁶ Montgomery, Nancy, “No permanent basing for Navy sub hunters in Iceland despite construction projects,” Stars and Stripes, 9 January, 2018, <https://www.stripes.com>

³¹⁷ 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>

³¹⁸ “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>

³¹⁹ 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>

³²⁰ Pettersen, Trude, “US Navy to study the Arctic,” The Barents Observer, 1 August 2013 <http://barentsobserver.com>

³²¹ “Caryey Restino, Arctic port study delayed past March,” The Arctic Sounder, 14 February 2014, <http://www.thearcticsounder.com>

³²² “Alaska Deep-Draft Arctic Port System Study,” U.S. Army Corps of Engineers, February 2015, <http://www.poa.usace.army.mil/Portals/34/docs/civilworks/arcticdeepdraft/ADDMainReportwithoutappendixes.pdf>

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.”³²³
 - During Trident Juncture (25 October–23 November 2018), the USS Harry S. Truman operated north of the Arctic Circle in the Norwegian Sea for the first time in twenty-seven years³²⁴.
 - “The 24th Marine Expeditionary Unit completed the Iceland portion of Exercise Trident Juncture 18 by conducting an amphibious air assault and cold-weather training from Oct. 17 – 21, 2018”³²⁵ “Twelve Amphibious Assault Vehicles, six Light Armored Vehicles, and 21 High Mobility Multipurpose Wheeled Vehicles” were used in the surface and air assaults.³²⁶

MQ-1C Gray Eagle Unmanned Aerial System³²⁷



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

- 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.”

S-92 SAR helicopter³²⁸

- 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.”

³²³ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012.

³²⁴ [Mizokami](https://www.popularmechanics.com), Kyle, “U.S. Carriers Are Operating in the Arctic Circle for the First Time in Decades”, Popular Mechanics, 22 October, 2018, <https://www.popularmechanics.com>

³²⁵ Gale, Margaret, “24th MEU completes training in Iceland”, Defense Visual Information Distribution Service, 21 October, 2018, <https://www.dvidshub.net>

³²⁶ Gale, Margaret, “24th MEU executes amphibious assault during Trident Juncture 18”, Defense Visual Information Distribution Service, 29 October, 2018, <https://www.dvidshub.net>

³²⁷ Brady, Sean, “Alaska Aviation Task Force expands Army Aviation capability,” US Army, 18 April 2016, <http://www.army.mil>

³²⁸ Waitt, Tammy, “Sikorsky delivers AK’s first S-92 Search and Rescue helicopter,” American Security Today, 30 September 2016, <https://americansecuritytoday.com>

HC 130 Aircraft³²⁹



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

- “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.”

Small unmanned aircraft systems (sUAS)

- “The U.S. Coast Guard is starting to augment its fleet of cutters and rotary-wing aircraft with small unmanned aircraft systems.
 - “The first installed sUAS, on National Security Cutter Stratton, assisted with the interdiction or disruption of four go-fast boats carrying 5,000 pounds of contraband on its inaugural deployment. A request for proposal for sUAS capability to outfit the full NSC fleet is planned for release by the end of this fiscal year.”³³⁰

MQ-4C Triton UAV



Photo credit: MQ-4C Triton, Northrop Grumman, photo by Alex Evers
<https://www.flickr.com/photos/usnavy/8906719846/>

- “The U.S. Navy is pairing its P-8s with the Triton – a new high altitude, long endurance (HALE) unmanned aircraft developed by Northrop Grumman– and is working an integrated approach between the two.”³³¹
- “Northrop Grumman has received a \$9.6 contract to install the Automatic Response Module of the Airborne Collision Avoidance System X into the MQ-4C Triton’s avionics system.”³³²
- Used in combination with the P-8 aircraft, they will replace the aged P-3 Orion.³³³
- Provides “real-time intelligence, surveillance and reconnaissance (ISR) over vast ocean and coastal regions.”³³⁴

³²⁹ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

³³⁰ Haring, Loretta, “U.S. Coast Guard looks to drones to expand its reach,” The Maritime Executive, 14 August 2017, <https://maritime-executive.com>

³³¹ Laird, Robbin, “NATO allies and North Atlantic maritime threats,” Vol. 14, No. 4, FrontLine Defence, 30 September, 2017, <http://www.sldinfo.com>

³³² Broderick, Tim, “The U.S. Navy is preparing the MQ-43 Triton drone for service in the pacific,” 7 December 2017, The National Interest, <http://nationalinterest.org>

³³³ Laird, Robbin, “NATO allies and North Atlantic maritime threats,” Vol. 14, No. 4, FrontLine Defence, 30 September, 2017, <http://www.sldinfo.com>

³³⁴ “MQ-4C Triton,” Northrop Grumman, no date, <http://www.northropgrumman.com>

Polar Scout smallsats³³⁵

- Two small Polar Scout satellites have been developed for the U.S. Department of Homeland Security. “The satellites have flexible radio frequency receivers to help search and rescue teams locate emergency beacons in remote areas, such as the Arctic.”
 - Scheduled to be launched into lower Earth orbit later this year

F-16 Fighting Falcons

- Used in Trident Juncture (first time returning to the Arctic Circle in nearly 30 years.)³³⁶
- Plans to upgrade jets with anti-jamming Global Positioning System receivers.³³⁷

1.2.2 Land

Light Armored Vehicle



Photo credit: Light Armored Vehicle Anti-Tank weapon system, photo by Lance Cpl. Elijah J. Abernathy/Marine Corps - <https://www.marinecorpstimes.com>

- The anti-tank variant of the Corps’ Light Armored Vehicle (LAV-AT), debuted at the 2018 Trident Juncture Exercise. This newly upgraded “[anti-tank version](#) of one of the Corps’ oldest armored vehicles in the fleet, and boasts a new turret system equipped with tube-launched, optically-tracked, wire-guided, or TOW, missiles”³³⁸

M1A1 Abrams Tanks

- In preparation for Exercise Northern Screen, M1A1 Abrams tanks were moved from caves that are part of the Corps’ Prepositioning Program–Norway. “Those tanks were recently offloaded into Bogen, Norway, from the USNS 1st LT Baldomero Lopez, a container ship with Military Sea Lift Command that prepositions gear for a Marine Air-Ground Taskforce, or MAGTF”³³⁹

1.2.3 Sea

Underwater drone research³⁴⁰

- “Navy scientists are using unmanned underwater autonomous robots, or drones, to examine what’s called the marginal ice zone – the portion of frozen ocean’s packed ice that meets open water.”
- Purpose of the drones is “to assess how quickly the ice is melting and understand how soon the U.S. and Russia will be competing for new strategic waterways in the region.”

³³⁵ “Raytheon builds small satellites for Department of Homeland Security,” PR Newswire, 18 April 2018, <https://www.prnewswire.com>

³³⁶ Rempfer, Kyle, “US breaches the Arctic with Marines, fighter jets and aircraft carriers”, Army Times, 23 October, 2018, <https://www.armytimes.com>

³³⁷ Rempfer, Kyle, “Air Force Reserve and Air National Guard F-16s to install upgraded anti-jam, anti-spoof”, Air Force Times, 15 November, 2018, <https://www.airforcetimes.com>

³³⁸ Snow, Shawn, “This armor-wrecking LAV with 2000 Marines and sailors will be steaming toward Norway”, Marine Corps Times, 5 October 2018, <https://www.marinecorpstimes.com>

³³⁹ Snow, Shawn, “The Corps’ armor makes a big showing in Norway as Marines test future force”, Military Times, 25 October 2018, <https://www.militarytimes.com>

³⁴⁰ Osborn, Kris, “The Navy is using drones to prep for future tensions with Russia in the Arctic,” Business Insider, 22 March 2017, <http://www.businessinsider.com>

Submarines

- “Most of the approximately 53 US nuclear attack submarines [which do not now carry nuclear weapons since the September 1991 Bush-Gorbachev agreement³⁴¹] (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.”³⁴²
- US Navy Adm. Mark Ferguson commented that, due to decommissioning and budget decisions, that figure will drop to 41 by the late 2020s.³⁴³
- “The US currently operates 54 nuclear powered attack submarines, all are armed with heavy weight torpedoes, and most also have tactical range land attack cruise missiles – all with conventional, or non-nuclear, warheads. About 60 percent of American attack submarines operate in the Pacific and 40 percent in the Atlantic, with regular forays into the Arctic.”³⁴⁴
- 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”³⁴⁵
- “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*.”³⁴⁶
- “In April 2011 two US nuclear attack submarines participated in Ice Exercise (ICEX) 2011, operating under the Arctic ice.”³⁴⁷
- 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.³⁴⁸
- Starting in 2031, 12 new SSBN(X) submarines will be introduced. “Each of these nuclear-powered vessels, the largest submarines the Navy has ever built, will carry up to 16 Trident ballistic missiles fitted with multiple nuclear warheads. All in all, this new submarine fleet is expected to deploy about 1,000 nuclear warheads — 70 percent of the U.S. government’s strategic nuclear weapons.”³⁴⁹ 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.”³⁵⁰

*Offshore Patrol Cutter (OPC) program*³⁵¹

- An acquisition project of the US Coast Guard. The project aims to build a series of 25 new Coast Guard vessels, with the production contract awarded to Eastern Shipbuilding in September 2016. The project is expected to cost up to \$2.4 billion.³⁵²
- OPC program will replace the 270-foot and 210-foot medium-endurance cutters that are 25 to 50 years old.³⁵³
- Saab's Sea Giraffe MMR – “a 3D, electronically scanned phased array radar” will be used on these cutters.³⁵⁴
- First cutter to be ready by 2021³⁵⁵

³⁴¹“The Presidential Nuclear Initiatives (PNIs) on Tactical Nuclear Weapons at a Glance,” Arms Control Association, August 2012, <http://www.armscontrol.org/factsheets/pniglance>

³⁴² Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012, p. 13.

³⁴³ Scuitto, Jim, Top Navy Official: Russian sub activity expands to Cold War level,” CNN, 19 April 2016, <http://www.cnn.com>

³⁴⁴ Regehr, Ernie, “Nuclear Submarines in the Arctic: Limiting Strategic Anti-Submarine Warfare”, 4 December, 2018, The Simons Foundation, <http://www.thesimonsfoundation.ca>

³⁴⁵ Lajeunesse, Adam, “Research Note: American SSNs in Canadian Arctic Waters, 1960-1988,” Laurier Centre for Military Strategic and Disarmament Studies, <http://www.canadianmilitaryhistory.ca>

³⁴⁶ Climate Change and Arctic Security Report

³⁴⁷ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012, p. 13.

³⁴⁸ “US meets primary objectives of submarine force readiness exercise in Arctic,” Sputnik News, 25 March 2016, <http://sputniknews.com>

³⁴⁹ Lawrence S. Winter, “Opinion: New nuclear submarine arms race poses great danger,” Times of Trenton, 12 August 2014, <http://www.nj.com>

³⁵⁰ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012, p. 13.

³⁵¹ Marcario, John C., “Coast Guard to focus on Arctic, Recapitalizing the fleet,” SEAPOW Magazine, 6 July 2016, <http://www.seapowermagazine.org>

³⁵² Carlson, Stephen, “Saab receives \$16.8M contract for Coast Guard patrol cutter radars,” United Press International, 25 September, 2017, www.upi.com

³⁵³ Marcario, John C., “Coast Guard to focus on Arctic, Recapitalizing the fleet,” SEAPOW Magazine, 6 July 2016, <http://www.seapowermagazine.org>

³⁵⁴ “Saab to Provide Multi-Mode Radar for US Coast Guard Offshore Patrol Cutter,” Business Insider, 3 October 2017, <http://markets.businessinsider.com>

³⁵⁵ Thornton, David, “Workforce focus, fleet upgrades propel Coast Guard toward modernization,” Federal News Radio, 20 October 2017, <https://federalnewsradio.com>

Legend-class National Security Cutters

- “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.”³⁵⁶
- As of June 2017, seven of the eight cutters have been completed.³⁵⁷
- “Of the Coast Guard’s white-hull patrol cutter fleet, the NSC is the largest and most technologically sophisticated”³⁵⁸
 - “With robust Command, Control, Communication, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) equipment, stern boat launch and aviation facilities, as well as long-endurance station keeping, the NSCs are afloat operational-level headquarters for complex law enforcement and national security missions”
- Manufactured by Huntington Ingalls Shipyards for a crew of 148.³⁵⁹

Sentinel-class Cutters

- The US Coast Guard commissioned its second cutter of this kind in June 2017. It will be harboured in Ketchikan alongside the first cutter of this kind, commissioned in April.³⁶⁰

Icebreakers

- Addressing the limited icebreaking capability of the US Coast Guard has been an issue for a number of years, with all the US’s icebreakers nearing the end of their lives. 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*).”
- New icebreaker acquisition is a growing priority:
 - As of March 2016, the US Coast Guard is moving ahead with an acquisition strategy for a new heavy icebreaker to “mitigate a possible three- to six-year heavy icebreaker capacity gap³⁶¹ as the agency’s lone active ice breaker *Polar Star* nears the end of its service life,” says the US Government Accountability Office.³⁶² 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 2020.³⁶³
 - 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”. The Coast Guard put forward an estimate that six icebreakers would satisfy the strategic needs of the U.S. in the polar regions.³⁶⁴ According to U.S. Coast Guard Commandant Adm. Paul Zukunft in remarks before the Center for Strategic and International Studies, the Trump administration’s budget request to Congress will include a first payment of \$150 million for the first of six Coast Guard icebreakers, to be delivered by 2023.³⁶⁵
 - 3 heavy and 3 medium³⁶⁶
 - “Analysts said the Coast Guard will likely receive approval from the Pentagon to arm these new icebreakers with medium caliber naval guns and probably even anti-ship missiles and cruise missiles.”³⁶⁷ Congress had previously declined funding for the project.³⁶⁸

³⁵⁶ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012, p. 13.

³⁵⁷ “Acquisition Update: Coast Guard Christens Seventh National Security Cutter,” United States Coast Guard, last modified 7 March 2017, <https://www.uscg.mil/hq/CG9/newsroom/updates/nsc030617.asp>

³⁵⁸ “National Security Cutter,” Military.com, no dated listed, <http://www.military.com>

³⁵⁹ “National Security Cutter,” Military.com, no dated listed, <http://www.military.com>

³⁶⁰ “Coast Guard commissions second Alaska cutter,” Daily News-Miner, 18 June 2017, <http://www.newsminer.com>

³⁶¹ 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.

³⁶² Nicholas, Scott, “GAO: Coast Guard to address Arctic regional operation capacity gaps,” ExecutiveGov, 14 July 2016, <http://www.executivegov.com>

³⁶³ Pugliese, David, “U.S. Coast Guard Moves Ahead on New Icebreaker,” Ottawa Citizen, 29 January 2016, <http://ottawacitizen.com>

³⁶⁴ Martinson, Erica, “Coast Guard advances plans to build 3 icebreakers,” The Arctic Sounder, 5 November 2016, <http://www.thearcticsounder.com>

³⁶⁵ Grady, John, Coast Guard Commandant continues to call for more U.S. icebreakers,” USNI News, 3 May 2017, <https://news.usni.org/>

³⁶⁶ Villasanta, Arthur D., “US, Russia Arming their Icebreakers as War in the Arctic Looms,” China Topix, 19 May 2017, <http://www.chinatopix.com>

³⁶⁷ Villasanta, Arthur D., “US, Russia Arming their Icebreakers as War in the Arctic Looms,” China Topix, 19 May 2017, <http://www.chinatopix.com>

³⁶⁸ Todaro, Chelsea, Congress Declines to Help Coast Guard Fund New Polar Icebreaker,” Military News – National Defense, 17 September 2014, <http://www.military.com/>

- “According to a September 2017 Congressional Research Service report, the Coast Guard’s current icebreaker program sets out to procure three new heavy polar icebreakers: delivered in the fourth quarter of FY2023, the second quarter of FY2025, and the second quarter of DY2026, respectively. Only one of these ships is now partially funded.”³⁶⁹
- On February 15, 2019, a bill that was passed by both Senate and Congress was signed into law that “appropriates 675 million USD for the US Coast Guard’s Polar Security Cutter (PSC) program, by far the largest sum allocated to the project to date...Of the sizable 675 million USD funneled to the PSC program, Congress specified that 655 million USD be earmarked for the construction costs of the first icebreaker in what the Coast Guard envisions as a class of 3 heavy polar icebreakers. Combined with the 360 million USD allocated to the PSC program in previous years, the Coast Guard has secured enough funding to construct the lead vessel, which is estimated to cost between 700 million USD and 1 billion USD”³⁷⁰
 - The US has awarded a contract to VT Halter Marine Inc., a shipbuilder off the coast of Mississippi, a \$745.9 million contract for a new heavy icebreaker, also known as Polar Security Cutter. According to the United States Coast Guard, construction will begin in 2021 with anticipated delivery in 2024. The USCG hopes this will become the first in a fleet of six new icebreakers.³⁷¹
- As of June 2017, the U.S. Coast Guard has expressed interest in the *Aiviq*, the Edison Chouest anchor handling supply tug, as “an interim icebreaker while the Coast Guard builds new polar ships”.³⁷²
 - In April 2018, Admiral Paul Zukunft asserted that, “The 2019 US budget authorizes \$750 million for a third icebreaker, with the goal of eventually expanding the US fleet to six.”³⁷³
 - In mid-October 2017, the US Navy and Coast Guard released a joint [draft request for proposal](#) for one heavy polar icebreaker, with the option of two more.³⁷⁴ In mid-November 2017, the US House of Representatives approved a bill that allows the military to build a new heavy icebreaker for the Coast Guard, funding contingent.³⁷⁵
 - In March 2018, the Coast Guard released its request for proposals to five potential vendors.³⁷⁶
 - According to Business Insider in February 2018, “The Homeland Security Department’s proposed budget for fiscal year 2019 requests \$2 billion to recapitalize the Coast Guard’s surface fleet — notably \$750 million to design and build the US’s “first new heavy polar icebreaker in over 40 years.””³⁷⁷ It is slated for delivery in 2023.³⁷⁸
 - The latest Government Accountability Office report – “Status of Coast Guard’s Heavy Polar Icebreaker Acquisition” – states a \$9.827 billion maximum for the project, which would include “acquisition, operations, and maintenance costs for the three heavy polar icebreakers over their entire 30-year lifecycle.”³⁷⁹
 - As of October, 2018, “The operational U.S. polar icebreaking fleet currently consists of one heavy polar icebreaker, *Polar Star*, and one medium polar icebreakers, *Healy*. In addition to polar star, the Coast Guard has a second heavy polar icebreaker, *Polar Sea*. *Polar Sea*, however, suffered an engine causality in June 2010 and has been nonoperational since then.”³⁸⁰

³⁶⁹ Gronning, Ragnhild, “US Senate bill includes funding for new icebreakers,” High North News, 28 September, 2017, <http://www.highnorthnews.com>

³⁷⁰ Uljua, Ryan, “Trump, Congress earmark 675 million USD for icebreaker program in major move”, High North News, February 27, 2019, <http://www.highnorthnews.com>

³⁷¹ Humpert, Malte, “U.S. Coast Guard Awards Contract for New Polar Class Icebreaker”, High North News, 30 April, 2019, <https://www.highnorthnews.com>

³⁷² Moore, Kirk, “Coast Guard may observe Aiviq icebreaker trials,” Workboat, 8 June 2017, www.workboat.com

³⁷³ “Expanding 2-ship U.S. icebreaker fleet becomes top national priority,” Sputnik News, 13 April 2018, <https://sputniknews.com>

³⁷⁴ Woody, Christopher, “The US Navy and Coast Guard are looking to play catch up in the Arctic,” Business Insider, 19 October 2017, <http://uk.businessinsider.com>

³⁷⁵ Malakoff, David, “Massive U.S. defense bill includes bevy of research-related provisions,” Science Magazine, 14 November 2017, <http://www.sciencemag.org/>

³⁷⁶ Larter, David, B., “U.S. Coast Guard to release new heavy icebreaker RFP,” Defense News, 1 March 2018, <https://www.defensenews.com>

³⁷⁷ Woody, Christopher, “The Coast Guard is asking for \$15 million to keep its only heavy icebreaker afloat – and \$750 million to finally build a new one,” Business Insider, 14 February 2018, <http://www.businessinsider.de>

³⁷⁸ McGarry, Brendan, “Coast Guard budget would fund 1st new heavy icebreaker in 40 years,” Military.com, 12 February 2018, <https://www.military.com>

³⁷⁹ “GAO reports on status of heavy polar icebreaker acquisition,” Marline Log, 16 April 2018, <https://www.marinelog.com>

³⁸⁰ “Report to Congress on Changes in the Arctic”, U.S. Naval Institute, 2 November, 2018, <https://news.usni.org>

Polar Star



Photo Credit: Polar Star, United States Coast Guard

<http://gcaptain.com/ship-photos-u-s-icebreaker-polar-star-reaches-mcmurdo-station-antarctica/>

- Commissioned in 1976³⁸¹, deactivated in 2010, and back in operation by 2013 to resume its mission.³⁸²
- 399 feet long, with a crew of 134, it can break 6 feet of ice at 3 knots, and can break 21 feet of ice by backing and ramming.³⁸³
- Set to retire no later than 2022³⁸⁴
- 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.³⁸⁵
- Likely to be used as scientific platform as well.³⁸⁶

Healy



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)

- A 420 foot vessel capable of breaking 4.5 feet of ice at three knots, and eight feet by backing a ramming.³⁸⁷
- “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.³⁸⁸
- In August 2017, the U.S. Coast Guard re-established dive capabilities to *Healy*.³⁸⁹

³⁸¹ Ortega-Welch, Marissa, and Miller, Craig, “Life Aboard a Polar Roller,” 6 November 2014, KQED Science, <https://ww2.kqed.org>

³⁸² “History,” United States Coast Guard, last modified 21 December 2016, <https://www.uscg.mil>

³⁸³ Starr, Terrell Jermaine, “The Naval Crisis in the Arctic that America Refuses to Fix,” Foxtro Alpha, 16 February 2017, foxtroalpha.jalopnik.com

³⁸⁴ Starr, Terrell Jermaine, “The Naval Crisis in the Arctic that America Refuses to Fix,” Foxtro Alpha, 16 February 2017, foxtroalpha.jalopnik.com

³⁸⁵ Carlsen, Audrey, “Polar Star Headed for Arctic Ice Trials,” Unalaska Community Broadcasting, 23 June 2013, <http://kucb.org>

³⁸⁶ Restino, Carey, “Coast Guard: Refurbished icebreaker heads north,” AlaskaDispatch, 6 July 2013, <http://www.alaskadispatch.com>

³⁸⁷ Restino, Carey, “Coast Guard: Refurbished icebreaker heads north,” AlaskaDispatch, 6 July 2013, <http://www.alaskadispatch.com>

³⁸⁸ 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>

³⁸⁹ “Diving ops resumed in Arctic: Coast Guard had stopped diving there after 2006 accident,” Ketchikan Daily News, 19 August, 2017, <http://www.ketchikandailynews.com>

1.3 Organizations and Operational Units (personnel)

US Coast Guard

- Runs seasonal Arctic operations out of Kotzebue³⁹⁰
- “Within the U.S. government, the Coast Guard is the U.S. agency responsible for polar icebreaking. The Coast Guard’s polar ice operations support 9 of the service’s 11 statutory mission. The nine mission supported by polar ice operations are search and rescue; maritime safety; aid to navigation; ice operations; marine environmental protection; living marine resources; other law enforcement (protect the exclusive economic zone [EEZ]); ports, waterways and costal security; and defense readiness. The two missions not supported are illegal drug interdiction and undocumented migrant interdiction.”³⁹¹
- In May 2013 the Coast Guard released a new “Arctic Strategy”³⁹² 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.³⁹³ The report³⁹⁴ identifies improvements in domain awareness as a key priority: “Coast Guard operations require precise and ongoing awareness of activities in the maritime domain. Maritime awareness in the Arctic is currently restricted due to limited surveillance, monitoring, and information system capabilities. Persistent awareness enables identification of threats, information-sharing with front-line partners, and improved risk management.”
- In discussing its Arctic “presence,” the Coast Guard identifies “strategic priorities to achieve effective presence,” including:
 - The development of “an adaptable mix of cutters, boats, aircraft (including unmanned aerial systems), and shore infrastructure to enable effective seasonal operations”;
 - “Expanding capacity to respond to emergency and other time critical events”;
 - “Maintain a scalable presence commensurate with risks posed by increasing activity”;
 - “Develop the appropriate capabilities and competencies, with sufficient capacity, to execute missions at an acceptable level of risk, and in a manner that is adaptive to changes in environmental conditions”; and
 - “Proceed with a risk-based, phased approach to resourcing to address the highest operational needs, including the establishment of infrastructure and communications systems to support operations”.
- The report also includes a useful appendix on “U.S. Coast Guard Forces and Assets” (elements, such as Dutch Harbor and Adak Facility).
- June 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.³⁹⁵
- 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.”³⁹⁶

³⁹⁰ Grueskin, Zoe, “Coast Guard wraps up seasonal operations out of Kotzebue,” Alaska Public Media, 30 October 2017, <https://www.alaskapublic.org>

³⁹¹ “Report to Congress on Changes in the Arctic”, U.S. Naval Institute, 2 November, 2018, <https://news.usni.org>

³⁹² “United States Coast Guard Arctic Strategy,” U.S. Coast Guard, May 2013, http://www.uscg.mil/seniorleadership/DOCS/CG_Arctic_Strategy.pdf

³⁹³ McDermott, Jennifer, “Arctic to remain part-time pursuit of Coast Guard,” The Day, 21 May 2013, <http://theday.com>

³⁹⁴ “United States Coast Guard Arctic Strategy,” U.S. Coast Guard, May 2013, http://www.uscg.mil/seniorleadership/DOCS/CG_Arctic_Strategy.pdf

³⁹⁵ Kelly, Casey, “New Coast Guard District 17 commander brings Arctic Experience,” KTOO, 14 June 2014, <http://www.ktoo.org>

³⁹⁶ Haun, Eric, “Coast Guard Preps for Arctic Research,” MarineLink, 1 August 2014, <http://www.marinelink.com>

- 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.”³⁹⁷
- 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.³⁹⁸ USCG will lease from May 1st to September 30th each year.³⁹⁹
- Increase in Coast Guard’s need for large-scale rescue exercises⁴⁰⁰
 - 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.
- May 2017 – “A draft proposal of the [2018] budget obtained in March called for the Coast Guard to be cut 14 percent to \$7.8 billion to help pay for Trump’s proposed southern border wall, but the idea was later scrapped in favor of level funding of about \$9.1 billion.”⁴⁰¹

Navy’s 2nd Fleet

- The Navy’s 2nd Fleet was activated in mid-2018. The Fleet was set up in the early 1950’s to deter the Soviet Union from the North Atlantic and Europe; it was deactivated in 2011 due to budgetary constraints. The 2nd Fleet returned in 2018 as “leaner, agile, and more expeditionary,” states Rear Adm. John Mustin, the fleet’s deputy commander. Prior to its deactivations, the 2nd Fleet was mostly used to train units getting ready to deploy. The focus now is “to develop and dynamically employ maritime forces ready to fight across multiple domains in the Atlantic and Arctic”, says Rear Adm. John Mustin. The command is based in Norfolk, Virginia.⁴⁰²

National Guard Arctic Interest Council

- A preliminary charter was signed in February 2017 in Utqiagvik (Barrow). “The goal is to coordinate and, at times, combine Arctic operations, share expertise and, if needed, stage joint responses with personnel trained and equipped for Arctic conditions.”⁴⁰³

Arctic Executive Steering Committee⁴⁰⁴

- In 2015, Obama issued an executive order aimed at coordinating federal action on the Arctic, called the Arctic Executive Steering Committee (AESC).
- “The AESC convenes at the Deputy Secretary level to guide the development of department and agency plans to assure that Federal activity is well-coordinated and better communicated to partners such as the State of Alaska, Alaska Native communities, the U.S. Congress, the business community, international partners, and other stakeholders.”⁴⁰⁵
- As of May 2017, the AESC remains operation under the Trump administration.⁴⁰⁶

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 project includes broadening “the Coast Guard’s understanding of Arctic waters and how best to prepare for the challenges the

³⁹⁷ “Coast Guard, partners, industry conduct mass rescue tabletop exercise in Anchorage, Alaska,” US Coast Guard Newsroom, 22 April 2016, <http://www.uscgnews.com>

³⁹⁸ Andrews, Laurel, “Coast Guard launches seasonal home base in Kotzebue,” 26 June 2016, Alaska News, <http://www.adn.com>

³⁹⁹ “USCG takes control of Kotzebue aviation facility,” 24 June 2016, KTUU, <http://www.ktuu.com>

⁴⁰⁰ Bergman, Julia, “Mass Rescue Exercise Tests Response Capabilities in Arctic,” Military.com, 25 August 2016, www.military.com

⁴⁰¹ Lamothe, Dan, “Trump pledges to build icebreakers but doesn’t say how he’ll pay for them,” Alaska Dispatch News, 18 May 2017, <https://www.adn.com>

⁴⁰² Woody, Christopher, “The US Navy’s newest fleet is bulking up for ‘leaner, agile’ operations to counter Russia in the Atlantic and the Arctic”, Business Insider, 18 January, 2019, <https://www.businessinsider.com>

⁴⁰³ Rosen, Yareth, “Increased activity in warming Arctic piques interest of Lower 48 National Guard leaders,” Alaska Dispatch News, 6 February 2017, www.adn.com

⁴⁰⁴ Ruskin, Liz, “Obama Issues Executive Order on Arctic Co-ordination,” Alaska Public Media, 21 January 2015, www.alaskapublic.org

⁴⁰⁵ “The Arctic as a national imperative,” Brown University, 31 May 2016, <https://www.brown.edu>

⁴⁰⁶ Rosen, Yareth, “With Trump administration intentions unclear, Alaskans might have to fill the void on Arctic policy,” Alaska Dispatch News, 22 May 2017, www.adn.com

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.⁴⁰⁷

- No updates since 2014.

U.S. Navy Arctic Roadmap⁴⁰⁸

- 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.⁴⁰⁹
- **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.”⁴¹⁰

Deployment of 330 US Marines in Norway⁴¹¹

- The Norwegian government announced in October 2016 the US initiative to station 330 US Marines 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.”
- As of January, the six month deployment of marines began.⁴¹²

2. Recurring Operations and Exercises

Operations occurring annually

ARCTIC EAGLE

- Annual exercise led by the Alaska National Guard⁴¹³
- Arctic Eagle 2017 was in preparation for Arctic Eagle 2018, “a major emergency response exercise that... will test the capabilities and effectiveness of a multi-national, multi-agency response to a major incident in the state.”⁴¹⁴
- Arctic Eagle 2018 took place in February and March at multiple sites including Valdez, the Donnelly Training Area, and Anchorage,⁴¹⁵ and the goals of Arctic Eagle 2018 were, “for participating forces to operate in a joint, interagency, intergovernmental and multinational environment; assess ability to conduct sustained operations in arctic conditions, and integrate new and emerging capabilities.”⁴¹⁶
- “As part of Arctic Eagle 2018, Alaska National Guardsmen trained on how to identify a potential cyber threat.”⁴¹⁷

ARCTIC PEGASUS

- US Army Alaska’s annual joint exercise⁴¹⁸

⁴⁰⁷ 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>

⁴⁰⁸ “U.S. Navy Arctic Roadmap 2014-2030,” U.S. Navy, February 2014, www.navy.mil

⁴⁰⁹ 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>

⁴¹⁰ “U.S. Navy Arctic Roadmap 2014-2030,” U.S. Navy, February 2014, www.navy.mil

⁴¹¹ L’Agence France Presse, “US to deploy 330 troops in Norway,” Yahoo, 24 October 2016, www.yahoo.com

⁴¹² “Norway welcomes 300 US Marines for first time since the Second World War,” The Independent, 17 January 2017, <http://www.independent.co.uk>

⁴¹³ Lt. Col. Olmstead, Candis, “Alaska National Guard trains to respond to state emergencies,” Alaska National Guard Public Affairs, 7 March 2017, <https://www.dvidshub.net>

⁴¹⁴ Lt. Col. Olmstead, Candis, “Alaska National Guard trains to respond to state emergencies,” Alaska National Guard Public Affairs, 7 March 2017, <https://www.dvidshub.net>

⁴¹⁵ Friedman, Sam, “Alaska National Guard completes largest state exercise since 2014,” The Fairbanks Daily News-Miner, 8 March 2018, <http://www.newsminer.com>

⁴¹⁶ Olmstead, Lt. Col. Candis, “Alaska National Guard’s exercise Arctic Eagle 2018 conducts field training in Valdez,” Defense Visual Information Distribution Service, 16 February 2018, <https://www.dvidshub.net>

⁴¹⁷ Siemedel, Joseph, “Alaska National Guard hones in on Efficient Cyber Security during Arctic Eagle 2018,” Alaska Native News, 2 March 2018, <http://alaska-native-news.com>

⁴¹⁸ 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 conditions⁴¹⁹
- Arctic Pegasus last took place in March 2018 as part of a series of exercises associated with Arctic Edge 2018.⁴²⁰

ARCTIC SHIELD

- An operation of the US Coast Guard which began in 2012 and occurs annually to increase the agency's Arctic awareness and preparedness.⁴²¹
- A series of exercises for developing responses of catastrophic events (e.g. earthquake) in Alaska, involving military and civilian agencies.⁴²²
- As of July 2016, its seasonal home will be established in Kotzebue, Alaska.⁴²³
 - "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 forward operation location will allow for more flexibility, [Coast Guard Chief Petty Officer Shawn] Eggert said."
- Arctic Shield 2017 launched 1 July 2017 and ran until the end of October.⁴²⁴

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.

ARCTIC CARE

- Operation occurring annually since 1995⁴²⁵, and last occurred in April 2018.⁴²⁶
- Joint military exercise between reservists of all branches of the United States Armed Forces, along with Alaska Army National Guard and Canadian Forces to provide care to underserved communities in Northwest Alaska.⁴²⁷
- This group also conducts "critical mission training and logistical movements to maintain currency needed to support future military/civilian humanitarian operations" during Arctic Care.⁴²⁸

Operations occurring Biennially

ICE EXERCISE (ICEX)

- Biennial exercise coordinated by ASL and aimed at assessing operational capacity of the submarine force in the Arctic while advancing scientific research
- Reflects the USA's national security and homeland defense interests in the region
- A five-week exercise with over 200 participants from four nations.
- **ICEX 2018**⁴²⁹
 - ICEX 2018 occurred in the Arctic Ocean in March following construction of the temporary US Ice Camp SKATE.
 - The United Kingdom participated by sending the HMS Trenchant attack submarine. The exercise totalled 3 submarines with "two [American] attack subs (Connecticut and Hartford) and the under-ice firing of Mk-48 torpedoes that carried sensors to gather data on their performance in Arctic conditions". Canadian forces participated in ICEX⁴³⁰

⁴¹⁹ Friedman, Sam, "Fort Wainwright's Strykers strike out for the Arctic," News Miner, 5 November 2015, <http://www.newsminer.com>

⁴²⁰ Oliver, Shady Grove, "Arctic Pegasus brings military ops to Deadhorse Airport," The Arctic Sounder, 23 March 2018, <http://www.thearcticsounder.com>

⁴²¹ Andrews, Laurel, "Coast Guard launches seasonal home base in Kotzebue," 26 June 2016, Alaska News, <http://www.adn.com>

⁴²² Alaska Shield 2012 focused on winter storm response:

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

⁴²³ Andrews, Laurel, "Coast Guard launches seasonal home base in Kotzebue," 26 June 2016, Alaska News, <http://www.adn.com>

⁴²⁴ Andrews, Laurel, "Coast Guard launches seasonal home base in Kotzebue," 26 June 2016, Alaska News, <http://www.adn.com>

⁴²⁵ "Operation Arctic Care", National Guard, retrieved 27 April 2018, <https://www.nationalguard.com>

⁴²⁶ Simms, Capt. Joseph, "Joint military exercise provides care for underserved regions of the Northwest Alaska," DVIDS, 12 April 2018, <https://www.dvidshub.net>

⁴²⁷ Simms, Capt. Joseph, "Joint military exercise provides care for underserved regions of the Northwest Alaska," DVIDS, 12 April 2018, <https://www.dvidshub.net>

⁴²⁸ Simms, Capt. Joseph, "Joint military exercise provides care for underserved regions of the Northwest Alaska," DVIDS, 12 April 2018, <https://www.dvidshub.net>

⁴²⁹ Submarine Force Pacific, "Navy's Arctic Ice Exercise Features Multinational Participation," 8 March 2018, U.S. Department of Defense, <https://www.defense.gov>

⁴³⁰ ERNIE'S POLICY BRIEF

NORTHERN EDGE

- The biennial exercise is a training event involving US Air Force, Navy, Army and National Guard.⁴³¹
- “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].”⁴³²
- Northern Edge, which normally runs every two years, was cancelled in 2013 and ran for the first time since 2011 from June 15-26 2015.⁴³³
- Exercise Northern Edge 2017 took place May 1-12 at Joint Base Elmendorf-Richardson in Anchorage, Alaska.⁴³⁴
 - Lingering concern from coastal communities in Alaska about the environmental impacts of Northern Edge 2015 made plans for 2017 controversial.⁴³⁵

Other exercises

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.⁴³⁶
 - Arctic Edge 18 was the largest joint exercise scheduled in Alaska in 2018, and was linked to Arctic Eagle, Arctic Pegasus, and ICEX, which occurred leading up to Arctic Edge in February and March.⁴³⁷ “Brought more than 1,500 U.S. military personnel from 20-plus units together to train in arctic conditions throughout the Alaska range.”⁴³⁸
 - Army Lt. Col. Joshua Gaspard, Joint Training and Readiness chief at Alaskan Command noted that, “Arctic Edge 18 focused on defending the homeland in extreme cold weather conditions found in Arctic environments,” whereas in previous years, the exercise focused on, “defense support to civil authorities following a natural disaster”.⁴³⁹

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

- The National Oceanic and Atmospheric Administration (NOAA) and the U.S. Coast Guard (USCG) carried out a simulation-based research exercise in 2014. The aim was 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...”⁴⁴⁰

RED FLAG – ALASKA (RFA)⁴⁴¹

- “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).
- Exercises occur up to four times per year, with the 2017 series of field training exercises concluding on 11 August 2017.⁴⁴²

⁴³¹ Northern Edge 2011 - <http://www.jber.af.mil/alcom/northernedge/northernedge2011.asp>

⁴³² Northern Edge 2011 - <http://www.jber.af.mil/alcom/northernedge/northernedge2011.asp>

⁴³³ “Northern Edge joint military training exercise,” Alaska Dispatch News, 23 June 2015, <http://www.adn.com>

⁴³⁴ Klouda, Naomi, “Northern Edge exercise takes to Alaska skies, seas,” Alaska Journal of Commerce, 3 May 2017, <http://www.alaskajournal.com>

⁴³⁵ “Alaska senator says Navy has explaining to do,” RCInet, 21 September 2016, www.rcinet.ca

⁴³⁶ Arctic Edge - <http://www.jber.af.mil/alcom/arcticedge/>

⁴³⁷ Davis, Capt. Phillip, “Arctic Edge Exercise dates announced,” Defense Visual Distribution Service, 12 February 2018, <https://www.dvidshub.net>

⁴³⁸ Miller, Kiona, Navy Petty Officer 1st Class, “Special Operations Forces exercise in Arctic conditions,” U.S. Department of Defense, 16 March 2018, <https://www.defense.gov>

⁴³⁹ “Arctic Conditions Provide Valuable Lessons in Alaska Exercise,” U.S. Department of Defense, 20 March 2018, <https://www.defense.gov>

⁴⁴⁰ Clemens, Jay, “NOAA, Coast Guard test systems for Arctic Response Missions,” ExecutiveGov, 15 Aug. 2014, <http://www.executivegov.com>

⁴⁴¹ Fence Check, <http://www.fencecheck.com>

⁴⁴² Whitman, Cassie, “Final Red Flag – Alaska of 2017 provides joint, multi-domain, multinational and fast combat training,” Eielson Airforce Base, 28 July, 2017, <http://www.eielson.af.mil>

SPARTAN PEGASUS

- A joint Army-Air Force rapid-deployment exercise occurring near Deadhorse, Alaska, that includes paratroopers from Joint Base Elemendorf-Richardson (JBER) and Stryker Brigade soldiers, as well as equipment from Fort Wainwright.⁴⁴³
- “Intended to demonstrate the ability of paratroopers and Strykers to deploy quickly to and operate in the Arctic.”⁴⁴⁴
- Most recent exercise wrapped up in February 2017.⁴⁴⁵
 - Spartan Pegasus 15 was the largest U.S. airborne mission north of the Arctic Circle in more than a decade.⁴⁴⁶

TRIDENT JUNCTURE

See Trident Juncture for US participation.

⁴⁴³ Ellis, Tim, “Exercise near Deadhorse to test paratroopers’ ability to operate in cold,” Alaska Public, <http://www.alaskapublic.org>

⁴⁴⁴ Ellis, Tim, “Exercise near Deadhorse to test paratroopers’ ability to operate in cold,” Alaska Public, <http://www.alaskapublic.org>

⁴⁴⁵ Ellis, Tim, “Exercise near Deadhorse to test paratroopers’ ability to operate in cold,” Alaska Public, <http://www.alaskapublic.org>

⁴⁴⁶ Smith, Jeffrey, “Exercise Spartan Pegasus demonstrates joint military partnership,” 26 February 2015, <https://www.army.mil>

RUSSIA

February 27, 2019: "Russian President Vladimir Putin has signed a decree transferring the functions for the formulation and implementation of the state policy and regulatory framework for the socioeconomic development of the Arctic to the Ministry for the Development of the Russian Far East and renamed it the Ministry for the Development of the Russian Far East and Arctic."⁴⁴⁷

1. Security Assets available for Operations in the North

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

As of January 2017, it is reported that Russia has "6 military bases, 16 deepwater ports, and 13 airbases".⁴⁴⁸ In addition, "Russia has been active in (re)opening a number of search-and-rescue (SAR) centers along the [Northern Sea] route. Out of 13 planned centers, about half have been completed. Originally all 13 were expected to be open by 2017; now Russia is saying they'll be completed by 2020."⁴⁴⁹

Many bases serve both civilian and military purposes: "Many bases and outposts are co-located with coastguard and border guard units. In this way, Arctic military infrastructure fundamentally serves a dual civilian/military purpose, encompassing SAR operations, border enforcement and overall domain awareness."⁴⁵⁰

Northern Fleet Naval Bases

Note: Russian Vice Admiral Nikolai Yevmenov reported in 2017 that, "Every Arctic island where there are bases of the Northern Fleet is being outfitted with all-season airfields which will be able to host different types of aircraft including heavy transport planes and fighter jets."⁴⁵¹ 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."⁴⁵²
- 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.⁴⁵³ The primary function of this command is to ensure protection of bases on the Kola Peninsula.⁴⁵⁴ Bases on the Kola Peninsula

Pechenga – Infantry Base

- Base of the Arctic Brigade and 200th Independent Motor Rifle Brigade (see Organizations and Operational Units for more information)
- 258th Independent Helicopter Squadron flying Mi-24, Mi-35, and Mi-8 helicopters⁴⁵⁵
- Samples of equipment:
 - Mi-24, Mi-35, and Mi-8 helicopters

⁴⁴⁷ "Putin Combines the Arctic with the Far East", High North News, 27 February, 2019, <https://www.highnorthnews.com>

⁴⁴⁸ ⁴⁴⁸ Starr, Terrell Jermaine, "Russia's Icebreakers Make it King of the Arctic and America is Just a Pauper," Foxtrot Alpha, 26 January 2017, <http://foxtrotalpha.ialopnik.com>

⁴⁴⁹ Thompson, John, and Ohanyan, Narine, "Casting a Cool Eye on Russia's Northern Sea Route Ambitions," News Deeply, 3 May, 2017, www.newsdeeply.com

⁴⁵⁰ Chatham House. (2019). "Russia's Military Posture in the Arctic Managing Hard Power in a 'Low Tension' Environment", London, United Kingdom: Boulègue, Mathieu

⁴⁵¹ "Russian military to boost Arctic presence: commander," Digital Journal, 3 November 2017, <http://www.digitaljournal.com>

⁴⁵² "Northern Fleet", GlobalSecurity.Org, last modified 21 September 2014, <http://www.globalsecurity.org/military/world/russia/mf-north.htm>

⁴⁵³ Poulin, Andrew, "5 ways Russia is positioning to dominate the Arctic," International Policy Digest, 24 January 2016, <http://intpolicydigest.org>

⁴⁵⁴ Chatham House. (2019). "Russia's Military Posture in the Arctic Managing Hard Power in a 'Low Tension' Environment", London, United Kingdom: Boulègue, Mathieu

⁴⁵⁵

- GAZ-3351, TTM-3P and DT-3P (used by Arctic Brigade)⁴⁵⁶
- All-terrain Grad and Smerch MLRS Multiple Launch Rocket System carried by Vityaz DT-30PM and DT-10PM all-terrain tracked cross-country vehicles (used by Arctic Brigade)⁴⁵⁷
- Motorized rifle units, main battle tank (MBT) unit with Arctic-hardened T-80BVM tanks, unmanned aerial vehicles (UAVs) (used by 200th Independent Motor Rifle Brigade)⁴⁵⁸
- “TREKOL-39294 and Berkut, quads, tracked cross-country DT-30 Vityaz vehicles, T-80BVM tanks, upgraded MTLB, drones and air-cushioned boats.”⁴⁵⁹
- August 2019: Several batteries of Tor-M2DT have been deployed in the Pechenga area⁴⁶⁰

Alakurtti Naval Air Base – Electronic Warfare & Radar⁴⁶¹

- “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.”⁴⁶²
- Samples of equipment:
 - Air support is ensured by a small number of Mi-24 (NATO: Hind) attack helicopters as well as by Mi-8 rescue helicopters⁴⁶³
 - Drones⁴⁶⁴
 - Air-cushioned boats⁴⁶⁵
 - TREKOL Snow Vehicles, quads, tracked cross-country DT-30 Vityaz vehicles, T-80BVM tanks, upgraded MTLB⁴⁶⁶
 - MT-LBV armoured personnel carrier, which has wider tracks than the original MTLB⁴⁶⁷
 - TTM-1901 Berkut snowmobile, which is adapted to Arctic conditions⁴⁶⁸
 - GAZ-3344-20 amphibious articulated personnel carrier⁴⁶⁹
 - One battalion of 122-mm 2S1 Gvozdika self-propelled howitzers based on the MT-LB track⁴⁷⁰
 - Tor-M2DT (NATO: SA-15 Gauntlet) and Pantsir-SA (NATO: SA-22 Greyhound) air defence systems, both adapted to Arctic conditions and based on the all-terrain DP-30PM vehicle⁴⁷¹

Severomorsk – Northern Fleet Headquarters

- Search and Rescue, tactical aviation (Su-25 and MiG-29), transport (Il-96)⁴⁷²
- Samples of equipment
 - *Yury Ivanov*⁴⁷³
 - *Pyotr Velikiy*
 - *Marshal Ustinov*⁴⁷⁴

⁴⁵⁶ Pettersen, Trude, “Testing equipment for Arctic Brigade,” The Barents Observer, 19 March 2013, <http://barentsobserver.com>

⁴⁵⁷ “Russian army Arctic brigade will be equipped with Grad & Smerch MLRS on DT-30PM,” Army Recognition, 10 February 2018, <https://www.armyrecognition.com>

⁴⁵⁸ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁴⁵⁹ “Russian Northern Fleet to equal military district in status,” April 2019 News Navy Naval Maritime Defense Industry, 19 April 2019. <https://navyrecognition.com/index.php/news/defence-news/2019/april/7002-russian-northern-fleet-to-equal-military-district-in-status.html>

⁴⁶⁰ Staalesen, Atle, “Russia’s new Arctic missile system comes to Pechenga Valley”, 27 August, 2019, <https://thebarentsobserver.com>

⁴⁶¹ Gramer, Robbie, “Here’s What Russia’s Military Build-Up in the Arctic Looks Like,” The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁴⁶² Korpela, Aleksj, “Of fire and ice: Russia’s militarization of the Arctic,” The Nato Association of Canada, 4 February 2016, <http://natoassociation.ca>

⁴⁶³ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁴⁶⁴ “Russian Northern Fleet to equal military district in status,” April 2019 News Navy Naval Maritime Defense Industry, 19 April 2019.

⁴⁶⁵ Ibid.

⁴⁶⁶ Ibid.

⁴⁶⁷ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁴⁶⁸ Ibid.

⁴⁶⁹ Ibid.

⁴⁷⁰ Ibid.

⁴⁷¹ Ibid.

⁴⁷² Eye on the Arctic (2018), ‘Russia upgrades Northern Fleet airbase’, 3 July 2018, <http://www.rcinet.ca/eye-on-the-arctic/2018/07/03/russia-military-base-severomorsk-upgrade-arctic/> (accessed 15 May 2019).

⁴⁷³ Rusakova, Tatyana, “Spy ship to track US missile defence system in Arctic,” Russia Beyond the Headlines, 19 November 2016, <http://rbth.com>

⁴⁷⁴ Nilsen, Thomas, “Three larger warships en route from Severomorsk to the Baltic”, The Barents Observer, 5 July, 2018, <https://thebarentsobserver.com>

- *Admiral Gorshkov*⁴⁷⁵
- *Severomorsk*⁴⁷⁶

Gremikha – Naval Base

- Since 1997, active submarines have not been stationed at Gremikha
- Used as a refueling facility⁴⁷⁷

Gadzhievo (Yegelnaya Bay) – Naval Base

- Home base for the Borei- and Delta-IV class ballistic missile submarines with 10 bunkers⁴⁷⁸.
- Three of the Borei submarines are sailing. Five more will be “commissioned from the yard in Severodvinsk” by 2021.⁴⁷⁹

Olenya – Airfield & Search and Rescue Base

Vidyayevo – Naval Base

Military logistics base in Arkhangelsk⁴⁸⁰

- Building new logistics centre to support the Northern Fleet, “The facility will become a crucial hub for reloading and storage of supplies for military activities in the region”.
- Part of the Northern Fleet Headquarters⁴⁸¹
- The centre will be built “in an area near the sea port of Ekonomia.”
- The facility will include indoor storage capacity of 31,500m² and outdoor space of 300,00m².
- The centre is expected to handle more than one million tons of goods per year. “At any time, up to 27 thousand tons of solid goods can be stored on site along with 78 thousand tons of fuels and lubricant materials and 260 vehicles and units of machinery.”
- The expected date of operation is 2021.
- According to developers, “up to 80 percent of capacity will at times be applied by non-military commercial companies”

Naryan-Mar – Nenets Autonomous Okrug, Airfield, Search and Rescue and Coast Guard Outpost^{482,483}

- Airfield is scheduled for construction in 2020.⁴⁸⁴

Vorkuta – Airfield, Search and Rescue⁴⁸⁵, early warning radar station⁴⁸⁶

- Pechora basin, Komi Republic, Search and Rescue, long-range patrol (Tu-22M3),⁴⁸⁷

Novaya Zemlya (Rogachevo Air Base) – Airfield & Search and Rescue, Air Defense⁴⁸⁸

- Serves as air defense base for Northern Fleet. In April 2015, radar installations for surveillance and early warning became operational.

⁴⁷⁵ Nilsen, Thomas, “Three larger warships en route from Severomorsk to the Baltic”, The Barents Observer, 5 July, 2018, <https://thebarentsobserver.com>

⁴⁷⁶ Ibid.

⁴⁷⁷ Virtualglobetrotting, Gremikha naval base, no date, <https://virtualglobetrotting.com/map/gremikha-naval-base/view/google/>

⁴⁷⁸ Nilsen, Thomas, “Satellite images show expansion of nuclear weapons sites on Kola”, The Barents Observer, 8 May, 2017, <http://barentsobserver.com>

⁴⁷⁹ Ibid.

⁴⁸⁰ Staalesen, Atle, “Navy is building a new major depot for Arctic operations,” The Barents Observer, 2 May 2019, <http://barentsobserver.com>

⁴⁸¹ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁴⁸² Gramer, Robbie, “Here’s What Russia’s Military Build-Up in the Arctic Looks Like,” The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁴⁸³ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁴⁸⁴ “Reconstruction of Naryan-Mar airport’s runway to begin in 2020”, TASS News Agency, 25 January, 2019, <https://tass.com/economy/1041801>

⁴⁸⁵ “Russian missile warning system can detect mass launch of ballistic missiles,” Sputnik News, 15 August 2015, <http://sputniknews.com>

⁴⁸⁶ Gramer, Robbie, “Here’s What Russia’s Military Build-Up in the Arctic Looks Like,” The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁴⁸⁷ VPK (2018), ‘Ekipazhi Tu-22M3 vypolnili posadku na Arkticheskiy aerodrom Vorkuta v khode ucheniy’ [The crews of Tu-22M3 landed on the Vorkuta Arctic airfield during the exercise], 5 October 2018, https://vpk.name/news/230103_ekipazhi_tu22m3_vyipolnili_posadku_na_arkticheskii_aerodrom_vorkuta_v_hode_uchenii.html (accessed 15 May 2019).

⁴⁸⁸ Gramer, Robbie, “Here’s What Russia’s Military Build-Up in the Arctic Looks Like,” The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

- Can host full-size battalion and is the largest of the three ‘Tricolour’ bases.
- Facilities are equipped with: S-300 & S-400 air defense systems, Pantsir-S1 anti-aircraft systems and Rubezh anti-ship coastal systems. Also equipped with P-800 Oniks systems.
- Airfield adjacent to base for resupply and logistics. Announced in 2012: squadron of MiG-31 fighters would be deployed⁴⁸⁹

Franz Josef Land base on Alexandra Island, known as “Arctic Shamrock (or “Trefoil)” – Airfield & Search and Rescue Base, Electronic Warfare & Radar, Naval Base⁴⁹⁰

- Located at 80 degrees north on Alexandra Land Island in Nagurskoye.⁴⁹¹
- Known as the “Arctic Trefoil” complex and is the second base completed so far in the Putin-era⁴⁹².
- The complex is the largest building in the high Arctic and the largest human made structure so far north⁴⁹³
- With 14,000 square metres it is capable of providing living and working conditions for 150 servicemen to live for one-and-a-half years without outside support.⁴⁹⁴
- The completed base was unveiled in mid-April 2017⁴⁹⁵ and is currently in operation, with 1000 soldiers now serving on the sites.⁴⁹⁶
- “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.”⁴⁹⁷
- Building of an airfield to receive aircrafts has entered an active phase and will be completed in 2018 to allow for year-round air operations.⁴⁹⁸ The project includes a landing strip and airfield service facilities.⁴⁹⁹ The 2,500-metre runway can accommodate refueling tanks and fighter aircrafts⁵⁰⁰
- “The main task of the base is to provide the Northern Fleet with air defence capabilities, notably via S-300 (NATO: SA-10 Grumble) air defence systems and Pantsir-S1 anti-aircraft systems for shortrange coverage. An electronic warfare and radar company operates at the base, notably with the P-18 Terek early-warning system. Naval facilities include K-300P Bastion-P (NATO: SSC-5) coastal defence systems armed with P-800 Oniks anti-ship cruise missiles (NATO: SS-N-26 Strobile) and 4K51 Rubezh (NATO: SSC-3 Styx) anti-ship systems.”⁵⁰¹

Amderma 2020⁵⁰² - Airfield & Search and Rescue⁵⁰³

- Located within Nenets Autonomous Okrug⁵⁰⁴
- New military unit to be stationed in Amderma near the Kara Sea by 2020, said Russian Deputy Defense Minister Army General Dmitry Bulgakov in February 2016⁵⁰⁵

⁴⁸⁹ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁴⁹⁰ Gramer, Robbie, “Here’s What Russia’s Military Build-Up in the Arctic Looks Like,” The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁴⁹¹ Thomas Nilsen, “Russia erects huge military trefoil on Franz Joseph Land,” The Barents Observer, 20 October 2015, <http://www.thebarentsobserver.com>

⁴⁹² Thomas Nilsen, “Russia erects huge military trefoil on Franz Joseph Land,” The Barents Observer, 20 October 2015, <http://www.thebarentsobserver.com>

⁴⁹³ Thomas Nilsen, “Russia erects huge military trefoil on Franz Joseph Land,” The Barents Observer, 20 October 2015, <http://www.thebarentsobserver.com>

⁴⁹⁴ “Take a glimpse inside Russia’s high-tech Arctic army base,” Press TV, 19 April 2016, <http://presstv.ir>

⁴⁹⁵ Collins, Danny, “The new Cold War,” The Sun, 18 April 2017, <https://www.thesun.co.uk>

⁴⁹⁶ Staalesen, Atle, “Defense Minister Shoigu sums up a year of Arctic buildup,” The Barents Observer, 3 January 2018, <https://thebarentsobserver.com>

⁴⁹⁷ Staalesen, Atle, “Fighter jets for Russia’s new Arctic base,” The Barents Observer, 22 April 2016, <http://thebarentsobserver.com>

⁴⁹⁸ Staalesen, Atle, “Defense Minister Shoigu sums up a year of Arctic buildup,” The Barents Observer, 3 January 2018, <https://thebarentsobserver.com>

⁴⁹⁹ “Spetsstroy starts construction of airfield on Franz Josef Land,” The Arctic, 26 October 2016, www.arctic.ru

⁵⁰⁰ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁵⁰¹ Ibid.

⁵⁰² “Military Unit to Be Deployed in Russia’s Kara Sea in Arctic by 2020,” Sputnik News, 26 February, 2016, <http://sputniknews.com>

⁵⁰³ Gramer, Robbie, “Here’s What Russia’s Military Build-Up in the Arctic Looks Like,” The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁵⁰⁴ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁵⁰⁵ “Military Unit to Be Deployed in Russia’s Kara Sea in Arctic by 2020,” Sputnik News, 26 February, 2016, <http://sputniknews.com>

Sabetta (FSB Arctic Complex) – Airfield & Search and Rescue⁵⁰⁶

- Located on the Yamal Peninsula⁵⁰⁷
- The new complex includes “a housing block for several tens of specialists, garages for special equipment, as well as a separate building for accessories”.⁵⁰⁸
- 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.⁵⁰⁹
- Built by Yamal LNG company along with regional authorities for protection of Yamal LNG project⁵¹⁰

Nadym – Yamalo-Nenets Autonomous Okrug, Airfield, Search and Rescue and Re-Supply^{511,512}

- Potential dual use military and civilian site⁵¹³
- Airfield: 2,584 metres in length and can handle large airliners (including Ilyushin Il-62 and Ilyushin Il-86 aircraft)⁵¹⁴

Alykel – Airfield & Search and Rescue⁵¹⁵

- Location: Norilsk, Krasnoyarsk Krai⁵¹⁶
- Alykel will be a radar site, one of a string of new radars being developed⁵¹⁷

Severnaya Zemlya/Sredny Island – Airfield & Search and Rescue, radar surveillance, tactical group, airfield^{518,519}

- 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.⁵²⁰

Temp base on Kotelný Island, New Siberian Islands

- Known as Northern Clover
- Location: 75° north, opened December 2016⁵²¹
- Complex is built to house up to 250 service people. There are enough supplies to last them for a full year without external support.
- The airfield is able to receive Ilyushin Il-76 aircrafts throughout the year, improving resupply missions for the base⁵²²
- Base is equipped with “coastal defense missile systems and Arctic-adapted Pantsir medium-range surface-to-air missile systems able to operate in temperatures as low as -50 C.”
- “Northern Clover aims to provide regional air defence. It is armed, with S-300 air defence systems, Pantsir-S1 anti-aircraft systems, Bastion-P coastal systems (increasingly replacing ageing Rubezh anti-ship systems) and anti-ship systems. These systems are officially for protection of the NSR and territorial defence.”⁵²³

⁵⁰⁶ Gramer, Robbie, “Here’s What Russia’s Military Build-Up in the Arctic Looks Like,” The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁵⁰⁷ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁵⁰⁸ Staalesen, Atle, “FSB opens new military complex,” The Barents Observer, 9 August 2016, <http://barentsobserver.com>

⁵⁰⁹ Staalesen, Atle, “FSB opens new military complex,” The Barents Observer, 9 August 2016, <http://barentsobserver.com>

⁵¹⁰ Staalesen, Atle, “FSB opens new military complex,” The Barents Observer, 9 August 2016, <http://barentsobserver.com>

⁵¹¹ Gramer, Robbie, “Here’s What Russia’s Military Build-Up in the Arctic Looks Like,” The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁵¹² Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁵¹³ Bender, Jeremy, “Russia just put the finishing touches on 6 Arctic military bases”, Business Insider, 7 December 2015, <https://www.businessinsider.my>

⁵¹⁴ Swartz, Karl L., “NYM- Airport”, 2019, Great Circle Mapper, <http://www.gcmap.com/airport/NYM>

⁵¹⁵ Gramer, Robbie, “Here’s What Russia’s Military Build-Up in the Arctic Looks Like,” The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁵¹⁶ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁵¹⁷ Atle Staalesen, “Russia builds another military base in East Arctic, The Barents Observer, 03 September 2018. <https://thebarentsobserver.com/>

⁵¹⁸ Ibid.

⁵¹⁹ Gramer, Robbie, “Here’s What Russia’s Military Build-Up in the Arctic Looks Like,” The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁵²⁰ “Russia Setting Up Another Arctic Sea Defence Base,” MarineLink, 2014, <http://www.marinelink.com>

⁵²¹ Ibid.

⁵²² Humpert, Malte, “New Satellite Images Reveal Extent of Russia’s Military and Economic Build-Up in the Arctic”, High North News, 3 May, 2019, <https://www.highnorthnews.com>

⁵²³ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

- "Our base performs radar control, monitors the airspace, secures the Northern Sea Route and eliminates damage to the environment," said Major Vladimir Pasechnik, commander of the Northern Clover tactical group on Kotelnoy Island.
- Future plans: test a "polar" version of the S-400 anti-aircraft systems and place additional air defense on nearby mainland airbase.⁵²⁴

Chersky – Sakha Republic, Airfield, Search & Rescue and Re-Supply⁵²⁵

Tiksi – Airfield & Search and Rescue, Air Defense⁵²⁶

- Intended to reinforce perimeter around Kola Peninsula. Has air defense with regiment of S-400 systems and tactical aviation capability through deployment of MiG-31s⁵²⁷
- A new naval base is nearly ready for operation. Northern Fleet commander Nikolay Yevmenov "met with regional authorities in early September [2018] to discuss the building of the base. Less than half a year later, the naval base is almost ready for operations"
- Will be part of the Northern Fleet's 45th Army and include anti-air forces. 100 soldiers will live on site.
- "The complex includes 11 objects, among them a dormitory, an administrative building, a diesel-run power station, water and fuel reservoirs, cantina, garages and more. All the buildings are interconnected with each other, enabling easy passage between the facilities."⁵²⁸
- "These will be radio-technical and anti-aircraft units, which will be able to fully cover the Arctic air space as a shield," Yevmenov said. He was clear that the new garrison in Tiksi is part of an overall plan for the region.⁵²⁹
- Tiksi is one of the main ports for accessing the Laptav Sea⁵³⁰
- Air Defence
 - anti-air forces and radio technical units⁵³¹
 - long ranges S-400 regiment deployed
 - short range surface to air Pantsir-S1 systems deployed (to protect S-400 regiment)⁵³²
 - Intended to reinforce perimeter around Kola Peninsula. Has air defense with regiment of S-400 systems and tactical aviation capability through deployment of MiG-31s⁵³³

Pevvek – Chukotka Autonomous Okrug, Airfield, Search and Rescue and Resupply⁵³⁴

Wrangle Island – Electronic Warfare & Radar, Pacific Fleet Naval Base, Airfield & Search and Rescue Base⁵³⁵

- In the midst of significant build-up. 68 new buildings to be built on Wrangle Island and Cape Schmidt by end of 2017.⁵³⁶
- Sopka-2 radar complex:
 - "A new radar array complex Sopka-2 entered service on Wrangel Island in 2016. The main mission of the radar is acquiring, generalizing and analyzing of aerial situation in the Arctic region," said Russian's Eastern Military District's spokesman Alexander Gordeev.⁵³⁷

⁵²⁴ Ilyushina, Mary and Pleitgen, Frederik, "Inside the military base at the heart of Putin's Arctic ambitions", CNN, 5 April, 2019

⁵²⁵ Ibid.

⁵²⁶ Gramer, Robbie, "Here's What Russia's Military Build-Up in the Arctic Looks Like," The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁵²⁷ Chatham House. (2019). "Russia's Military Posture in the Arctic Managing Hard Power in a 'Low Tension' Environment", London, United Kingdom: Boulègue, Mathieu

⁵²⁸ Staalesen, Atle, "A new Russian Arctic naval base in the Sakha Republic is almost finished", Arctic Today, 30 January 2019, <https://www.arctictoday.com>

⁵²⁹ Ibid.

⁵³⁰ World Atlas, "The Arctic Ports Of Russia", 2019, <https://www.worldatlas.com/articles/the-arctic-ports-of-russia.html>

⁵³¹ Atle Staalesen, "Russia builds another military base in East Arctic," The Barents Observer, 03 September 2018

⁵³² Busch, Gary, "Russia's New Arctic Military Bases", Lima Charlie World, 2017, <https://limacharlieworld.com>

⁵³³ Chatham House. (2019). "Russia's Military Posture in the Arctic Managing Hard Power in a 'Low Tension' Environment", London, United Kingdom: Boulègue, Mathieu

⁵³⁴ Chatham House. (2019). "Russia's Military Posture in the Arctic Managing Hard Power in a 'Low Tension' Environment", London, United Kingdom: Boulègue, Mathieu

⁵³⁵ Gramer, Robbie, "Here's What Russia's Military Build-Up in the Arctic Looks Like," The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁵³⁶ Staalesen, Atle, "New Arctic military base is declared ready for operation," The Barents Observer, 14 December 2016, <https://thebarentsobserver.com>

⁵³⁷ "Russia deploys Arctic radar array on Wrangel Island," RT News, 5 January 2017, www.rt.com

Cape Schmidt – Naval Base, Airfield & Search and Rescue Base⁵³⁸

- Located in Cape Schmidt in the eastern Chukotka region⁵³⁹
- The autonomous base is shaped like a five-point star and built in environmentally protected territories⁵⁴⁰
- According to Lt. Col. Sergei Surovikin, plans for construction of a drone detachment and an airport on the cape were to be completed by 2015⁵⁴¹
- 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.”⁵⁴²
- In November of 2015, it was announced by Russian company Rusaliance Stroy that the federal Agency for Special Construction had halted funding, and therefore construction, of the Cape Schmidt base upgrade.⁵⁴³
- As of 2017, a number of news articles indicate that construction has continued and Cape Schmidt is in the midst of significant build-up.
 - In fact, 68 new buildings are to be built on Wrangle Island and Cape Schmidt by end of 2017.⁵⁴⁴
 - The Barents Observer noted in June 2017 that, “Seventeen new buildings, power generation stations and a fresh water well are under construction in Cape Schmidt.”⁵⁴⁵
- Airfield: a major airfield with a 2,450 by 60 metres (8,038 ft × 197 ft) concrete tarmac. The gravel overrun suggests that the runway was to eventually be extended to 3000 m⁵⁴⁶

Provideniya – Chukotka Autonomous Okrug, Airfield, Search and Rescue and Resupply⁵⁴⁷

Anadyr-Ugolny – Airfield & Search and Rescue, Electronic Warfare, UAV Operations, long-range patrols, satellite communications⁵⁴⁸

- UAV unit established in 2015⁵⁴⁹
- Chukotka Autonomous Okrug⁵⁵⁰
- In 2014, Russia announced plans to deploy Mig-31 interceptors at the airport⁵⁵¹

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 month⁵⁵²
- 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

⁵³⁸ Gramer, Robbie, “Here’s What Russia’s Military Build-Up in the Arctic Looks Like,” The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁵³⁹ Bodner, Matthew, Eremenko, Alexey, “Russia Starts Building Military Bases in the Arctic,” The Moscow Times, 8 September 2014, <http://www.themoscowtimes.com/>

⁵⁴⁰ Bodner, Matthew, Eremenko, Alexey, “Russia Starts Building Military Bases in the Arctic,” The Moscow Times, 8 September 2014, <http://www.themoscowtimes.com/>

⁵⁴¹ “Russian Military Opens 2nd Arctic Base,” The Moscow Times, 27 November 2014, <http://www.themoscowtimes.com/>

⁵⁴² “Russia Builds New Arctic Military Base,” The Moscow Times, 8 December 2014, <http://www.themoscowtimes.com/>

⁵⁴³ Staalesen, Atle, “Arctic army base construction put on hold,” The Barents Observer, 6 November 2015, <http://www.thebarentsobserver.com>

⁵⁴⁴ Staalesen, Atle, “New Arctic military base is declared ready for operation,” The Barents Observer, 14 December 2016, <https://thebarentsobserver.com>

⁵⁴⁵ Staalesen, Atle, “Navy reports progress on building of east Arctic base,” The Barents Observer, 8 June 2017, <https://thebarentsobserver.com>

⁵⁴⁶ “UHMI – Airport”, Great Circle Mapper, 2019, <http://www.gcmap.com>

⁵⁴⁷ Staalesen, Atle, “Navy reports progress on building of east Arctic base,” The Barents Observer, 8 June 2017, <https://thebarentsobserver.com>

⁵⁴⁸ Gramer, Robbie, “Here’s What Russia’s Military Build-Up in the Arctic Looks Like,” The Cable, 25 January 2017, <https://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/>

⁵⁴⁹ Granholm, Carlsson and Korkmaz (2016), The Big Three in the Arctic, pp. 28–29.

⁵⁵⁰ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁵⁵¹ Cenciotti, David, “Russia to base Mig-31 Foxhound fighters at Arctic airbase in renewed sign of pivot to the North Pole”, The Aviationist, 28 October, 2014, <https://theaviationist.com/2014/10/28/mig-31-based-arctic/>

⁵⁵² 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.”⁵⁵³

Zapadnaya Litsa – Naval Base

- Home base for Yasen-class multi-purpose SSGN (Project 885-M)⁵⁵⁴

Kandalaksha – Naval Base

Okonlnaya Bay – Naval Base

- Covers a land area of 10km² with 50 bunkers⁵⁵⁵

Shcukozero – Naval Base

Bolshoya Ramozero – Naval Base

Nerpicha – Naval Base

Research Station in development⁵⁵⁶

- Russian Armed Forces have plans to develop an Arctic research station with branches in Arkhangelsk, Priozersk, and St. Petersburg.

Counterterrorism Headquarters in Murmansk⁵⁵⁷

- “In December 2015, plans were announced to found a counterterrorism headquarters in Murmansk.”
- See MiG-31BM under *Equipment* for information on patrols based in Murmansk

The North Pole research platform

- Key investment noted in Russia’s revised Arctic Program (covering years present – 2020)⁵⁵⁸
- Ice-class drifting platform to be used by Russian Armed Forces for Arctic research⁵⁵⁹
- “The platform has a preliminary price tag of seven billion rubles and will consequently consume more than half of the program budget.”⁵⁶⁰
- As of October 2017, the Admiralty Yard in St. Petersburg was bidding for the contract.⁵⁶¹

Forward Military Infrastructure⁵⁶²

- 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.”⁵⁶³

Forward Arctic Aerodrome Upgrade

- According to Commander-in-Chief of the Russian Air Force, Col.-General Viktor Bondarev upgrades are planned for a Russian Arctic aerodrome “to receive Ilyushin Il-76 heavy military transport planes. Plans are afoot to make the

⁵⁵³ ⁵⁵³ Pettersen, Trude, “Russian paratroopers conquer North Pole,” The Barents Observer, 10 April 2014, <http://barentsobserver.com>

⁵⁵⁴ Nielsen, T. (2017), ‘Rogozin floats out new attack submarine’, The Barents Observer, 31 March 2017, <https://thebarentsobserver.com/en/security/2017/03/rogozin-floats-out-new-attack-submarine> (accessed 16 May 2019).

⁵⁵⁵ Ibid.

⁵⁵⁶ Brown, Daniel, “Russia is planning to build an Arctic military research centre to further its polar buildup,” Business Insider, 27 May 2017, <http://www.businessinsider.com>

⁵⁵⁷ Korpela, Aleks, “Of fire and ice: Russia’s militarization of the Arctic,” The Nato Association of Canada, 4 February 2016, <http://natoassociation.ca>

⁵⁵⁸ Staalesen, Atle, “Russia makes new big cuts in Arctic spending,” The Independent Barents Observer, 5 July 2017, <https://thebarentsobserver.com>

⁵⁵⁹ Staalesen, Atle, “Russia makes new big cuts in Arctic spending,” The Independent Barents Observer, 5 July 2017, <https://thebarentsobserver.com>

⁵⁶⁰ Staalesen, Atle, “Russia makes new big cuts in Arctic spending,” The Independent Barents Observer, 5 July 2017, <https://thebarentsobserver.com>

⁵⁶¹ Staalesen, Atle, “Russian Arctic research on thin ice,” 9 October 2017, The Independent Barents Observer, <https://thebarentsobserver.com>

⁵⁶² “A military infrastructure will be created in the Arctic archipelagos of Russia,” Arctic Info, 21 May 2014, <http://www.arctic-info.com/>

⁵⁶³ “Russia to create united naval base system for ships. Subs in Arctic-Putin,” RT News, 22 April 2014, <http://rt.com>

Temp aerodrome on the Kotelny Island of the New Siberian Islands archipelago off Yakutia suitable for Il-76 aircraft.”⁵⁶⁴

New Arctic Territory Discovered - 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.⁵⁶⁵ Russian pilots discovered the location of the island in October 2014, and the location was confirmed by the Admiral Vladimírsky research ship.⁵⁶⁶

Emergency rescue centres⁵⁶⁷

- “According to the Ministry of Civil Defense, Emergencies and Disaster Relief (EMERCOM), which oversees the centers, Russia currently operates four centers in the Arctic located in Murmansk, Arkhangelsk, Dudinka, and Naryan-Mar, which opened between 2013-2016.”
- “Russia announced plans to open two additional emergency rescue centers along the Northern Sea Route (NSR). The new centers will be located in Pevek and Anadyr in the Chukotka region and will provide additional search and rescue capabilities along the Arctic shipping route.”
- Future plans to construct airstrips in Chokurdy, Kigely and Taymylyan for SAR purposes.⁵⁶⁸

1.2 Equipment

Russia has developed a new weapons program that aims to modernize 70 percent of weapons and equipment by 2021. Russian President Vladimir Putin states, “For [2018], the Ministry of Defense has allocated significant resources for the creation and mass production of weapons and military equipment: a total of almost half a trillion rubles... In the middle of November [2018], as part of the tasks of the state defense order, about two thousand main types of weapons and military equipment have already been delivered to the troops. Among them - 74 aircraft and helicopters, 80 unmanned aerial vehicles, four regimental sets of anti-aircraft missile systems S-400, five surface ships, 250 tanks and combat armored vehicles”⁵⁶⁹

“In recent years, there has been a slight but steady increase in the number of nuclear warheads deployed on Russian intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs) and missiles carried by long-range bomber aircraft. The number of delivery vehicles, ballistic missiles and heavy bombers, has remained fairly constant since 2011, but the new and modernized Russian ICBMs and SLBMs can carry more warheads per missile than the missiles that they replace, hence the increase in the total number of deployed warheads,” says Senior Researcher Kristian Åtland with the Norwegian Defence Research Establishment⁵⁷⁰

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.⁵⁷¹

⁵⁶⁴“Russian Arctic island to serve as base for military transport planes,” ITAR TASS Russia News Agency, 2014, <http://en.itar-tass.com>

⁵⁶⁵ Rogoway, Tyler, “Russia Annexes and Deploys Forces to Tiny but Strategic Arctic Island,” Foxtrot Alpha blog, 22 October 2014, <http://foxtrotalpha.jalopnik.com>

⁵⁶⁶ 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>

⁵⁶⁷ Humpert, Malte, “Two new Arctic emergency centres open along the Northern Sea Route,” high North News, 30 January 2017, <http://www.highnorthnews.com>

⁵⁶⁸ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁵⁶⁹ “Meeting with the leadership of the Ministry of Defense and defense enterprises”, President of Russia, 20 November, 2018, <http://www.kremlin.ru>

⁵⁷⁰ Nilsen, Thomas, “Satellite images show expansion of nuclear weapons sites on Kola”, The Barents Observer, 8 May, 2017, <http://barentsobserver.com>

⁵⁷¹ Staalesen, Atle, “Airships for Russian Arctic patrol,” The Barents Observer, 12 March 2014, <http://barentsobserver.com>

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.⁵⁷²

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.⁵⁷³

Russia is currently testing a new unmanned helicopter that "can perform both reconnaissance and combat functions for use by the Russian army... The new machine is built on a co-axial scheme and has a take-off weight of up to 500 kg (1,102 pounds). It is equipped with a diesel engine." According to the head of Russian Helicopters, "The new helicopter can be useful for ice exploration of the Northern Sea Route and other similar routes that pass through the Arctic region. We see a great demand for it already, so we hope that a [civilian] series production of the new model will be started during the next 1 to 1.5 years."⁵⁷⁴

In 2018, the Russian Airforce received 100 new aircrafts including, "Su-35S and Su-30SM fighters, Su-34 bombers, Ka-52 attack helicopters, Mi-8 transport helicopters, Yak-130 training aircraft and other types", and should receive 100 more in 2019. "The steady acquisition of new warplanes and helicopters has helped the air force to boost to nearly two-thirds the proportion of its roughly 3,600 aircraft that it considers 'modern'."⁵⁷⁵

Northern Fleet Aircraft⁵⁷⁶

Su-33 Fighter (18)



Photo Credit: Su-33 Fighter,

http://commons.wikimedia.org/wiki/File:Russian_Navy_Sukhoi_Su-33.jpg

⁵⁷² 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>

⁵⁷³ Staalesen, Atle, "First Northern Fleet drones taking off," The Barents Observer, 4 April 2014, <http://barentsobserver.com>

⁵⁷⁴ Gerden, Eugene, "Russia is Testing a Powerful New Unmanned Helicopter," Rotor & Wing International, 15 March 2018, <http://www.rotorandwing.com>

⁵⁷⁵ Axe, David, "Russia's Air Force Is Getting Lots of New Aircraft (Just Not a Lot of Su-57s or Stealth)", The National Interest, 6 January 2019, <https://nationalinterest.org>

⁵⁷⁶ "The Military Balance 2012," IISS, 7 March 2012, <https://www.iiss.org>

Su-30SM (2)

“Compared with its predecessors, the Su-30SM has a far bigger flight range.”⁵⁷⁷



Photocredit: Su-30SM

<http://www.airforce-technology.com/projects/su-30sm-multirole-fighter-aircraft/>

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

Su-57 fifth-generation fighters

- Russian President Vladimir Putin announced that by 2028 the Russian Defense Ministry plans to procure 76 Su-57 fifth-generation fighters⁵⁷⁸

Tu-142 Anti-Submarine Warfare (13)



Photo Credit: Sergey Krivchikov, *Tu-142 Anti-Submarine Warfare*,

<http://www.airliners.net/photo/India---Navy/Tupolev-Tu-142/1184007/L/>

- Long range surveillance aircraft derived from strategic bomber Tu-95⁵⁷⁹

⁵⁷⁷ Staalesen, Atle, “New fighter jets for Northern Fleet,” The Barents Observer, 3 January 2017, <http://barentsobserver.com>

⁵⁷⁸ Episkopos, Mark, “Here Is Russia’s Plan to Build a Fleet of Su-57 Stealth Fighters”, 18 May 2019, <https://nationalinterest.org>

⁵⁷⁹ Staalesen, Atle, “Air Force ready to land in new Arctic bases”, The Barents Observer, 2 January 2019, <https://thebarentsobserver.com>

- “It is expected that the Navy pilots of the Northern Fleet in 2018 will significantly expand the geography of the Arctic flights.”⁵⁸⁰
 - “In the course of 2017, more than 70 air patrols with aircrafts Tu-142 and Il-38 were conducted over Arctic waters, [the press services of the Northern Fleet informs](#).”⁵⁸¹
 - In 2018, “pilots and crews of anti-submarine aircrafts Tu-142 and Il-38, as well as reconnaissance and attack aircraft Su-24MR, conducted more than 100 patrols over the Arctic Ocean”⁵⁸²

Tu-160M2 Blackjacks 2023



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

- “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.”⁵⁸³
- “Serial production of the Tu-160M2 is to be implemented starting from 2023,” said Russian deputy defence minister Yury Borisov in July of 2015.⁵⁸⁴
- Update November 2017: “We plan that the aircraft will be built already in 2019. Serial deliveries should begin in 2023 while we plan to carry out the first flight of the Tu-160M2, which has been rolled out of the workshop today, in February next year,” said Deputy Prime Minister Dmitry Rogozin reported to President Vladimir Putin.⁵⁸⁵

Il-38 Maritime Patrol (14)

- Maritime patrol aircraft and anti-submarine warfare aircraft⁵⁸⁶

⁵⁸⁰ Staalesen, Atle, “Russian Navy announces it will significantly expand Arctic air patrols,” *The Independent Barents Observer*, 2 January 2017, <https://thebarentsobserver.com>

⁵⁸¹ Staalesen, Atle, “Russian Navy announces it will significantly expand Arctic air patrols,” *The Independent Barents Observer*, 2 January 2017, <https://thebarentsobserver.com>

⁵⁸² Staalesen, Atle, “Air Force ready to land in new Arctic bases”, *The Barents Observer*, 2 January 2019, <https://thebarentsobserver.com>

⁵⁸³ “Tupolev TU-160 Blackjack,” *Military-Today.com*, <http://www.military-today.com>

⁵⁸⁴ 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>

⁵⁸⁵ “Russia’s upgraded Tu-160 strategic bomber to make debut flight in February 2018,” *TASS*, 16 November 2017, <http://tass.com>

⁵⁸⁶ Staalese, Atle, “Air Force ready to land in new Arctic bases”, *The Barents Observer*, 2 January, 2019, <https://thebarentsobserver.com>

Il-20 Electronic Warfare and Electronic Intelligence

Il-112V Light Military and Transport plane⁵⁸⁷



Photo Credit: Marina Lystseva, TASS, Mock-up of the Il-112V
<http://tass.com/defense/948235>

- “Russia will begin the trials of its new Ilyushin Il-112V military transport plane at the end of this year...”
- “The plane is expected to be rolled out in two modifications: for civil aviation (the Il-112T) and military transport aviation (the Il-112V). It was reported earlier that the Russian Defense Ministry wanted to order 62 such planes.”
- The first batch of 35 units is undergoing final testing. The Il-112B also boasts a new “President-S” onboard missile defense system from Radio-Electronic Technologies (KRET), a Rostec subsidiary”⁵⁸⁸

Tu-134 Transport



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

⁵⁸⁷ “Russia to begin trials of new military transport plane in late 2017,” TASS, 29 May 2017, <http://tass.com>

⁵⁸⁸ Episkopos, Mark, Forget Stealth Fighters: Russia's Military Modernization Gets Down to the Basics, The National Interest, 15 December 2018, <https://nationalinterest.org>

Ka-27 Anti-Submarine Warfare Helicopters



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

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



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

- 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.⁵⁸⁹
- “Compared to the basic version of the MI-8 helicopter, the Arctic model has better thermal isolation, and is equipped with cutting-edge navigation and radio equipment (including an inertial navigation system that does not rely on a satellite signal), and engine and transmission heating systems for starting helicopter engines in temperatures below -40C .”⁵⁹⁰
- The Russian military will reportedly receive 5 more in 2017, which are custom-made for Arctic conditions.⁵⁹¹ As of July 2017, 2 of 5 were already received.
- “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.”⁵⁹²

*Mil Mi-38 rotorcraft*⁵⁹³

- Russian military is launching new Mil Mi-38 helicopters, the first (an Mi-38T) made her maiden flight on November 23, 2018 as part of a preliminary testing program.⁵⁹⁴
- “They will have an explosion-proof fuel system, extra fuel tanks for longer range, special communications systems, and maritime SAR equipment.”

⁵⁸⁹ Stevenson, Beth, “Russian military accepts Arctic Mi-8”<https://www.flightglobal.com/news/articles/russian-military-accepts-arctic-mi-8-rotorcraft-419559/>

⁵⁹⁰ “Russian Defense Ministry gets two helicopters designed for the Arctic,” The Arctic, 7 July 2017, <http://arctic.ru>

⁵⁹¹ Ziezulewicz, Geoff, “Russia getting helicopters for Arctic operations,” 25 May 2016, United Press International, <http://www.upi.com>

⁵⁹² Ziezulewicz, Geoff, “Russia getting helicopters for Arctic operations,” United Press International, 25 May 2016, <http://www.upi.com>

⁵⁹³ “Russian military becomes launch customer for Mi-38,” Russian Aviation Insider, 26 August 2017, <http://www.rusaviainsider.com/russian-military-becomes-launch-customer-mi-38/>

⁵⁹⁴ “Russia’s newest military transport helicopter makes maiden flight”, Global Times, 24 November, 2018, <http://www.globaltimes.cn>

Tu-142 and Il-38 maritime Reconnaissance Aircraft resumed regular missions near or over the Arctic in 2007⁵⁹⁵

- Long-range Tu-22 bombers resumed patrols beyond Russia in 2007⁵⁹⁶, currently 100-120 in service in Northern Fleet.⁵⁹⁷
- 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 Island⁵⁹⁸
 - These plans were later modified – earlier plans to base MiG-31 aircraft in Novaya Zemlya were reversed in February 2013.⁵⁹⁹
- A squadron of MiG-31 long-range fighter interceptors are to be stationed on the Novaya Zemlya archipelago in the Arctic.⁶⁰⁰

Forward S-400 Triumph anti-aircraft weapon system

- 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 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."⁶⁰¹
- Early in 2014 an air defense unit based in the Kola Peninsula was equipped with S-400 missile systems.⁶⁰²
 - Russian Armed Forces inform that, in 2017, another unit equipped with the S-400 will become operational on the Kola Peninsula.⁶⁰³
- Two S-400 anti-aircraft missile systems have been moved towards the Finnish border "to replace the older S-300 rockets".⁶⁰⁴

Forward Deployment of MiG-31 Interceptors



Photo Credit: Dmitry Pichugin Russian Air Force MiG-31 BM,

<http://www.airliners.net/photo/Russia---Air/Mikoyan-Gurevich-MiG-31BM/2126525/L/>

- 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."⁶⁰⁵

⁵⁹⁵ Wezeman, Siemon, T., "Military Capabilities in the Arctic," SIPRI Background Paper, March 2012, p. 9.

⁵⁹⁶ 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>

⁵⁹⁷ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁵⁹⁸ "Russia to Reopen Arctic Airbases," RIANOVOST, 30 May 2012. http://en.rian.ru/military_news/20120530/173757083.html

⁵⁹⁹ Pettersen, Trude, "Russia drops Arctic air force plans," The Barents Observer, 4 February 2013, <http://barentsobserver.com>

⁶⁰⁰ Kislyakov, Andrei, "Russia deploys Arctic troops," RBTH, 2 November 2012, <http://rbth.ru>

⁶⁰¹ "Russia deployed two S-400 air defence missile regiments in Arctic in 2015 – General Staff," TASS, 8 December 2015, <http://tass.ru>

⁶⁰² "Russia to deploy regiment of S-400 launchers on Novaya Zemlya 2015," TASS, 30 December 2014, <http://tass.ru>

⁶⁰³ Staalesen, Atle, "Missile complex S-400 on guard in Kola Peninsula," The Barents Observer, 11 January 2017, <http://barentsobserver.com>

⁶⁰⁴ "Russia moves missiles to Finnish border," RCINet, 23 September 2016, <http://www.rcinet.ca/>

⁶⁰⁵ Ballaban, Michael, "Russia is Deploying Its Fastest Interceptors To The Arctic Full-Time," Foxtrot Alpha blog, 16 October 2014, <http://foxtrotalpha.jalopnik.com/>

- Regular patrols of MiG-31BM: Two squadrons of MiG-31BM will conduct regular patrols from the Northern and Pacific Fleets. "From Russia's European Arctic region, the patrols will be carried out by the 98th Guards Reconnaissance Aviation Regiment at the air base in Monchegorsk on the Kola Peninsula."⁶⁰⁶

Complex Arctic monitoring and control system by 2025⁶⁰⁷

- 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."⁶⁰⁸
 - Russia will complete its Arctic radar coverage by "deploying state-of-the-art Konteiner and Podsolnukh over-the-horizon radars. These systems will establish a radar field 900 miles to 1,200 miles deep beyond the country's borders, providing protection against surprise aerial and sea-surface attacks."⁶⁰⁹
- "...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."⁶¹⁰
- "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."⁶¹¹ VRT-300 system (rotorcraft UAVs)⁶¹² Russian Helicopters (part of Rostech Corp.) is prototyping helicopter drones for the purpose of Russian ice observation and operation in the Arctic.
- Designed in two versions:
 - Arctic Supervision has side-looking radar and is designed for the purpose of developing the Northwest Passage's transport system
 - Opticvision is capable of increased flying range is designed to improve "diagnostic assessment, prevention, and liquidation of emergency situations in exploration and transportation of energy sources".

ZALA

- The ZALA Arctic unmanned aerial vehicle adapted for Arctic use was presented at the 8th international forum, "The Arctic: the Present and the Future" on December 6, 2018.
- "The ZALA 421-08M and ZALA 421-16E systems are suited for their operation at considerable freezing temperatures, which makes it possible to carry out numerous surveillance operations and regularly monitor the ice situation."
- "ZALA drones are equipped with the AIS system capable of detecting and identifying vessels at a distance of up to 100 km, which exceeds the operational range of ground-based equipment by several times."
- "The drone has its own GIRSAM alternative navigation system developed specially for the navigation of both unmanned aerial vehicles and the ground-and water-based users amid the suppression or the absence of GPS or GLONASS signals."⁶¹³

⁶⁰⁶ Nilsen, Thomas, "Russia resumes North Pole patrols with fighter jets", The Barents Observer, 2 February, 2019, <http://barentsobserver.com>

⁶⁰⁷ "Drones and satellites: Russia to create Arctic complex monitoring system by 2025," RT News, 7 August 2015, <https://www.rt.com>

⁶⁰⁸ "Russian Defense Ministry to deploy Arctic radar in 2017," 27 June 2016, The Arctic, <http://arctic.ru/>

⁶⁰⁹ Sevryugin, Sergei, "Russia strengthens its radar defenses in the arctic," Russia Beyond the Headlines, 10 February, 2017, <http://rbth.com>

⁶¹⁰ "Russian Defense Ministry to deploy Arctic radar in 2017," 27 June 2016, The Arctic, <http://arctic.ru/>

⁶¹¹ "All Seeing Eye: Russia Builds Gigantic Military Radar in Arctic," Sputnik News, 29 October 2016, <https://sputniknews.com>

⁶¹² Zhukovsky, "New Russian helicopter drone for Arctic exploration unveiled at MAKS airshow," TASS, 18 July 2017, <http://tass.com>

⁶¹³ "Russian gunmaker Kalashnikov unveils new drone for Arctic operation", TASS: Russian News Agency, 6 December, 2018, <http://tass.com>

MiG-35 4++

- Russia is expected to receive four MiG-35 4++ generation multirole jet fighters in 2019. TASS news agency reports that two of the jets were manufactured and delivered in 2018.⁶¹⁴
- Although it is unclear if these jets are designed for Arctic use, it is reported that, “MiG-35 and its two-seater option MiG-35D are designed to destroy air, moving and stationary ground and surface targets in any *climate and weather* [emphasis added]”⁶¹⁵
- “Maximum altitude speed is 2100 km/h and 1400 km/h at the ground. Practical ceiling is 16000 meters. One-seater MiG-35 with air-to-air missiles and three suspended fuel tanks has a radius of 1000-1400 km depending on the arms and flight altitude”⁶¹⁶

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...”⁶¹⁷ 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.”⁶¹⁸
- 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.”⁶¹⁹

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.”⁶²⁰

Airfield Reconstruction

- By year 2018, Russia intends to have a total of nine operative Arctic airfields, some of which are under modernization, some under total reconstruction.⁶²¹

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 Tymoshenko⁶²²
- To supplement stations in Pechora and Olenegorsk⁶²³

The Frigate (UAV)⁶²⁴

- “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

⁶¹⁴ “Russian Aerospace Forces to get four MiG-35 4++ generation jet fighters this year”, TASS: Russian News Agency, 18 January, 2019, <http://tass.com>

⁶¹⁵ Ibid.

⁶¹⁶ Ibid.

⁶¹⁷ “Russia to deploy drone grouping in Arctic region by yearend,” TASS, 27 November 2014, <http://itar-tass.com>

⁶¹⁸ “Russia’s Arctic group to get Orlan-10 drones by year end,” TASS, 29 December 2014, <http://itar-tass.com>

⁶¹⁹ “New drone squadron protects Russian interest in the Arctic,” The Siberian Times, 23 November 2016, <http://siberiantimes.com>

⁶²⁰ “Heavy-duty” A look at Russia’s Arctic Forces’ Military Vehicles,” Sputnik News, 10 April 2016, <http://sputniknews.com/>

⁶²² “Russian missile warning system can detect mass launch of ballistic missiles,” Sputnik News, 15 August 2015, <http://sputniknews.com>

⁶²³ “Russia begins construction of Anti-Missile Radar in Arctic,” Sputnik News, 3 October 2015, <http://sputniknews.com>

⁶²⁴ “Flight model of Russia’s heavy duty transformer drone undergoes trials,” RT News, 16 May 2016, <https://www.rt.com>

Possible New Russian Tanks Stationed in Arctic

- Mass production of the T-14 Armata tank will begin in 2018.⁶²⁵ The battle tank is “equipped with a special blend of steel to extremely low temperatures” and is equipped with 44S-SV-SH armor.⁶²⁶ 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, there is reason to believe they will be deployed there.
- By the end of 2019, Russian military will receive 12 T-14 main battle tanks and four T-16 armoured recovery vehicles. A statement from the Ministry of Defense claims, “The T-14 tank, which has been created on the universal Armata platform and developed for the Ground Forces, is completing the manufacturer’s trials. The fighting vehicle in 2019 will start undergoing state trials in the Russian Defense Ministry’s scientific and research institutions.”⁶²⁷
- Russia’s 2017 May 9 Victoria Day parade will showcase Arctic modifications to the T-72B3M tank.⁶²⁸

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.”⁶²⁹

Arctic KAMAZ-5350 Trucks

- “Russia’s Defense Ministry will get the first 30 KAMAZ trucks for the Arctic in 2018...” which have been adapted for extreme cold climates.⁶³⁰

DT-3PM off-roaders

- “Designed for Arctic operations, the DT-3PM two-section tracked armored transporter launched state trials on December 1 2017, an insider told Mil.Today.”⁶³¹
- “DT-3PM was designed for transportation of personnel, weapons and military hardware, towage of artillery systems and army trailers in extremely severe climatic conditions like virgin snows, tundra, woods, swamps, and mountains.”⁶³²
- Will likely be certified by the end of 2018⁶³³

Aleut GAZ-3344 amphibious articulated all-terrain vehicles⁶³⁴

- “Features high cross-country capability, low average ground pressure, and high power-to-weight ratio.”
- Used by a motor rifle brigade of the Northern Fleet

Chaborz M-3 Combat Buggy



Photo credit: Screenshot from video by Kadyrov_95

- “Little is known about the buggy which reportedly was developed by the Chechnya-based University of Spetsnaz on request of regional leader Ramzan Kadyrov.”⁶³⁵

⁶²⁵ “Russia to start churning out Armata tanks in 2018,” Sputnik News, 7 February 2017, <http://sputniknews.com>

⁶²⁶ Denis Kungurov (14 November 2014), “Secret new Russian tank could be deployed to Arctic zones,” Russia Beyond the Headlines, <http://rbth.com/>

⁶²⁷ Gady, Franz-Stefan, “Russia’s Military to Receive 12 T-14 ‘Armata’ Battle Tanks in 2019”, The Dipolmat, 14 February 2019, <https://thediplotmat.com>

⁶²⁸ “Russia rules out arms race in the Arctic but stands firm on its interests,” Sputnik News, 9 April 2017, <http://sputniknews.com>

⁶²⁹ 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>

⁶³⁰ “Russian Defense Ministry to get first 30 Arctic KAMAZ trucks in 2018,” The Arctic, 24 August 2017, <http://arctic.ru>

⁶³¹ “Arctic tractor with new engine kicked off state trials.” Mil.Today , 12 December 2017, <http://mil.today>

⁶³² “Arctic tractor with new engine kicked off state trials.” Mil.Today , 12 December 2017, <http://mil.today>

⁶³³ “Second Arctic Rover to Complete Trials by Yearend,” Military Today, 20 April 2018, <http://mil.today>

⁶³⁴ “Russian military beefs up all-terrain capabilities,” Army Recognition, 18 March 2018, <http://www.armyrecognition.com/>

⁶³⁵ Staalesen, Atle, “Chechens developed combat vehicle for Arctic operations”, The Barents Observer, 11 May, 2018, <http://barentsobserver.com>

4902PS-10 Ruslan two-link tracked ATV carrier



Photo credit: Army Recognition,

https://armyrecognition.com/weapons_defence_industry_military_technology_uk/new_ttm-4902ps-10_all-terrain_vehicle_tested_during_amphibious_operation_by_russian_navy_troops_12408152.html

- “Russian-made two-section tracked amphibious all-terrain vehicle developed and manufactured by the Company CJSC «Transport». It was designed for the transportation of cargo, repair teams and equipment (up to 4000 kg) in off-road conditions. The first section is a power module (load-carrying capacity 500 kg). It is able to carry 6 people and has 2 full beds. The second section is a passenger module (16 people, 6 beds)... The vehicle was tested in harsh conditions in the Murmansk Region north of the Arctic Circle before entering into service, is able to operate in temperatures ranging from -50°C (-58°F) to 50°C (122°F).”⁶³⁶

Trekol ATV

- Amphibious scouting⁶³⁷

Arctic version of the BAZ-69092 heavy high-mobility military vehicle⁶³⁸

- “The arctic option considerably differs from previous Voshchina-1 chassis. It has upgraded life-support systems, chassis and hull constructions for successful operations in the Extreme North and the Arctic.” It is built to work in eternal frost conditions.
- Testing of the vehicle will begin mid-2018 in Yakutia.

T-80BVM Tanks

- Tanks are equipped with “a 125 mm smoothbore gun with a range of up to 3,000 meters. Secondary armament consists of a coaxial 7,62 mm machine gun and roof-mounted 12,7 mm machine gun”
- Upgrade of T-80BVM battle tank, publically revealed in 2017
- More than 20 new tanks will be delivered in 2019 to the Kola Peninsula.⁶³⁹
- Operated by the Arctic Brigade⁶⁴⁰

BTR-82A

- Wheeled armour vehicle. Equipped with “one 2A72 30mm cannon coupled with a 7.62 mm machine gun. The turret is fully stabilized on the two axes and fitted with new sights. The BTR-82 can fire on the move in day and night operations.”⁶⁴¹
- Operated by the Arctic Brigade⁶⁴²

⁶³⁶ “New TTM-4902PS-10 all-terrain vehicle tested during amphibious operation by Russian navy troops 12408152”, Army Recognition, 24 August, 2015, <http://www.armyrecognition.com/>

⁶³⁷ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁶³⁸ “Arctic prototype of the BAZ-69092 soon to be tested in Russia,” Army Recognition, 12 April 2018, <http://www.armyrecognition.com/>

⁶³⁹ Staalesen, Atle, “New more powerful tank rolls into Northern Fleet garrisons”, The Barents Observer, 8 February 2019, <http://barentsobserver.com>

⁶⁴⁰ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁶⁴¹ “BTR-82A BTR-82AM Armoured infantry fighting vehicle”, Army Recognition, 8 December, 2018, <https://www.armyrecognition.com>

⁶⁴² Ibid.

RM Vector 551i Snowmobiles

- “The Russkaya Mekhanika (Russian Mechanics, RM) Company started producing in the Yaroslavl Region new-generation RM Vector 551i snowmobiles, equipped for working in conditions of the Arctic and Far North... The Industry Development Fund has offered a soft loan of 24.5 million rubles (\$375 thousand) for equipment and another 10.5 million rubles (\$161 thousand)...The new snowmobile can transport people and cargo in cross-country conditions, crossing deep snow, hills, pits in air temperatures from minus 40 to plus 5 degrees,” the Industry Development Fund’s press service told reporters. “Its maximum speed is 105 km/h.”⁶⁴³

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.”⁶⁴⁴

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.”⁶⁴⁵

Two-thirds of Russia’s nuclear strike capabilities are based with the Northern Fleet.⁶⁴⁶

The Burevestnik (“Storm Petrel”)

- Russia’s nuclear-powered cruise missile under development.
- “The missile is known to the U.S. intelligence community as the KY30, or the SSC-X-9 ‘Skyfall.’”
- March 2018: President Putin announced the existence of the weapon. Described as having, “unlimited range and unlimited ability to maneuver.”
- “With 13 test flights and only two partially successful ones, the nuclear-powered cruise missile is still in what will likely be a long developmental period”⁶⁴⁷

Naval vessels assigned to the Northern Fleet

The Northern Fleet holds 42 of Russia’s 72 submarines, including 7 of its 12 ballistic missile submarines (SSBNs), 4 of its 9 cruise missile submarines (SSGN), and 38 major surface combatants, including Russia’s largest aircraft carrier, the Kuznetsov and the large cruiser Pyotor Veliki.⁶⁴⁸

Submarines

“Most submarine units of the Northern Fleet are based in Gadzhiyev, on Yagelnaya Bay on the Kola Peninsula. The order of battle of the Northern Fleet comprises 41 submarines, and will follow the modernization and procurement cycles of nuclear-powered ballistic-missile submarines (SSBNs), nuclear-powered guided-missile submarines (SSGNs) and nuclear-powered attack submarines (SSNs) under the state armament programme for 2027. Legacy diesel-electric submarines will be modernized. In terms of operations, the fleet of more than 30 nuclear-powered submarines can nevertheless deploy only some seven to eight units at sea, making it relatively fragile.”⁶⁴⁹

⁶⁴³“New snowmobiles for Arctic to be made in Yaroslavl Region”, TASS Russian News Agency, <http://tass.com>

⁶⁴⁴ Staalesen, Atle, “Russian military builds four more Arctic bases,” The Barents Observer, 23 October 2015, <http://www.thebarentsobserver.com>

⁶⁴⁵ “Russian Naval Presence in the Arctic, World Ocean goes up to 100 ships – commander,” TASS, 21 April 2016, <http://tass.ru>

⁶⁴⁶ Åtland (2018), The Building up of Russia’s Military Potential in the Arctic Region.

⁶⁴⁷ Mizokami, Kyle, “Russia Conducts a New Test of its Nuclear-Powered Cruise Missile”, Popular Mechanics, 6 February 2019, <https://www.popularmechanics.com>

⁶⁴⁸ “Many of these vessels are not based in the Northern Fleet for Arctic strategic/security purposes, but rather relate to Russia’s engagements more broadly, e.g. its SSBNs.” <https://www.state.gov/documents/organization/262585.pdf>

⁶⁴⁹ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

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.⁶⁵⁰

SSBN (intercontinental nuclear-powered and nuclear-armed ballistic missiles)

In total, Russia operates 12 SSBN submarines, 3 of these are the new Borei ballistic missile submarines (see below), 6 are the Delta VI submarines (each with the capacity for 16 missiles carrying 4 warheads, plus 4 tubes each for heavy-weight torpedoes), the remaining 3 are the Delta III submarines (each with the capacity for 16 missiles carrying 3 warheads, plus 4 tubes each for heavy-weight torpedoes and 2 tubes for light-weight torpedoes). Although not all submarines are constantly on patrol, and those on patrol are not all armed to their full capacity, in theory the fleets ballistic missiles have the capacity to launch 768 warheads. "The US Congressional Research Service estimates that Russia currently has about 640 sea-launched warheads available for deployment." At least 7 of these 12 are assumed to be part of the northern fleet location on the Kola Peninsula.⁶⁵¹

- Developments:
 - More active since 2009 (when one broke up through ice and launched a ballistic missile)⁶⁵²
 - Some SSBNs are being modernized, while major new construction is underway
 - New vessels:
 - According to the Military Balance 2018, there are 3 Borei-class submarines— the Yuri Dolgoruky, the Vladimir Monomakh and Knyaz Vladimir — in service with the Northern Fleet. One entered the Northern Fleet in January 2013, and the second entered in December 2013.⁶⁵³ Both operate out of the Northern Fleet's main nuclear submarine base in Gadzhiyev.⁶⁵⁴
 - Each Borei SSBN can carry "16 Bulava sea-launched ballistic missiles (SLBM), each armed with up to six nuclear warheads, and each Borei has six tubes for launching heavy weight torpedoes"⁶⁵⁵
 - "Starting 2020, the Borei-class submarines will be the main naval component in the Russian nuclear strategic deterrence forces,"⁶⁵⁶ and will replace the aging Typhoon, Delta-3 and Delta-4 class boats.⁶⁵⁷ It is expected that by the mid-2020's, there will be a total of 8 of the Borei class submarine based on the Russian SSDBN modernization program. This class of submarine can carry more warheads than the current fleet, making these vessels a greater target. Therefore, it is expected that the Kremlin will order another 4 vessels to have 6 submarines in the Arctic, and 6 in the Pacific.⁶⁵⁸
 - The Akula-class SSBN Dmitri Donskoy (Project 941UM, NATO: Typhoon) "was recently modernized to conduct tests for Bulava missiles. The three legacy Antey-class (Project 949A, NATO: Oscar 2- class) and the six Shchuka-B-class (Project 971, NATO: Akula III) SSGNs are also undergoing MRO to equip them with Kalibr and Oniks systems."⁶⁵⁹

SLBM

- Plans to introduce new new R-29RMU Sineva (NATO: SS-N-23 Skiff) submarine-launched ballistic missiles⁶⁶⁰

⁶⁵⁰ De Larrinaga, Nicholas, "Russian submarine activity topping Cold War level," 2 February 2016, IHS Jane's Deference Weekly, <http://www.janes.com>

⁶⁵¹ Regehr, Ernie, "Nuclear Submarines in the Arctic: Limiting Strategic Anti-Submarine Warfare", 4 December, 2018, The Simons Foundation, <http://www.thesimonsfoundation.ca>

⁶⁵² 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>

⁶⁵³ "Russian nuclear submarines hold underwater torpedo 'duel' in Arctic," Sputnik News, 12 March 2017, <https://sputniknews.com>

⁶⁵⁴ Pettersen, Trude, "Two new nuclear-powered submarines to Northern Fleet, The Barents Observer, 3 January 2013, <http://barentsobserver.com>

⁶⁵⁵ Regehr, Ernie, "Nuclear Submarines in the Arctic: Limiting Strategic Anti-Submarine Warfare", 4 December, 2018, The Simons Foundation, <http://www.thesimonsfoundation.ca>

⁶⁵⁶ "Borei-class submarines: Principal component of Russia's nuclear triad," Sputnik News, 15 December 2016, <https://sputniknews.com>

⁶⁵⁷ Pettersen, Trude, "Two new nuclear-powered submarines to Northern Fleet, The Barents Observer, 3 January 2013, <http://barentsobserver.com>

⁶⁵⁸ Regehr, Ernie, "Nuclear Submarines in the Arctic: Limiting Strategic Anti-Submarine Warfare", 4 December, 2018, The Simons Foundation, <http://www.thesimonsfoundation.ca>

⁶⁵⁹ Chatham House. (2019). "Russia's Military Posture in the Arctic Managing Hard Power in a 'Low Tension' Environment", London, United Kingdom: Boulègue, Mathieu

⁶⁶⁰ Ibid.

- Third generation missile system that launched in 2007. Can carry four – ten nuclear warheads 68000km⁶⁶¹

SSN (nuclear powered attack subs, not nuclear armed)



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

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

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

SSGN (cruise missile attack submarines)

- Yasen-class multipurpose SSGN serves as an attack submarine with guided-missile systems.
- Developments:
 - 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 submarines⁶⁶²
 - In December 2012 the first of its new Yasen Class cruise missile SSN's undertook a new round of sea trials⁶⁶³
 - Can potentially carry nuclear armed missiles
 - Will likely be one of the vessels equipped with the new Futlyar torpedo Russia is testing⁶⁶⁴
 - Sea trials to date have disclosed extensive flaws in a ship experiencing missed deadlines and cost over-runs⁶⁶⁵

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.

Nuclear-powered research submarine

- "Russian Navy to commission Project 09852 KS-139 Belgorod special mission submarine in 2018"⁶⁶⁶
- "Can be used for both military and civilian purposes along the Arctic shelf"⁶⁶⁷

⁶⁶¹ Zhukov, R. (2015), 'Ballisticheskaya raketa "Sineva": kharakteristiki, opisaniye' [Ballistic missile 'Sinev': characteristics, description], FB, 10 December 2015, <http://fb.ru/article/219005/ballisticheskaya-raketa-sineva-harakteristiki-opisanie> (accessed 16 May 2019).

⁶⁶² Bodner, Matthew, Eremenko Alexey, "Russia Starts Building Military Bases in the Arctic," The Moscow Times, 8 September 2014, <http://www.themoscowtimes.com/>

⁶⁶³ 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>

⁶⁶⁴ Staalesen, Atle, "Navy takes on new torpedo," 30 June, 2016, The Barents Observer, <http://thebarentsobserver.com/>

⁶⁶⁵ Digges, Charles, "Shaky Severodvinsk nuclear sub sets to sea for trials – again," The Bellona Foundation, 5 November 2012, <http://www.bellona.org>

⁶⁶⁶ "Project 09852 Belgorod," Naval Forces News, 27 April 2017, <http://www.navyrecognition.com>

⁶⁶⁷ Nilsen, Thomas, "Now, Russia builds a submarine even bigger than the Typhoon," The Barents Observer, 3 May 2017, <https://thebarentsobserver.com>

- “The “Belgorod” (KS-139) is believed to have four to six tubes aimed for the Poseidon nuclear-powered, nuclear armed underwater drone”⁶⁶⁸
- “The extra space in the prolonged hull has room to carry equipment for deep-sea operations, like small-sized nuclear-reactors aimed to provide power to secret military installations on the Arctic Sea bed.”⁶⁶⁹

Strategic nuclear warheads based in the Arctic (192)



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

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.⁶⁷⁰
- 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.”⁶⁷¹
- “*Podmoskovye*” will probably be used as carrier for the “*Losharik*” deep diving titanium submarine.⁶⁷²

“Russia resumed 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.”⁶⁷³ 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.”⁶⁷⁴ The first November 2015 launch was not successful as one of the missiles was reported to have malfunctioned.⁶⁷⁵

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.⁶⁷⁶ For more information see ‘Forward Military Base – Alakurtti Village’.

⁶⁶⁸ Nilsen, Thomas, “Here comes a nuclear submarine longer than the world has ever seen”, The Barents Observer, 23 April, 2019, <https://thebarentsobserver.com>

⁶⁶⁹ Ibid.

⁶⁷⁰ “Russian strategic nuclear forces: Current Status”, RussianForces.org, last modified March 2012, <http://russianforces.org/navy/>

⁶⁷¹ Pettersen, Trude, “Russian nuclear submarine launched after modernization,” The Barents Observer, 13 August 2015, <http://barentsobserver.com>

⁶⁷² Pettersen, Trude, “Russian nuclear submarine launched after modernization,” The Barents Observer, 13 August 2015, <http://barentsobserver.com>

⁶⁷³ Pettersen, Trude, “Russia to resume Bulava tests,” The Barents Observer, 15 April 2014, <http://barentsobserver.com>

⁶⁷⁴ “Vladimir Monomakh begins transfer to the Pacific,” Russian Strategic Nuclear Forces, last modified 16 August 2016, <http://russianforces.org>

⁶⁷⁵ “Salvo Bulava launch from Vladimir Monomakh - second attempt expected in June,” Russianforces.org, 11 March 2016, <http://russianforces.org>

⁶⁷⁶ Staalesen, Atle, “Moving 3000 intelligence officers to Finnish border,” The Barents Observer, 14 March 2014, <http://barentsobserver.com>

Project 23120 – Elbrus class⁶⁷⁷

- Lead vessel in this class joined the Northern Fleet in April 2018.
 - “From now on, the ship is listed in the group of support vessels of the united strategic command of the Northern Fleet,” said Captain First Class Vadim Serga
- Combines rescue tug and transport ship capabilities

Underwater Drones

Poseidon (formerly known as Status-6)

- “The drone is powered by a mini-sized nuclear-reactor giving it nearly unlimited range and a speed said to be 200 km/h. It has previously been reported that the drone can dive and move at a depth deeper than one kilometers (in comparison, most submarines can dive to a maximum of 400 to 600 meters.)”⁶⁷⁸
- March 2018: Russian President Vladimir Putin confirmed that the nuclear-powered drone could travel, “extreme depths, intercontinentally, at a speed multiple times faster than the speed of submarines, cutting-edge torpedoes and all kinds of surface vessels, including some of the fastest”.⁶⁷⁹
- The torpedo was tested in July 2018, and is designed to “carry a several megatons nuclear warhead, by weapons analysts described as a “doomsday nuke”. If detonated outside the east coast of the United States, it could create a several tens of metres high tsunami wave additional to the nuclear blast itself.”⁶⁸⁰
- News agency TASS reports, “It is assumed that the Poseidon carrier will have two submarines each. They will be part of the Northern and Pacific fleets. Each will carry a maximum of eight UAVs, that is, the total number of Poseidons on alert can reach 32 units” Source: The Navy plans to put up to 32 Poseidon vehicles on combat duty.”⁶⁸¹

*Klavesin-2R-PM*⁶⁸²



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

- 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.”

Surface Ships

The [Source] reports that the Northern Fleet is officially comprised of 27 surface vessels. Ten of the 13 larger ships are operational.⁶⁸³

⁶⁷⁷ “Elbrus logistics support ship joins Russia’s Northern Fleet,” The Arctic, 10 April 2018, <https://arctic.ru>

⁶⁷⁸ Nilsen, Thomas, “Russia to deploy 16 nuclear-powered doomsday drones on combat duty from Barents Sea”, 14 January, 2019, <http://barentsobserver.com>

⁶⁷⁹ Nilsen, Thomas, “Moscow confirms test trials of nuclear-powered doomsday torpedo”, The Barents Observer, 22 July, 2018, <http://barentsobserver.com>

⁶⁸⁰ Ibid.

⁶⁸¹ “Source: The Navy plans to put up to 32 Poseidon vehicles on combat duty”, TASS, 12 January, 2019

⁶⁸² Nilson, Thomas, “This is Russia’s new unique underwater drone for Arctic waters,” The Barents Observer, 12 July 2016, <http://thebarentsobserver.com>

⁶⁸³ Russianships.info (2019), ‘Russian Navy 2019: List of Active Russian Navy Ships and Submarines’, <http://russianships.info/eng/today/> (accessed 31 May 2019).

Aircraft Carriers

- Russia's Navy currently only has one aircraft carrier, *Admiral Kuznetsov*, which is part of the Northern Fleet⁶⁸⁴
 - Plans for the building of a new vessel to replace the Kuznetsov have formed. However, the contract to build the Shtorm (heavy aircraft carrier) is on hold and likely won't be signed until 2025.⁶⁸⁵
 - In October 2018, the Kuznetsov was seriously damaged when the PD-50 dry-dock sank while Kuznetsov was aboard for repairs. It is possible that the Kremlin might decommission the Kuznetsov rather than repair it.⁶⁸⁶
- There are plans for seven of this group, with three laid down as of 2019, most of which would be based in northern waters.⁶⁸⁷
 - These new carriers are to be smaller than Russia's current ship, a more versatile combat ship, say some reports, that could include drones.⁶⁸⁸
 - The frigates are armed with Kalibr-NK land-attack cruise missiles and P-800 Oniks anti-ship cruise missiles, making them effective assets for interdiction operations at sea.⁶⁸⁹
 - *Admiral Gorshkov*, the first ship of Project 22350, is one example of these new aircraft carriers. She weighs 500 tons and is 135 meters long⁶⁹⁰. Was put back in service in mid-2018.
 - "The Admiral Gorshkov was designed with universality in mind, with the "capability to combat surface ships and submarines with equal effectiveness, attack land-based targets with high-precision weapons, resist aircraft of the probable enemy, carry out reconnaissance by taking advantage of its low visibility characteristics, and much more."⁶⁹¹
 - Admiral-series vessels are expected to become the backbone of the navy's presence of the coming years, according to Sputnik News.⁶⁹²
 - The *Admiral Kasatanov*, is scheduled to enter service in autumn 2019.⁶⁹³

Amphibious Assault Ships



Photo Credit: BPS Dixmude,

http://commons.wikimedia.org/wiki/File:BPC_Dixmude.jpg

- 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 France⁶⁹⁴
- Designated Vladivostok Class by the Russians, each of the ships is to carry:
 - 30 helicopters
 - Anti-missile cannons
 - Anti-aircraft missiles

⁶⁸⁴ "Phasing NATO out of the Arctic: Russia arming up Northern Fleet with new weapons," Sputnik News, 1 June 2017, <https://sputniknews.com>

⁶⁸⁵ "Phasing NATO out of the Arctic: Russia arming up Northern Fleet with new weapons," Sputnik News, 1 June 2017, <https://sputniknews.com>

⁶⁸⁶ Axe, David, "Russia's Only Aircraft Carrier Might Be Headed for the Scrapper", The National Interest, 7 April, 2019, <https://nationalinterest.org>

⁶⁸⁷ 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>

⁶⁸⁸ Litovkin, Viktor, "Russian Navy plans further expansion," Russia and India Report, 14 January 2013, <http://indrus.in>

⁶⁸⁹ Chatham House. (2019). "Russia's Military Posture in the Arctic Managing Hard Power in a 'Low Tension' Environment", London, United Kingdom: Boulègue, Mathieu

⁶⁹⁰ Staalesen, Atle, "Rogozin: Aircraft carrier will be ready for long-distance mission," The Barents Observer, 10 March 2016, <http://www.thebarentsobserver.com>

⁶⁹¹ "How new Admiral-series super-frigates will help project Russian naval power," Sputnik News, 17 February 2018, <https://sputniknews.com/>

⁶⁹² "How new Admiral-series super-frigates will help project Russian naval power," Sputnik News, 17 February 2018, <https://sputniknews.com/>

⁶⁹³ Tass.ru (2018), 'Russian Navy to get cutting-edge frigate in 2019', 4 July 2018, <http://tass.com/defense/1011973>(accessed 15 May 2019).

⁶⁹⁴ "Russia postpones building 2 Mistral class amphibious assault ships locally," Defense Update Blog, 26 December 2012, <http://defenseupdates.blogspot.ca>

- Grenade launchers
- 450 marines⁶⁹⁵
- The two ships are expected to be delivered in October 2013 and October 2014.⁶⁹⁶
- 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."⁶⁹⁷

Kirov-Class Battlecruiser

Kirov Class (1144.2)⁶⁹⁸



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

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

Yuri Andropov (Now named Pyotr Velikiy)⁶⁹⁹



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

- 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 2019-2022⁷⁰⁰.
- The battle cruiser carries many options for underwater threats. These include:
 - 254mm and 305mm anti-submarine rocket launchers "that can send volleys of depth charges or anti-torpedo decoys into the water around the ship"
 - 10 553mm torpedo tubes which can fire RPK-6s⁷⁰¹

⁶⁹⁵ "The Vladivostok Class," The Strategy Page, 2 April 2013, <http://www.strategypage.com>

⁶⁹⁶ "Russia's first Mistral-class ship stern launched," RT.Com, 26 June 2013, <http://rt.com/news/mistral-ship-stern-russia-261/>

⁶⁹⁷ "Ukraine crisis: France halted warship delivery to Russia," BBC News, 3 September 2014, <http://www.bbc.com>

⁶⁹⁸ "Kirov Class (Tye 1144.2) (Peter the Great), Russia," NavalTechnology.com, no date listed, <http://www.naval-technology.com>

⁶⁹⁹ Kramer, Andrew, "Russia Preparing Patrols of Arctic Shipping Lanes," New York Times, 14 September 2013, <http://www.nytimes.com/>

⁷⁰⁰ Pettersen, Trude, "Battle cruiser "Pyotr Veliky" is back in the Barents Sea," Barents Observer, 18 May 2016, <http://www.thebarentsobserver.com>

⁷⁰¹ Trevithick, Joseph, "Russian Cruiser Fires Odd Torpedo Tube-Launched Anti-Sub Missile During Arctic Exercise", The Drive, 15 November, 2018, <http://www.thedrive.com>

Admiral Nakhimov



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

Currently undergoing repairs Sevsmash shipyard in Severodvinsk, but will join the Northern Fleet upon completion, anticipated in 2021.⁷⁰²

Admiral Grigorovich-class frigate



Photo Credit: United Shipbuilding Corporation,
<http://www.janes.com/article/58801/russian-navy-receives-first-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.⁷⁰³

⁷⁰² Chatham House. (2019). "Russia's Military Posture in the Arctic Managing Hard Power in a 'Low Tension' Environment", London, United Kingdom: Boulègue, Mathieu

⁷⁰³ De Larrinaga, Nicholas, "Russian Navy receives first Admiral Grigorovich-class frigate," IHS Jane's Defence Weekly, 16 March 2016, <http://www.janes.com>



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

- 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.

Project 22120 Purga-Class Patrol Ship⁷⁰⁵

- "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.

Marshal Ustinov (Slava-class destroyer) back in operation⁷⁰⁶

- Docked for upgrades from 2011- 2016 but declared ready for action again as of April 2017
- Part of the Northern Fleet and considered among the most powerful ships in the Russian Navy
- "It is heavily armed, with S-300F Fort systems (the sea-based variant of S-300s), 9K33 Osa-MA surface-to-air (SAM) systems and P-500 Bazalt cruise missiles, in addition to a 533-mm torpedo system and modernized radio-electronics." ⁷⁰⁷

Sovremenny-class destroyer

- One active - Admiral Ushakov of Project 956⁷⁰⁸

Lider-class destroyer (Project 23560)

- Construction of first began in 2018, and is scheduled for completion in 2025. "Eight vessels from this class will serve in the Northern and Pacific Fleets, albeit in the distant future. They will be equipped with Kalibr, Onyx and S-500 long-range anti-aircraft missile systems."⁷⁰⁹

Anti-submarine Ships

- "Three of the five existing Udaloy-class (Project 1155) anti-submarine ships are reported active. The fleet has six small Project 1142M (Grisha-class) anti-submarine ships for brown- and green-water operations. At least five amphibious landing ships supplement the fleet (the heavy landing ship Ivan Gren of Project 11711190 and several large Project 775 vessels)."⁷¹⁰

⁷⁰⁴ Rusakova, Tatyana, "Spy ship to track US missile defence system in Arctic," Russia Beyond the Headlines, 19 November 2016, <http://rbth.com>

⁷⁰⁵ Mladenov, Alex & Grozev, Krassimir, "Russia orders new patrol ship," 7 november 2016, Shephard Media, <https://www.shephardmedia.com>

⁷⁰⁶ Staalesen, Atle, "After 5 years of upgrade, destroyer «Marshal Ustinov» is back in Barents Sea," The Barents Observer, 23 May 2017, <http://barentsobserver.com>

⁷⁰⁷ Chatham House. (2019). "Russia's Military Posture in the Arctic Managing Hard Power in a 'Low Tension' Environment", London, UK: Boulègue, Mathieu

⁷⁰⁸ Ibid.

⁷⁰⁹ Khrolenko, A. (2017), 'Atomnyi esminets "Lider": kak Rossiya poluchit prevoskhodstvo v Mirovom okeane' [Atomic destroyer 'Leader': how Russia will gain superiority in the oceans], RIA Novosti, 27 July 2017, <https://ria.ru/20170729/1499181539.html?inj=1> (accessed 15 May 2019)

⁷¹⁰ Nielsen, T. (2018), 'Russia's largest landing ship to sail north through major NATO exercise', The Barents Observer, 14 October 2018, <https://thebarentsobserver.com/en/security/2018/10/russias-largest-landing-ship-sail-north-throughmajor-nato-exercise> (accessed 15 May 2019)

Icebreakers

- Russia has a fleet of 46 icebreakers, four that are nuclear powered.⁷¹¹
- Only the Northern Fleet is capable of breaking thick ice.⁷¹²
- The Kremlin has a total of approximately 40 icebreakers in use with 11 more in production⁷¹³, and more than 20 civilian icebreakers operating in Arctic⁷¹⁴
- The bulk of the Northern Fleet is set to be decommissioned in the 2020s, although construction for the replacements are delayed. There will likely be an “icebreaking” gap.⁷¹⁵

Heavy

- One large “50 Let Pobedy” icebreaker (thick ice-breaking capacity) belongs to the Northern Fleet⁷¹⁶
- The LK-2, Project 22600 will be the world’s most powerful diesel-engined icebreaker, at 146,8 meters long and 22258 tons.⁷¹⁷ The project has experienced delays and the launch has been pushed from 2015 to late 2017/early 2018.⁷¹⁸
- In 2012, Russia began the construction of a new record-breaking icebreaker:⁷¹⁹
 - 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.”
 - Other reports say it will go through 3 meters of ice and will be able to escort vessels through the Northern Sea Route year-round⁷²⁰
- More recently, in 2016, design for an icebreaker-class more powerful than ever – the Lider-class nuclear-powered icebreaker – was announced.⁷²¹
 - 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
 - Unveiled June 2018. Units will be built at the Zvezda shipyard near Vladivostok, but will not be commissioned before the 2030s at least – if they are ever built, as the project is already experiencing funding issues.”⁷²²
 - Icebreaker would have 110 MW power unit and could navigate ice 4-5 meters thick, making the Northern Sea Route accessible year round.
 - “Three more next-generation Lider-class vessels will be constructed in 2023 to 2025, Vice-Premier Dmitry Rogozin told [Russian media](#).”⁷²³
 - These three icebreakers will join the three current-generation icebreakers—the *Arktika*, *Ural* and *Sibir*—scheduled to be commissioned in 2019–2021.⁷²⁴

⁷¹¹ Rosatomflot (undated), ‘Atomnei ledokolie’ [Atomic icebreakers], <http://www.rosatomflot.ru/flot/>.

⁷¹² Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁷¹³ Starr, Terrell Jermaine, “Russia’s Icebreakers Make it King of the Arctic and America is Just a Pauper,” *Foxtrot Alpha*, 26 January 2017, <http://foxtrotalpha.jalopnik.com>

⁷¹⁴ Staalesen, Atle, “New icebreakers open way for Russia in Arctic,” *The Barents Observer*, 5 May 2015, <http://barentsobserver.com>

⁷¹⁵ Wishnick, E. (2017), ‘Tensions with Russia Heat Up the Melting Arctic’, PONARS Eurasia Policy Memo No. 464, <http://www.ponarseurasia.org/memo/tensions-russia-heat-melting-arctic> (accessed 15 May 2019).

⁷¹⁶ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁷¹⁷ Staalesen, Atle, “New icebreakers open way for Russia in Arctic,” *The Barents Observer*, 5 May 2015, <http://barentsobserver.com>

⁷¹⁸ “Baltiysky Zavod to deliver 25MW icebreaker Victor Chernomyrdin (Project 22600) in late 2017 – early 2018,” *Port News*, 17 June 2016, <http://portnews.ru/>

⁷¹⁹ Conan, Eve, “Breaking the Ice: Russian Nuclear-Powered Ice-Breakers,” *Scientific American Blog*, 8 September 2012, <http://blogs.scientificamerican.com>

⁷²⁰ Pettersen, Trude, “Three new nuclear icebreakers in the pipeline,” *The Barents Observer*, 4 November 2012, <http://barentsobserver.com>

⁷²¹ “Russia starts designing a super-icebreaker,” *The Arctic*, 13 October 2016, <http://arctic.ru/>

⁷²² Digges, C. (2018), ‘Putin slated to announce construction of enormous sci-fi nuclear icebreaker’, *Bellona*, 7 August 2018, <http://bellona.org/news/nuclear-issues/nuclear-russia/2018-08-putin-slated-to-announce-construction-of-enormous-sci-fi-nuclear-icebreaker> (accessed 16 May 2019).

⁷²³ Peck, Michael, “Russia has a plan to dominate the arctic,” *The National Interest*, 6 January 2018, <http://nationalinterest.org/>

⁷²⁴ Peck, Michael, “Russia has a plan to dominate the arctic,” *The National Interest*, 6 January 2018, <http://nationalinterest.org/>

- The Arktika, Project 22220



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>

Russia launched the first of three Arktika-class nuclear powered icebreakers in June 2016, ahead of its planned 2017 launch, according to Sputnik News and the shipyard where the Arktika was built.⁷²⁵ The ship reportedly cost \$1.74 billion.⁷²⁶

- First of three "new generation of 'super modern' universal-use icebreakers" built by St. Petersburg's Baltic Shipyard at a tender of \$2.3 billion.⁷²⁷ The Arktika is the lead ship of "Project 22220" and it was expected that at least two of its kind would be built by 2020.⁷²⁸ Project 22220 vessels will be capable of breaking through 13 feet of ice⁷²⁹ and will be 173 meters long and 34 meters wide.⁷³⁰
 - February 2017: Russia's nuclear icebreaker port Atomflot confirmed in February 2017 that the Arktika would be commissioned a year behind schedule for a launch date of 2019 due to unpaid bills and sanctions from the west.⁷³¹
 - May 2019: Russia launches the *Ural*, the world's largest nuclear-powered icebreaker. "It will eventually be handed over to Russia's state-owned nuclear energy corporation Rosatom in 2022, when the other two icebreakers – the Arktika and the Sibir – also enter service."⁷³²
 - Arktika and the Sibir, launched in 2016 and 2017, and the Arktika is expected to enter service in 2019.⁷³³

Medium / Light Icebreakers

- Four small "Project 97" icebreakers (thin ice-breaking capability)⁷³⁴
- Ilya Muromets, Project 21180
 - Russia's first ice-breaking patrol ship to be deployed to the Arctic was commissioned on November 30, 2017.⁷³⁵
 - "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."⁷³⁶
 - Launched on 10 June 2016⁷³⁷.
- "Polyarnaya Zvezda" is the first of two vessels of Project 22100 Okean-class ice-going patrol vessels⁷³⁸ In January 2017, it made the trip to its permanent base at the port of Murmansk.⁷³⁹

⁷²⁵ Domonoske, Camila, "Russia Launches World's Biggest, Most Powerful Icebreaker", NPR, 16 June 2016, www.npr.org

⁷²⁶ ⁷²⁶ Starr, Terrell Jermaine, "Russia's Icebreakers Make it King of the Arctic and America is Just a Pauper," Foxtrot Alpha, 26 January 2017, <http://foxtrotalpha.jalopnik.com>

⁷²⁷ Staalesen, Atle, "World's biggest icebreaker on the water," The Barents Observer, 16 June 2016, <http://thebarentsobserver.com>

⁷²⁸ Charled Digges (9 May 2014), "Russia trumpets victory in new 'super modern' nuclear icebreaker project," <http://bellona.org/>

⁷²⁹ Domonoske, Camila, "Russia Launches World's Biggest, Most Powerful Icebreaker", NPR, 16 June 2016, www.npr.org

⁷³⁰ Staalesen, Atle, "World's biggest icebreaker on the water," The Barents Observer, 16 June 2016, <http://thebarentsobserver.com>

⁷³¹ Digges, Charles, "Nuclear icebreaker roll out delayed by unpaid bills and sanctions over Ukraine," Bellona, 6 March 2017, <http://bellona.org>

⁷³² Cockburn, Harry, "Russia launches world's largest nuclear-powered icebreaker to open up Arctic shipping routes", The Independent, 26 May, 2019, <https://www.independent.co.uk>

⁷³³ Bershidsky, Leonid, "Bershidsky: Russia's winning the race to control the Arctic", The-Dispatch.com, 30 May 2019, <https://www.the-dispatch.com>

⁷³⁴ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁷³⁵ "PHOTO: Icebreaker Ilya Muromets Joined Russian Navy," Mil.Today, 1 December 2017, <http://mil.today>

⁷³⁶ "Russia unveils new Navy icebreaker in Arctic military focus," Defence News, 11 June 2016, <http://www.defensenews.com>

⁷³⁷ "Russia unveils new Navy icebreaker in Arctic military focus," Defence News, 11 June 2016, <http://www.defensenews.com>

⁷³⁸ Pettersen, Trude, "New Vessels for Russia's Coast Guard," The Barents Observer, 2 June 2015, <http://barentsobserver.com>

⁷³⁹ "Polyarnaya Zvezda border patrol ship arrives at duty station in Murmansk," The Arctic, 30 January 2017, <http://arctic.ru>

- The Polyarnaya Zvezda is 93 meters long, 15 meter wide and has a deadweight of 3,200 tons. It has a top speed of 20 knots and can operate autonomously for up to 60 days.⁷⁴⁰
- Both vessels are expected to be delivered in Murmansk by December 2019.⁷⁴¹
- In April 2016, two Project 23550 Ice-class patrol ships were ordered by the Russian Navy for delivery by 2020. They are capable of operating in up to 1.5-metre-thick ice.⁷⁴²
 - Project 23550, being called ‘combat icebreakers’, will differ from international competitors in that “they are capable of carrying heavy missiles that can strike targets hundreds of miles away, whereas these other ships are used more for localized security and ice navigation missions”.⁷⁴³ They also carry lasers that can cut through ice.⁷⁴⁴
- The first of [four icebreakers of the 21180 project](#) for the Ministry of Defence was launched in 2016 and will be commissioned in 2017.⁷⁴⁵
- “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.”⁷⁴⁶
- The three diesel-engined Project 21900M vessels are in service, the last setting off on its debut voyage in February 2017⁷⁴⁷. This project was developed for large-scale oil tanker assistance, as well as towing, transportation and rescue missions in icy waters.⁷⁴⁸
- Ivan Papanin (Project 23550)
 - “Two multipurpose patrol icebreakers being built by JSC Admiralty Shipyards for the Russian Navy”
 - Vessels can operate alongside other ships or independently
 - Length of 110m and width of 20m
 - Can accommodate 60 crew members, with the option for 50 more
 - Expected delivery is 2021
 - Ideal for “deal for missions such as monitoring and protection of Russian Arctic waters, rescue, escorting of ships in polar waters, transportation of special equipment, towing of ships in the port of detention, and maintenance and support for service vessels.”
 - “A flight deck and a hangar will be fitted on the main deck towards the stern to support the operations of a single Ka-27PS anti-submarine helicopter or a Ka-27PL search-and-rescue helicopter or an unmanned aerial vehicle.”
 - “The vessel will house two high-speed patrol boats of type Raptor (Project 03160)-class of the Russian Navy. Located on the starboard side of the ship, the boats can be used to conduct a variety of tasks such as search-and-rescue, anti-terrorism, patrolling, and anti-sabotage.”
 - Will be armed with one AK-176MA automatic naval gun system⁷⁴⁹

Soveitsky Soyuz, Arktika-class twin-reactor icebreaker⁷⁵⁰

- 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

⁷⁴⁰ Staalesen, Atle, “This is the FSB’s new Arctic vessel,” The Barents Observer, 30 January 2017, <http://barentsobserver.com>

⁷⁴¹ “Project 21100 Okean,” GlobalSecurity.Org, last modified 21 September 2016, www.globalsecurity.org

⁷⁴² Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁷⁴³ Rogoway, Tyler, “This is Russia’s warship Built Specifically For Arctic Fighting,” Time Inc., 27 March 2017, <http://www.thedrive.com>

⁷⁴⁴ “Laser-armed nuclear icebreakers: what Russia has in store for Arctic,” Sputnik News, 17 July 2017, <https://sputniknews.com>

⁷⁴⁵ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁷⁴⁶ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁷⁴⁷ Lanteigne, Marc, “U.S. wary of Russia’s Arctic military buildup,” News Deeply, 13 February 2017, <https://www.newsdeeply.com>

⁷⁴⁸ Staalesen, Atle, “New icebreakers open way for Russia in Arctic,” The Barents Observer, 5 May 2015, <http://barentsobserver.com>

⁷⁴⁹ “Ivan Papanin (Project 23550) Class Arctic Patrol Vessels”, Naval Technology, n.d., <https://www.naval-technology.com>

⁷⁵⁰ “Russian icebreaker could be Arctic HQ,” MarEx, 1 February 2016, <http://www.maritime-executive.com>

- 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.⁷⁵¹
- The Predanny, a second rank border patrol vessel, arrived in Murmansk in October 2017 to support a wide range of coast guard tasks, including “patrolling the territorial waters in the close and distant maritime zones, protecting the state border and the continental shelf, carrying out rescue operations and providing disaster relief”.⁷⁵²

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 2021.⁷⁵³
- Bastion systems, designed for coastal defense, have the capacity to engage various surface ships at ranges out to 300 kms.⁷⁵⁴
- The Russian Navy's Pacific Fleet formally deployed the K-300P Bastion-P (SSC-5 'Stooge') mobile coastal defence missile system in the Kuril Islands in 2016. This followed live firing trials of the system at a training range in the Primorye Territory in July 2016.⁷⁵⁵

Technology

Multiservice Transportation and Communication Network (MTSS).

- March 2019: The Russian army is creating “a closed system to exchange digital information... The first stage will be completed in late 2019 and the system is to be fully ready in two years. MTSS will have its own search engine and the military will ensure independent operation through a fiber-optic Arctic cable...At present, the Russian military use the closed data transmission segment (ZSPD) for information exchange. Until recently it has been also used by civilian operators. ZSPD will be fully integrated into MTSS which is created on the basis of the latest Russian designs in the sphere of digital data transmission. MTSS will have its own fiber-optic network which will be divided into main zonal channels. The Defense Ministry is preparing to lay a transarctic line for the Navy and coastal forces. The fiber-optic cable will go via the Arctic to the Far East from Severomorsk to Vladivostok.”⁷⁵⁶

Global Navigation Satellite System

- “Born as a 1970’s Soviet project to establish a satellite-based space navigation system in the context of the ongoing Cold War space race between the United States and the Soviet Union”
- “GLONASS and GPS are built on similar design principles, and therefore enjoy rough performance parity in most contemporary use-cases. While GLONASS boasts slightly better accuracy at high altitudes, its major current weakness is a relative lack of stations in certain regions. Moreover, GLONASS satellites’ chief production flaw is over-reliance on foreign components—a security concern that Russia hopes to address in 2022 with the release of its GLONASS-K2 revision.”⁷⁵⁷
- Russia plans to launch the GLONASS-K2 in 2022⁷⁵⁸

⁷⁵¹“Russia to Deploy Four New Warships By 2020 to Protect Nation’s Arctic Zone,” RIA Novosti, 28 May 2013, <http://en.ria.ru>

⁷⁵² “New boarder patrol ship Predanny arrives in Murmansk,” The Arctic, 16 October 2017, <http://arctic.ru>

⁷⁵³ “Russian Navy to receive five bastion missile defense systems in 2015”, Sputnik News, 9 September 2015, <http://sputniknews.com>

⁷⁵⁴ Novichkov, Nikolai, “Russia Navy Pacific Fleet deploys Bastion-P to Kuril Islands,” IHS Jane’s 360, 4 August 2016, <http://www.janes.com>

⁷⁵⁵ Novichkov, Nikolai, “Russia Navy Pacific Fleet deploys Bastion-P to Kuril Islands,” IHS Jane’s 360, 4 August 2016, <http://www.janes.com>

⁷⁵⁶ “Russian armed forces create closed data exchange system”, Army Recognition, 28 March, 2019, <https://www.armyrecognition.com>

⁷⁵⁷ Episkopos, Mark, “Russia Has 1 'Weapon' NATO Can't Easily Defeat”, The National Interest, 2 May, 2019, <https://nationalinterest.org>

⁷⁵⁸ “Russia to launch new generation GLONASS satellite in 2022: report”, China Daily, 2 July, 2018, <http://www.chinadaily.com.cn>

AIR DEFENCE SYSTEMS MISSILES

Long-range

S-400 (NATO: SA-21 Growler)



Photocredit: Wikimedia Commons, https://en.wikipedia.org/wiki/S-400_missile_system

- “The S-400 Triumph is designed to engage, ECM, radar-picket, director area, reconnaissance, strategic and tactical aircraft, tactical and theatre ballistic missiles, medium-range ballistic missiles and other current and future air attack assets at a maximum range of 400 km, and an altitude of up to 30 km.”⁷⁵⁹

S-300 (NATO: SA-10 Grumble)

- “Two improved variants of the 5V55 missile were introduced. The 50 nautical mile extended range 5V55KD was supplemented with the 5V55R, the latter using a Track Via Missile (TVM) semi-active seeker similar in concept to the MIM-104 Patriot seeker. The TVM system relays to the ground station radar data produced by the missile seeker, and offers better jam resistance and accuracy against a pure command link guidance package, especially as the missile nears the target.”⁷⁶⁰

Medium-range

SS-N-26 “Strobile” (P-800 Oniks)

- Mathieu Boulègue states SS-N-26 “Strobile” is part of Russia’s defense operation⁷⁶¹
- Russian anti-ship cruise missiles developed by NPO Mashinostroyenia⁷⁶²
- Length - 8.6 m for surface-to-surface missile (SSM) (8.3 m for air-to-surface missile (ASM)), 300 km range, single warhead payload⁷⁶³
- “There are three known variants of the missile. The ship-launched variant is known as the P-800 Oniks and has been designated the SS-N-26 “Strobile” by NATO. 1 The export variant of the ground-launched version is known as the Yakhont. An air-launched variant was developed in 1999 and is known as the Yakhont-M. A sub-launched version has been proposed and is suspected to be fitted to Yasen-class attack submarines. 2 The Oniks can be ground-launched using two variants of Bastion launch system: the stationary Bastion-S, and the transportable Bastion-P.”⁷⁶⁴

SS-N-27 “Sizzler” (Kalibr NK)

- Mathieu Boulègue states SS-N-27 “Sizzler” is part of Russia's defense operation⁷⁶⁵
- Anti-ship cruise missile, submarine-ship launched, single conventional warhead
- Range: 220 km (3M54), 300 km (3M54M1)

⁷⁵⁹ “S-400 TRIUMF TRIUMPH SA-21 GROWLER 5P85TE2”, Army Recognition, 17 July, 2019, <https://www.armyrecognition.com>

⁷⁶⁰ “S-300 PS SA-10B Grumble B Surface-to-Air missile”, Army Recognition, 31 March, 2018, <https://www.armyrecognition.com>

⁷⁶¹ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁷⁶² “SS-N-26 “Strobile” (P-800 Oniks)/ Yakhont / Yakhont-M / Bastion (launch systems)”, Missile Threat, 15 June, 2018, <https://missilethreat.csis.org>

⁷⁶³ Ibid.

⁷⁶⁴ Ibid.

⁷⁶⁵ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

Short-range base defense

Pantsir-SA (NATO: SA-22 Greyhound)



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

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



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

- 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.⁷⁶⁶
 - "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.⁷⁶⁷
- Range of 19 miles and able to function in temperatures as low as -58F⁷⁶⁸
- "The newly modified system will likely be mounted on a new chassis developed for [Russia's](#) third-generation Armata tank", FMSO reported.⁷⁶⁹
- In 2019, Russian troops are reported to receive their first Pantsir-SA.⁷⁷⁰
- Pantsir-SA is a "a variant of the medium-range anti-aircraft system, designed specifically to operate in the extremely harsh conditions of the Arctic region"⁷⁷¹ using the Pantsir-S1 weapon station. It is based on the chassis of the DT-30PM tracked all-terrain vehicle which consists of two tracked vehicle units linked by a steering mechanism. The second vehicle is used to carry the Pantsir-S1 weapon station. The Pantsir-SA differs from the Pantsir S1 by removing the 30mm cannon. The main armament consists of 18 launchers for 57E6 surface-to-air guided missiles, nine in three rows on each side of the turret. The missiles can hit target with a range from 1,200 to 20,000 m at an altitude from 5 to 15,000 m.⁷⁷²
- July 2019: First battalion of Pantsir-S has assumed combat duty with Russia's Northern Fleet⁷⁷³.

⁷⁶⁶ Howell, Kellen, "Russia planting new anti-aircraft missiles in Arctic," The Washington Times, 19 August, 2015, <http://www.washingtontimes.com>

⁷⁶⁷ "Russian army to get Pantsir-SA systems for Arctic in late 2016," TASS, 20 August 2016, <http://tass.com>

⁷⁶⁸ Howell, Kellen, "Russia planting new anti-aircraft missiles in Arctic," The Washington Times, 19 August, 2015, <http://www.washingtontimes.com>

⁷⁶⁹ Howell, Kellen, "Russia planting new anti-aircraft missiles in Arctic," The Washington Times, 19 August, 2015, <http://www.washingtontimes.com>

⁷⁷⁰ "Reinforcing northern flank: Russian Arctic troops to get first Pantsir-SA air defense system in 2019", RT News App, 18 January, 2019, <http://www.rt.com>

⁷⁷¹ Ibid.

⁷⁷² "Pantsir-SA Arctic short-range air defense missile system", Army Recognition, 21 January, 2019, <https://www.armyrecognition.com>

⁷⁷³ "Russia's first Pantsyr-S air defense missile battalion assumes combat duty in Arctic", TASS News Agency, 29 July, 2019, <https://tass.com/defense/1070864>

Tor M2-DT (NATO: SA-15 Gauntlet)

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.⁷⁷⁴ 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.⁷⁷⁵
- “The system is designed for air and ballistic missile defense at the battalion level. It can be used to provide coverage for key administrative facilities and forward forces against the attacks of anti-radiation and cruise missiles, glide bombs, planes, helicopters and unmanned aerial vehicles. The system has 16 vertical-launched air defense missiles with a range of 12 kilometers (7.4 miles) and an altitude of up to 10,000 meters and can operate in manual and automatic modes. It monitors the airspace autonomously and downs all aerial targets that have not been identified by the friend-or-foe system. Tor-M2DT was developed on the basis of a two-section tractor. It can operate in harsh conditions of the Arctic and the Extreme North at temperatures of down to -50°C. It has the unique DT-30 tracked chassis making it capable of passing water obstacles and cross-country areas.”⁷⁷⁶
- December 2018: The first shipment of Tor-M2DT surface-to-air missile system has landed at the 726th Army Air Defense Training Center located in Yeysk, southern Russia.⁷⁷⁷ It is unclear where these systems will be based, but will be at a northern base for exclusively Arctic use.⁷⁷⁸

Coastal Defense

3K60 BAL (NATO: SC-B Sennight)



Photo credit: Russian MoD, <https://www.navyrecognition.com/index.php/news/defence-news/2017/september-2017-navy-naval-forces-defense-industry-technology-maritime-security-global-news/5594-pictures-russian-navy-baltic-fleet-firing-with-3k60-bal-coastal-missile-system-during-zapad-2017.html>

- October 2016: “Russia’s Northern Fleet will receive the Bal (NATO reporting name: SSC-6 Sennight) coastal defense missile system to accomplish tasks in the Arctic”⁷⁷⁹
- “The Bal coastal defense system uses Kh-35 anti-ship cruise missiles. The launcher vehicle is based on an MZKT-7930 heavy high mobility chassis with 8x8 configuration and carries 8 cylindrical containers with Kh-35 anti-ship cruise missiles.”⁷⁸⁰
- “A battery of Bal can launch up to 32 anti-ship cruise missiles.”

K-300P Bastion-P (NATO: SSC-5)

4K51 Rubezh (NATO: SSC-3 Styx)

⁷⁷⁴ “Russia building new Tor missile for Arctic defence, TASS reports,” Radio Free Europe, 3 March 2016, <http://www.rferl.org>

⁷⁷⁵ Staalesen, Atle, “Russia deploys S-300 in Novaya Zemlya,” The Barents Observer, 9 December 2015, <http://www.thebarentsobserver.com>

⁷⁷⁶ “Russia’s Northern fleet to get first Tor-M2DT systems in November — official”, Russian News Agency, 26 October, 2018, <http://tass.com>

⁷⁷⁷ “Russian 726th Army Air Defense Training Center receives first Tor-M2DT”, Army Recognition, 3 December, 2018, <http://www.armyrecognition.com>

⁷⁷⁸ Staalesen, Atle, “First division of new missile system ready for Arctic”, The Barents Observer, 28 November, 2018, <https://thebarentsobserver.com>

⁷⁷⁹ “Russia’s Northern Fleet to receive 3K60 Bal coastal defense missile system”, Navy Recognition, 27 October 2016, <https://www.navyrecognition.com>

⁷⁸⁰ “Bal: Coastal Defense Missile System”, Military Today, 2019, <http://www.military-today.com>

1.3 Organizations and Operational Units (personnel)

April 2019: “Russia’s Ministry of Defense has proposed an amendment to the existing presidential decree on the military administrative division of the country. The amendment is expected to be completed and signed into law by December 1, 2019. It will mark an upgrade to the status of the Northern Fleet, effectively detaching it from its current subordination to the North Military District (MD)”⁷⁸¹

- According to SIPRI’s 2016 Background Paper:⁷⁸²
 - “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”.
 - 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 2018.⁷⁸³

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

- Formed in December 2015, reported by Russian Defense Minister Sergey Shoigu.⁷⁸⁴

80th Independent Rifle Brigade⁷⁸⁵

- The *Barents Observer* reports that, “the unit in Alakurtti was established in January 2015 as part of Russia’s increased Arctic ambitions”.
- Highly mobile force designed for Arctic operations. “Several systems were designed with the harsh climate in mind and deployed there, including: the MT-LBV armoured personnel carrier, which has wider tracks than the original MTLB; the TTM-1901 Berkut snowmobile, which is adapted to Arctic conditions; and the GAZ-3344-20 amphibious articulated personnel carrier. The 80th is equipped with one battalion of 122-mm 2S1 Gvozdika self-propelled howitzers based on the MT-LB track. This makes it the first Arctic-capable unit equipped with organic artillery. It is supported by recently deployed Tor-M2DT (NATO: SA-15 Gauntlet) and Pantsir-SA (NATO: SA-22 Greyhound) air defence systems, both adapted to Arctic conditions and based on the all-terrain DP-30PM vehicle. Air support is ensured by a small number of Mi-24 (NATO: Hind) attack helicopters as well as by Mi-8 rescue helicopters. The brigade is further strengthened by two air surveillance regiments: the 331st and the 332nd Radio-Technical Regiments in Severomorsk and Arkhangelsk.”⁷⁸⁶

200th Independent Motor Rifle Brigade⁷⁸⁷

- Became part of the Northern Fleet’s ground forces in December 2012 and is based in Pechenga.
- Serves as “a mobile, all-purpose military unit equipped with heavy gear, including three motorized rifle units and a main battle tank (MBT) unit with Arctic-hardened T-80BVM tanks. It employs unmanned aerial vehicles (UAVs) for basic intelligence, surveillance and reconnaissance (ISR) operations. Deployment of an organic airborne battalion for increased mobility and response was long rumoured but has so far failed to materialize— this would have been a relatively new feature for combined-arms brigades⁷⁸⁸

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

⁷⁸¹ McDermott, Roger, “Moscow Plans to Upgrade the Status of the Northern Fleet”, The Jamestown Foundation, 24 April, 2019, <https://jamestown.org>

⁷⁸² Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?”, SIPRI Background Paper, SIPRI, October 2016.

⁷⁸³ “Russia to station military unit in Arctic by 2018,” The Associated Press, 22 October 2015, <http://www.armytimes.com>

⁷⁸⁴ Petterson, Trude, “Northern Fleet gets own air force, air defence forces,” The Barents Observer, 1 February 2016, <http://www.thebarentsobserver.com>

⁷⁸⁵ Petterson, Trude, “Northern Fleet plans large Arctic exercise in 2015,” The Barents Observer, 3 June 2015, <http://barentsobserver.com>

⁷⁸⁶ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

⁷⁸⁷ Petterson, Trude, “Northern Fleet plans large Arctic exercise in 2015,” The Barents Observer, 3 June 2015, <http://barentsobserver.com>

⁷⁸⁸ Chatham House. (2019). “Russia’s Military Posture in the Arctic Managing Hard Power in a ‘Low Tension’ Environment”, London, United Kingdom: Boulègue, Mathieu

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’.”⁷⁸⁹

- 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.⁷⁹⁰
- “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.”⁷⁹¹
- “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.”⁷⁹²
- In 2012 the Brigade became part of the Northern Fleet.⁷⁹³
- 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.”⁷⁹⁴

- 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.”⁷⁹⁵
- “Russian Army Arctic brigades will be equipped with all-terrain Grad and Smerch MLRS Multiple Launch Rocket System carried by Vityaz DT-30PM and DT-10PM all-terrain tracked cross-country vehicles...”⁷⁹⁶
- The main roles of the Arctic Brigade is the protection of Russia’s Arctic coastline, infrastructure and facilities and escorting ships through the Northern Sea Route⁷⁹⁷

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.⁷⁹⁸
- It is comprised of Russian ground, naval, and air forces, and its headquarters are located in Arkhangelsk.⁷⁹⁹

Forward Arctic Military Command 2017

- With the aim to defend national interests in the Arctic, Russia “will establish a military command structure with two brigades of mechanized infantry supported by snowmobiles and hovercraft by 2017...” According to Colonel General Oleg Salyukov, “The new specially trained and outfitted military brigades will patrol Russia’s Arctic coastline, protect current and future military installations along the shore and in the Russian Arctic, ensure free passage of the Northern Sea Route and — perhaps most important of all — demonstrate to other Arctic nations Russia’s military presence in the increasingly contested region...”⁸⁰⁰

⁷⁸⁹ Pettersen, Trude, “Russia to establish Polar Spetsnaz on border to Norway,” *The Barents Observer*, 16 March 2011, <http://barentsobserver.com>

⁷⁹⁰ Pettersen, Trude, “Testing equipment for Arctic Brigade,” *The Barents Observer*, 19 March 2013, <http://barentsobserver.com>

⁷⁹¹ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, SIPRI, March 2012, p. 9.

⁷⁹² 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>

⁷⁹³ Pettersen, Trude, “Motorized infantry brigade to Northern Fleet,” *The Barents Observer*, 26 November 2012, <http://barentsobserver.com>

⁷⁹⁴ Pettersen, Trude, “Testing equipment for Arctic Brigade,” *The Barents Observer*, 19 March 2013, <http://barentsobserver.com>

⁷⁹⁵ Staalesen, Atle, “Arctic Brigade on snow,” *The Barents Observer*, 22 February 2016, <http://thebarentsobserver.com>

⁷⁹⁶ “Russian army Arctic brigade will be equipped with Grad & Smerch MLRS on DT-30PM,” *Army Recognition*, 10 February 2018, <https://www.armyrecognition.com>

⁷⁹⁷ Frolov, I. E. (2015), ‘Development of the Russian Arctic Zone: Challenges Facing the Renovation of Transport and Military Infrastructure’, *Studies on Russian Economic Development*, 26(6): p. 564,

⁷⁹⁸ Pettersen, Trude, “Northern Fleet gets own air force, air defence forces,” *The Barents Observer*, 1 February 2016, <http://www.thebarentsobserver.com>

⁷⁹⁹ Korpela, Aleks, “Of fire and ice: Russia’s militarization of the Arctic,” *The Nato Association of Canada*, 4 February 2016, <http://natoassociation.ca>

⁸⁰⁰ *The Moscow Times* (1 October 2014), “Russia to Form Arctic Military Command by 2017,” <http://www.themoscowtimes.com>

New Arctic air division established in 2018

- New Arctic air division will be established in 2018, to cover the territory from Novaya Zemlya to Chukotka which will help protect against attack from the North Pole.⁸⁰¹

Russian Coast Guard division to be deployed in Chukotka region 2018⁸⁰²

- 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.

Russian Emergencies Ministry in the Arctic⁸⁰³

- Facilities in Vorkuta, Murmansk, Naryan-Mar, Arkhangelsk and Dudinka, as well as an Arctic SAR training center Vytegra in the Vologda Region
- Adding paratroopers to its Arctic group in 2017

2. Recurring Operations and Exercises

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.”⁸⁰⁴
- 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.⁸⁰⁵
- Russia has significantly increased its missile testing in the Arctic. In late October 2017, “four ballistic missiles were tested in what turned out to be one of the most massive nuclear missile drills in post-Soviet history,” according to The Independent Barents Observer.⁸⁰⁶
- As of March 2018, a new hypersonic “Sarmat” intercontinental ballistic missile (ICBM), known as Satan 2 by NATO, which is capable of overcoming missile defense systems, has completed tests. It will replace the SS-18 Satan ICBM.⁸⁰⁷
- According to a Russian defense source, “the missile will enter service by 2021, with serial production beginning in 2020.”⁸⁰⁸
- During NATO’s 2018 Trident Juncture Exercise, Russia plans to conduct missile testing off the coast of Norway, “a move seen as an escalation of tensions in the Far North”. NATO General Secretary General Jens Stoltenberg states that Russia informed them of the testing.⁸⁰⁹

⁸⁰¹ Staaleson, Atle, “Russia builds Arctic air defense shield,” The Independent Barents Observer, 20 February 2017, <https://thebarentsobserver.com/en/security/2017/02/russia-builds-arctic-missile-shield>

⁸⁰² “Russian division in Chukotka will be equipped with all-terrain vehicles,” Sputnik News, 26 August 2016, <http://sputniknews.com>

⁸⁰³ “Emergencies Ministry to add paratroopers to the Arctic group in 2017,” The Arctic, 10 March 2017, <http://arctic.ru>

⁸⁰⁴ “Russia tests ballistic missiles in Arctic,” Maritime executive, 12 October 2016, <http://www.maritime-executive.com>

⁸⁰⁵ Nilsen, Thomas, “Russia plays nuclear war-games in Barents Region,” The Barents Observer, 1 November 2014, <http://barentsobserver.com>

⁸⁰⁶ Nilsen, Thomas, “Russia plays massive nuclear war games across Arctic,” The Independent Barents Observer, 26 October 2017, <http://barentsobserver.com>

⁸⁰⁷ “Russia’s new hypersonic Sarmat ICBM has begun active testing – Putin,” RT News, 1 March 2018, <https://www.rt.com>

⁸⁰⁸ “Russia tests new nuclear intercontinental ballistic missile ‘Sarmat’,” Global Village Space, 2 April 2018, <https://www.globalvillagespace.com>

⁸⁰⁹ Deshayes, Pierre-Henry, “Russia to Respond to NATO Exercises with Missile Tests”, Military.com, 30 October, 2018, <http://www.military.com>

Airborne Operations

- “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 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.”⁸¹⁰
- November 2018 – “long-ranged bombers [supersonic Tu-160 and the propeller Tu-95] have been on four missions flying from the Barents Sea to the North Sea along the coast of Norway where Trident Juncture wargame is played”⁸¹¹
- Russia flew dozens of patrols over the Arctic in 2018 with its combat aircraft, and expects to continue into 2019. According to Russia’s Ministry of Defense, “Russian Tu-142 Bear and Il-38 May maritime patrol and anti-submarine warfare aircraft, as well as Su-24MR Fencer tactical reconnaissance jets, flew more than 100 sorties in total above the Arctic circle” in 2018. These flights occurred over Russian national territory and international airspace.⁸¹²

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.⁸¹³
- 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 Velikiy (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.”⁸¹⁴
- On October 30, 2018 Russia’s Defense Ministry reports, “The battle cruiser, the largest of all warships in the Russian navy, has left her home base Severomorsk north of Murmansk.” The press service of the Northern Fleet states, “In the exercise area of the Northern Fleet in the Barents Sea, the crew of the battle cruiser began training and combat missions operations together with airplanes and helicopters of the Air Force and Air Defense,” and “Pyotr Velikiy” [Peter the Great] will during the exercise now starting use its Ka-27 helicopters for anti-submarine search”.⁸¹⁵
- In early December 2018, two Kalibr cruise missiles were test fired from an area north of the Kola Peninsula. These missiles were launched from both a submarine and a surface ship. The missile reportedly, “hit its target at the Chizha shooting range at Cap Kanin on the northern coast of the Arkhangelsk region”. Also in this timeframe, “a Kalibr cruise missile was launched from Severodvinsk - the first in service of the 4th generation nuclear-powered multi-purpose submarines of the Yasen-class”. These missiles have a range of over 2,000 metres, exposing most of Northern Europe.⁸¹⁶
- Two nuclear submarines of the Russian Northern Fleet held an underwater torpedo duel in the Barents Sea. Yuri Dolgoruky dueled against the multipurpose Obninsk submarine in a combat training in March 2017.⁸¹⁷
- An unnamed nuclear power submarine was involved in a drill where “nuclear battlecruiser Pyotr Velikiy, or Peter the Great, firing multiple Soviet-era RPK-6s”. A video of the vessels attack on each other was released on November 15, 2018.⁸¹⁸
- In April and May 2019, the Russian Northern Fleet conducted exercises outside of the usual Kola Peninsula. “Live-fire missile drills have traditionally taken place in the Barents Sea, but the activity now seems to be expanding into the Norwegian Sea, as indicated by recent NOTAMs and missile launches in international waters off the

⁸¹⁰ “Russia Paradrops Airborne Battalion in Arctic,” Sputnik News, 14 March 2014, <http://en.ria.ru>

⁸¹¹ Nilsen, Thomas, “Four strategic-bomber missions in a week along coast of Norway”, The Barents Observer, 3 November, 2018, www.thebarentsobserver.com

⁸¹² Trevithick, Joseph, “Russia Projects Heavy Airpower In The Arctic From Constellation of New And Improved Bases”, The Drive, 2 January, 2019, <http://www.thedrive.com>

⁸¹³ Staalesen, Atle, “Northern and Pacific fleets conduct first joint drills in Arctic,” The Barents Observer, 10 October 2016, <http://www.thebarentsobserver.com>

⁸¹⁴ “Russian missile cruiser joins Northern Fleet drills in Barents Sea,” TASS, 27 May 2016, <http://tass.ru>

⁸¹⁵ Nilsen, Thomas, “Russia’s largest nuclear missile-cruiser sails for Barents Sea combat training”, The Barents Observer, 3 November, 2018, <http://www.thebarentsobserver.com>

⁸¹⁶ Nilsen, Thomas, “Two Kalibr cruise missiles test fired from Barents Sea in last few days”, The Barents Observer, 6 December 2018, <https://thebarentsobserver.com>

⁸¹⁷ “Russian nuclear submarines hold underwater torpedo ‘duel’ in Arctic,” Sputnik News, 12 March 2017, <https://sputniknews.com>

⁸¹⁸ Trevithick, Joseph, “Russian Cruiser Fires Odd Torpedo Tube-Launched Anti-Sub Missile During Arctic Exercise”, The Drive, 15 November, 2018, <http://www.thedrive.com>

Norwegian west coast” says Kristian Åtland Senior Research Fellow with the Norwegian Defence Research Institute.⁸¹⁹

- August 2019: 30 Russian naval vessels are training in the Norwegian Sea. Vessels include: *Severomorsk* and *Admiral Gorshkov*. Four NOTAMS were issued between August 14-17, 2019. Live shooting took place.⁸²⁰



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

Testing of Nuclear Missiles

- On January 29, Russia tested the Burevestnik (“Storm Petrel”) at Kapustin Yar, a major weapon-testing ground.⁸²¹
- May 2019: During planned under water training in the Arctic for the Russian Northern Fleet, “the crews of the Northern Fleet’s nuclear-powered submarines also conducted practical research for employing weapons under the ice”. Russia’s Northern Fleet press office reports, “The underwater nuclear-powered missile cruisers Tula, Novomoskovsk and Severodvinsk were involved in performing missions under the Arctic Ocean’s ice. The submariners practiced a whole range of under-ice sailing tasks, including the search for an open water patch in the designated area and surfacing through ice”. The statement also said during this mission, crews of the nuclear-powered submarines conducted research to employ weapons beneath the ice.⁸²²

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.⁸²³ 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.”⁸²⁴

- 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.⁸²⁵
- Additional tactical drills took place in the Karelia⁸²⁶ region involving 1,000 personnel and 70 aircraft in exercises in mid-air refuelling, reconnaissance, air protection.⁸²⁷

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.⁸²⁸

- Russia notified Sweden in advance of the March 2013 simulation of air attacks on Sweden.⁸²⁹
- 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,⁸³⁰

⁸¹⁹ Nilsen, Thomas, “Russian navy with artillery shooting in Norwegian Sea, second in a month”, The Barents Observer 16 May 2019, <https://thebarentsobserver.com>

⁸²⁰ Nilsen, Thomas, “Russian navy to hold live-fire exercise off Northern Norway”, The Barents Observer, 6 August, 2019, <https://thebarentsobserver.com>

⁸²¹ Mizokami, Kyle, “Russia Conducts a New Test of its Nuclear-Powered Cruise Missile”, Popular Mechanics, 6 February 2019, <https://www.popularmechanics.com>

⁸²² “Three Russian nuclear-powered subs surface through Arctic ice in drills”, TASS News Agency, 3 June, 2019, <https://tass.com>

⁸²³ “Russian Air Force conducts air defence exercises”, Airforce-Technology.Com, 22 March 2013. <http://www.airforce-technology.com>

⁸²⁴ “Russian Air Force Readies for Massive Drills”, RiaNovost, 19 March 2013. http://en.rian.ru/military_news/20130319/180118617.html

⁸²⁵ Staalsen, Atle, “Arctic on Russian-Finnish military agenda,” The Barents Observer, 29 May 2013, <http://barentsobserver.com>

⁸²⁶ Pettersen, Trude, “Russia starts air force drills in Karelia,” The Barents Observer, 20 March 2013, <http://barentsobserver.com>

⁸²⁷ “Russian Air Force conducts air defence exercises,” Airforce-Technology.Com, 22 March 2013. <http://www.airforce-technology.com>

⁸²⁸ “Russians practiced attack on Sweden, but no Swedish response” Radio Sweden, 22 April 2013, <http://sverigesradio.se>

⁸²⁹ O’Dwyer, Gerard, “NATO Rejects Direct Arctic Presence,” Deference News, 29 May 2013, <http://www.defensenews.com>

⁸³⁰ Bennett, Mia, “Why NATO isn’t establishing an Arctic presence,” AlaskaDispatch, 6 June 2013, <http://www.alaskadispatch.com>

- when Sweden was not able to respond, NATO scrambled fighter aircraft out of Lithuania, though also not in time to monitor the Russian exercise.⁸³¹
- 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”⁸³²

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.”⁸³³

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”.⁸³⁴

2017 expedition to Kotelny Island⁸³⁵

- The expedition from mainland Russia to Kotelny Island aims to test new military equipment and weapons in Arctic conditions. The total distance covered came to 1,140 kilometers.
- “Members of the Defense Ministry expedition were the first in the world to cross from the mainland to Kotelny on board vehicles,” said Deputy Defense Minister Dmitry Bulgakov in March 2017.

Annual naval Arctic expedition⁸³⁶

- “Russia’s Northern Fleet started voyages along the Northern Sea Route in 2012.”
- In 2017, for the sixth annual Arctic voyage, a convoy with four warships and three support vessels left the Northern Fleet’s main base Severomorsk on August 10th to the port of Dudinka.
- Purpose is to practice joint maneuvers

Zapad⁸³⁷

- Quadrennial exercise
- Zapad-2017 was a joint strategic military exercise of the armed forces of the Russian Federation and Belarus, taking place over the course of six days in mid-September, taking place in Belarus as well as the Karelian area in the Russian Arctic.

Vostok

- From September 11 – 17, 2018, Russia held one of its largest military exercises in far-eastern Russia. “Taking part in the drills are around 300,000 Russian soldiers, 36,000 military vehicles, 80 ships and 1,000 aircraft, helicopters and drones, as well as 3,500 Chinese troops.”⁸³⁸⁸³⁹
- Vostok was the largest training exercise in Russian history, and quite possibility, in the history of any nation.⁸⁴⁰

Snap Check

⁸³¹ “Swedish Air Force fails to counter mock Russian attack,” AlaskaDispatch, 22 April 2013, <http://www.alaskadispatch.com>

⁸³² O’Dwyer, Gerard, “NATO Rejects Direct Arctic Presence,” Defence News, 29 May 2013, <http://www.defensenews.com>

⁸³³ Backwell, George, “Russia Conducts High North Geophysical Surveys,” MarineLink, 20 August 2014, <http://www.marinelink.com>

⁸³⁴ Bodner, Matthew, “Russian Navy is Planning Summer Expeditions to Contested Arctic Region,” The Moscow Times, 21 May 2014, www.themoscowtimes.com

⁸³⁵ “Russians First in the World to Reach Island in Arctic on Military Equipment,” Sputnik News, 12 March 2017, <https://sputniknews.com>

⁸³⁶ Nilsen, Thomas, “Warships of Russia’s Northern Fleet sail to Arctic waters,” The Barents Observer, 15 August 2017, <https://thebarentsobserver.com>

⁸³⁷ Brown, Daniel, “Russia just finished the Zapad military exercises that freaked out NATO – here’s what we know,” Business Insider, 25 September 2017, <http://www.businessinsider.com>

⁸³⁸ “Russia begins its largest ever military exercise with 300,000 soldiers”, The Guardian, no date listed, <https://www.theguardian.com>

⁸³⁹ “Vostok-2018 Drills Show Russian Army Capable of Countering Threats”, Sputnik News, 13 September, 2018, <https://sputniknews.com>

⁸⁴⁰ Pry, Peter, “Russian, NATO exercises demonstrate West’s death wish”, The Hill, 20 November, 2018, <https://thehill.com>

NORWAY

1. Security Assets available for Operations in the North

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

- January 2019: The Norwegian Defence Ministry plans to expand and rebuild its military facilities in the far north used during the Cold War Era; this is expected to cost NOK2.5 billion (\$290 million)⁸⁴¹
- Norwegian Armed Forces headquarters now in Reitan, near Bodo, just north of the Arctic Circle.⁸⁴²
- 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.⁸⁴³ Army headquarters are even further north, in Bardufoss.⁸⁴⁴
- While Navy headquarters are south, in Bergen, Coast Guard headquarters moved to the north, in Sortland, in 2010.⁸⁴⁵
- “Norway’s Defence Minister Ine Sørreide 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.⁸⁴⁶
- “With the 2009 closure of Olavsvern naval base near Tromsø, allied submarines have lacked a secured port facility in the north. To compensate, Norwegian authorities are now allowing for port calls to Grøtsund / Tønsnes civilian industrial port a-half-hour-sailing north of Tromsø”⁸⁴⁷
- “Allied nuclear powered submarines are much more frequently sailing inside Norwegian waters, surfacing for crew-exchange or other purposes; either to port or in waters inshore the coast.”⁸⁴⁸
 - In 2017, “more than 40 voyages requiring permission in and out of Norwegian coastal waters”
 - “[Navy] Captain Per-Thomas Bøe says the increase in allied submarine visits to Norway is closely connected with the increase in Russian submarine missions out of Russian waters in the north.”

Bodo⁸⁴⁹

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

Harstad⁸⁵⁰

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

Evenes (ved Harstad)

- Army garrison

Bjerkvik⁸⁵¹

- Technical workshop
- Maintenance on Armed Forces Vehicles and Weapons

Sortland⁸⁵²

- Navy’s Coast Guard Squadron

⁸⁴¹ “Norway Beefs up Arctic Defenses at Russia’s Doorstep”, Sputnik News, 18 January 2019, <https://sputniknews.com>

⁸⁴² Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁸⁴³ “Norwegian Military Bases,” Norwegian Armed Forces, no date listed, <http://mil.no>

⁸⁴⁴ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁸⁴⁵ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁸⁴⁶ Pettersen, Trude, “Norwegian military faces major cuts,” The Barents Observer, 21 April 2016, <http://www.rcinet.ca>

⁸⁴⁷ Nilsen, Thomas, “Moscow accuses Norway of northern military buildup - Here is map of submarine ports”, The Barents Observer, February 8, 2019, <https://thebarentsobserver.com>

⁸⁴⁸ Nilsen, Thomas, “Nuclear submarines inshore Norway 3 to 4 times monthly”, The Barents Observer, 27 January 2018, <https://thebarentsobserver.com>

⁸⁴⁹ “Norwegian Military Bases: Bodo,” Norwegian Armed Forces, no date listed, <http://mil.no>

⁸⁵⁰ “Norwegian Military Bases: Harstad,” Norwegian Armed Forces, no date listed, <http://mil.no>

⁸⁵¹ “Norwegian Military Bases: Bjerkvik,” Norwegian Armed Forces, no date listed, <http://mil.no>

⁸⁵² “Norwegian Military Bases: Sortland,” Norwegian Armed Forces, no date listed, <http://mil.no>

Andoya/Andenes⁸⁵³

- 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
- The Norwegian government is considering closing the base in 2020-2011; but, the base may remain open to support NATO operations in the North Atlantic.⁸⁵⁴

Setermoen⁸⁵⁵

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

Skjold⁸⁵⁶

- Army 2nd battalion
- Army Engineer battalion

Bardufoss⁸⁵⁷

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

Sorreisa⁸⁵⁸

- 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
- Northern most airstrip to accommodate F-16 fighter jets⁸⁵⁹
- Serves detachment of the 330 Squadron
- Search and rescue helicopter squadron (linked to Porsanger)

Porsanger⁸⁶⁰

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

• The Defense Ministry plans to station more than 500 soldiers and invest NOK 1.5 billion (\$176 million) in Porsanger. By the end of January 2019, the first 150 soldiers should arrive. During the Cold War, Porsanger had 1,500 soldiers stationed. As the perceived threat from the Soviet Union decreased, so did Norway's military presence⁸⁶¹

Sor-Varanger/Kirkenes⁸⁶²

- 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 operative⁸⁶³

⁸⁵³ "Norwegian Military Bases: Andoya/Andenes," Norwegian Armed Forces, no date listed, <http://mil.no>

⁸⁵⁴ "Will NATO save important air base in Norwegian Arctic?" Eye on the Arctic, 10 May, 2018, <http://www.rcinet.ca>

⁸⁵⁵ "Norwegian Military Bases: Setermoen," Norwegian Armed Forces, no date listed, <http://mil.no>

⁸⁵⁶ "Norwegian Military Bases: Skjold," Norwegian Armed Forces, no date listed, <http://mil.no>

⁸⁵⁷ "Norwegian Military Bases: Bardufoss," Norwegian Armed Forces, no date listed, <http://mil.no>

⁸⁵⁸ "Norwegian Military Bases: Sorreisa," Norwegian Armed Forces, no date listed, <http://mil.no>

⁸⁵⁹ Nilsen, Thomas, "Norway rearms Finnmark for new security landscape" The Barents Observer, 17 April, 2019, <http://thebarentsobserver.com>

⁸⁶⁰ "Norwegian Military Bases: Porsanger," Norwegian Armed Forces, no date listed, <http://mil.no>

⁸⁶¹ "Norway Beefs Up Arctic Defences at Russia's Doorstop", Sputnik News, 18 January, 2019, <http://sputniknews.com>

⁸⁶² "Norwegian Military Bases: Sor-Varanger/Kirkenes," Norwegian Armed Forces, no date listed, <http://mil.no>

⁸⁶³ Nilsen, Thomas, "Norway creates new Army unit on border to Russia," The Barents Observer, 17 June 2016, <http://thebarentsobserver.com>

Possible re-opening of Olavsvern⁸⁶⁴

- 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.

Grøtsund

- 375 km west of the border with Russia's Kola Peninsula.⁸⁶⁵

Ørland

- A fleet of F-35s "will operate from Ørland, which is currently being churned into a major construction site. A large squadron building there will integrate training and simulators. 'Everything will happen in one location,' Bakke says. 'All the first-level maintenance. We're building hangars, shelters, a good base to operate from.' 'Ørland,' says Aamodt, 'is the future.'"⁸⁶⁶

Vardø

- Military radar facility that is home to the GLOBUS system, which, "ensures continued access to important and relevant information of national importance". The system in Vardø has been a cooperation with Norway and the US since the 1950's. Construction of GLOBUS III begin in 2016, and should be ready for active service in 2022.⁸⁶⁷
- NIS denies any accusations of the radar system being part of the American missile defense program. "It is not connected to, nor does it transfer information in real time to the US or any other country's missile defense system – a prerequisite for a functional missile defense system."⁸⁶⁸

1.2 Equipment

1.2.1 Air⁸⁶⁹

F-16 Fighters



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

- Approximately 60 in operation⁸⁷⁰
- Based at Bodo, on 24/7 alert⁸⁷¹
- 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.⁸⁷²

⁸⁶⁴ Nilsen, Thomas, "Report encourages Norway to reopen Olavsvern submarine support base," The Barents Observer, 28 July 2016,

<http://thebarentsobserver.com>

⁸⁶⁵ Nilsen, Thomas, "Moscow accuses Norway of northern military buildup – Here is map of submarine ports," The Barents Observer, 8 February, 2019,

<http://thebarentsobserver.com>

⁸⁶⁶ Posey, Carl A., "The Guard at NATO's Northern Gate", Air & Space Smithsonian, September 2016, <https://www.airspacemag.com>

⁸⁶⁷ Nilsen, Thomas, "US and Norway upgrade eye on border to northern Russia", The Barents Observer, 18 November, 2018, <https://thebarentsobserver.com>

⁸⁶⁸ Ibid.

⁸⁶⁹ "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>

⁸⁷⁰ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁸⁷¹ "New Fighter Jets Lack Arctic abilities," News in English, 27 October 2011, <http://www.newsinenglish.no>

⁸⁷² "New Fighter Jets Lack Arctic abilities," News in English, 27 October 2011, <http://www.newsinenglish.no>

F-35 Fighters



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

- 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.⁸⁷³
- To be based mainly at Ørland Main Air Station in central Norway, but with a Forward Operating base at Evenes in northern Norway.⁸⁷⁴The first of the aircraft were expected to be delivered to Norway in 2017, and Norway plans to have all 52 delivered by 2025.⁸⁷⁵
- SIPRI reports that without air refuelling they will have no capability beyond Norwegian airspace⁸⁷⁶
- No plans for air-to-air refuelling

P-3C and P-3N Anti-Submarine Warfare and Long-Range Patrol⁸⁷⁷(6)



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

- 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.⁸⁷⁸
- 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."⁸⁷⁹

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."⁸⁸⁰

⁸⁷³ Stevenson, Beth, "Oil price, weak currency challenge Norwegian F-35 buy", Flightglobal, 21 January 2016, <https://www.flightglobal.com>

⁸⁷⁴ "F-35 Lightning II Wins Norway's (Fake) Competition," Defense Industry Daily, 17 June 2012, <http://www.defenseindustrydaily.com>

⁸⁷⁵ Nilsen, Thomas, Lockheed Martin unveils Norway's first F-35," The Barents Observer, 22 September 2015, <http://barentsobserver.com>

⁸⁷⁶ Wezeman, Siemon, T., "Military Capabilities in the Arctic," SIPRI Background Paper, March 2012, p. 7.

⁸⁷⁷ Smol, Robert (4 April 2014), "The Norwegian juggernaut," National Post, <http://www.nationalpost.com/index.html>

⁸⁷⁸ "Warriors of Steel: Meet Russia's robot army," Sputnik News, 29 May 2016, sputniknews.com

⁸⁷⁹ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁸⁸⁰ Dagenborg, Joachim, "Norway plans \$1.15 billion order for five Boeing Poseidon military aircraft," Reuters, 28 November 2016, www.reuters.com

- 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.”⁸⁸¹
 - Together, with the new Triton UAV, the two aircrafts will replace the P-3C Orion.⁸⁸²

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>

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

Army⁸⁸³

CV9030 Tank

Leopard 2A4 Heavy Tank

Archer Self-Propelled Artillery

M-113 Family of Light Tanks

BV 206 Tracked Vehicle

⁸⁸¹ “Norway in \$A1.54b military aircraft order,” Gold Coast Bulletin, 28 November 2016, <http://www.goldcoastbulletin.com.au/>

⁸⁸² Laird, Robbin, “NATO allies and North Atlantic maritime threats,” Vol. 14, No. 4, FrontLine Defence, 30 September, 2017, <http://www.sldinfo.com>

⁸⁸³ “About,” Norwegian Armed Forces, date not listed, <http://mil.no>

1.2.3 Sea

*Frigates or destroyers*⁸⁸⁴ (last of which was delivered in Jan 2011)⁸⁸⁵

- Five new Frigates or destroyers
- Fridjof Nansen class
- New Arctic capability
- Have the US Aegis combat system
- Will host NH90 helicopters⁸⁸⁶
- November 2018: One Frigate collided with a fully loaded oil tanker while returning from Trident Juncture. “The frigate Helge Ingstad lost steering and drifted at five knots onto the rocky shore near Norwegian port of Sture, north of Bergen, saving the ship from sinking in the Fjord, according to media reports. The crew of 137 was forced to abandon ship. Ingstad is now resting on its side on three points while crews move to secure it.”⁸⁸⁷

Coastal Patrol Vessels



Copyright: NDMA Norwegian Defence Materiel Agency

- Six coastal patrol vessels
- Skjold class
- 76mm gun, anti-ship and anti-air missiles
- ISS 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.^{888 889}
- In 2021, Norwegian Coast Guard Vessel *Svalbard* will be equipped with the latest version of the TRS-3D naval radar and MSSR 2000 I IFF System from HENSOLDT.
 - “The TRS-3D includes a secondary radar MSSR 2000 I for Identification-friend-or-foe (IFF). It operates all current IFF modes, including the latest “Mode S/Mode 5 Level 1/2” standard answering the most recent NATO requirements.”⁸⁹⁰

⁸⁸⁴ The Military Balance 2012 counts them as destroyers.

⁸⁸⁵ 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.

⁸⁸⁶ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012, p. 8.

⁸⁸⁷ Larter, David B., & Sprenger, Sebastian, “Warnings and confusion preceded Norwegian frigate disaster: here’s what we know”, Defense News, 10 November, 2018, <https://www.defensenews.com>

⁸⁸⁸ 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>

⁸⁸⁹ See “Coast Guard” section for more details.

⁸⁹⁰ Vavasseur, Xavier, “HENSOLDT Delivers TRS-3D Radar & IFF System To Norwegian Coast Guard”, Naval News, 16 August, 2019, <https://www.navalnews.com>

Marjata IV, Intelligence Vessel



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

- 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 2016⁸⁹¹. The Marjata IV will be 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.⁸⁹² 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”.⁸⁹³

Submarines

- Six Ula class (SIPRI) to be replaced starting in mid-2020⁸⁹⁴
 - Minister of Defence, Ine Eriksen Sørreide, has announced a “Norwegian-German strategic partnership for purchase and lifetime management for four new submarines.”⁸⁹⁵
 - “The plan is to sign a common contract for new submarines in 2019. This will enable delivery of new submarines from the mid-2020s to 2030.”⁸⁹⁶
- 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 yacht⁸⁹⁷
- Planning a large logistic support ship to be commissioned in 2017 (HNoMS Maud)⁸⁹⁸
- “...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.”⁸⁹⁹
- “None of Norway’s warships or patrol ships can break ice.”⁹⁰⁰

Combat support ship⁹⁰¹

- “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.”

⁸⁹¹ Nilsen, Thomas, “Norway’s new Arctic giant spyship,” *The Barents Observer*, 17 March 2014, <http://barentsobserver.com>

⁸⁹² “Vikings Striking: Norway to Double its Warships to Track Russian Fleet”, *Sputnik News*, 4 April 2016, <http://sputniknews.com>

⁸⁹³ Jones, Bruce, “Norway’s new surveillance ship arrives, deploys quickly to support NATO operations,” *IHS Janes 360*, 22 April 2016, <http://www.janes.com>

⁸⁹⁴ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁸⁹⁵ Nilsen, Thomas, “Norway teams up with Germany for new submarines,” 3 February 2017, *The Barents Observer*, <https://thebarentsobserver.com>

⁸⁹⁶ Nilsen, Thomas, “Norway teams up with Germany for new submarines,” 3 February 2017, *The Barents Observer*, <https://thebarentsobserver.com>

⁸⁹⁷ “The Military Balance 2012,” *IJSS*, 7 March 2012, p. 142., <https://www.ijss.org>

⁸⁹⁸ “A COMPARISON OF HMCS QUEENSTON AND HNoMS MAUD,” *Canadian Defence Matters*, April 7, 2017, <http://jgmjgm516.blogspot.ca/2017/04/the-queenston-class-is-class-of-naval.html>

⁸⁹⁹ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012.

⁹⁰⁰ Wezeman, Siemon, T., “Military Capabilities in the Arctic,” SIPRI Background Paper, March 2012.

⁹⁰¹ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

Kronprins Haakons – New oceanographic icebreaker

- Has launched at Fincantieri's shipyard in Muggiano, La Spezia and was completed and delivered in 2017.⁹⁰²
- Can accommodate 55 people, cruise at up to 15 knots, break ice up to 1 metre thick, and is equipped with 2 helicopters in the bow.⁹⁰³
- Vessel is owned by the Norwegian Polar Institute for the Norwegian Government and will be used also by the Institute of Marine Research (IMR), the Norwegian governmental body for oceanographic research and fishing, and by the University of Tromsø.⁹⁰⁴
- The vessel's first research voyage is to begin 9 July, 2018, where it will map the northern parts of the Barents Sea as part of the Nansen Legacy project.⁹⁰⁵

KNM Maud, Logistics Vessel

- At 183 metres long, it is the largest vessel ever operated by the Norwegian Navy. The new logistics vessel made its maiden voyage to San Diego, USA "where it loaded military equipment, ammunition and spare parts to the F-35 fighter jets".
- "The 'KNM Maud' is important for the strengthening of operations and endurance of the Navy's other vessels, and logistics vessels is a much-needed resource for NATO" says Norwegian Prime Minister Erna Solberg. The primary tasks will be to "provide supplies of fuel, foodstuff and equipment to other Norwegian naval vessels and consequently extend the Navy's operational endurance at sea... It will also be able to assist in action aimed at protecting sovereignty and offer support to other military units, take part in search and rescue and humanitarian operations."
- The ship has a core crew of 43 people and an additional crew of 116. It is due to be fully operational in 2020.⁹⁰⁶

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."⁹⁰⁷

Coast Guard

- Ministry of defence says Coast Guard has 13 vessels of various size⁹⁰⁸
 - 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 Sørreide proudly announced that Norway will not only order one, but three at a time, new Coast Guard vessels."⁹⁰⁹
 - 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".

⁹⁰² Haun, Eric, "Norway's New Oceanographic Icebreaker Launched," Marine Link, 28 February, 2017, <http://www.marinelink.com/news/oceanographic-icebreaker422636>

⁹⁰³ Haun, Eric, "Norway's New Oceanographic Icebreaker Launched," Marine Link, 28 February, 2017, <http://www.marinelink.com/news/oceanographic-icebreaker422636>

⁹⁰⁴ Haun, Eric, "Norway's New Oceanographic Icebreaker Launched," Marine Link, 28 February, 2017, <http://www.marinelink.com/news/oceanographic-icebreaker422636>

⁹⁰⁵ Eilertsen, Av Hege, "The Nansen Legacy project gets the go-ahead," High North News, 15 December 2017, <http://www.highnorthnews.com>

⁹⁰⁶ Staalesen, Atle, "Norwegian Navy gets its biggest ship ever", The Barents Observer, 29 March 2019, <https://thebarentsobserver.com>

⁹⁰⁷ "About," Norwegian Armed Forces, no date listed, <http://mil.no>

⁹⁰⁸ Wezeman, Siemon, T., "Military Capabilities in the Arctic," SIPRI Background Paper, March 2012.

⁹⁰⁹ "Norway orders new Coast Guard vessels as vanishing sea ice increases areas needing patrol," RCINet, 30 September 2016, www.rcinet.ca

Brigade Nord⁹¹⁰

- 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 District⁹¹¹

- 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 project⁹¹²

- 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

Operations occurring Annually

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

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 MONGOOSE⁹¹³

- Largest annual anti-submarine warfare exercise
- Last occurred in July 2017
 - Participation included “a total of 11 surface ships, eight maritime patrol aircrafts, five submarines, and more than 2,000 sailors and airmen from ten allied nations”, according to the Norwegian Navy.⁹¹⁴
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⁹¹⁰ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁹¹¹ Admiral Haakon Bruun-Hanssen, “Norwegian Armed Forces in Transition,” Norwegian Armed Forces, 2015.

https://forsvaret.no/en/Forsvaret/Documents/Strategic_Defence_Review_2015_abridged.pdf

⁹¹² “Maritime Preparedness and International Partnership in the High North (MARPART project),” The University of the Arctic, 20 May 2016, <http://www.uarctic.org>

⁹¹³ “Anti-submarine warfare exercise ‘Dynamic Mongoose’ starts off Norwegian coast,” NATO, 4 May 2015, <http://www.nato.int>

⁹¹⁴ Staalesen, Atle, “NATO trains in anti-submarine warfare in northern waters,” 24 July 2017, The Independent Barents Observer, <https://thebarentsobserver.com>

JOINT VIKING⁹¹⁵

- A national Norwegian exercise that, in 2017, included approximately 700 soldiers from the United States Marine Corps, United States Army and the British Royal Marines and took place in Finnmark.
- Main goals are to practice crisis management and the defense of northern Norway.

Operations occurring Biennially

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.”⁹¹⁶
- “Largest of its kind” aviation exercise, with approx. 100 aircraft and 4,000 servicemen taking part⁹¹⁷
- Biennial, held in May⁹¹⁸
- Occurred May 22 – June 2, 2017, organized by Norway, Sweden and Finland with over 11 countries participating.⁹¹⁹
- Last occurred May 22 – June 4, 2019, led by the Swedish Air Force from Kallax air base near Luleå. Host airports also include: Rovaniemi (Finnish air base) and Ørland and Bodø (Norwegian air bases). “Additional to Norway, Finland and Sweden, participating aircraft and ground personnel come from Denmark, USA, the Netherlands, Germany, France and the United Kingdom. NATO is also flying its AWACS aircraft monitoring the air space during the exercise.”⁹²⁰

Exercises

⁹¹⁵ Nilsen, Thomas, “Norway kicks off exercise in Finnmark,” The Barents Observer, 3 March 2017, <https://thebarentsobserver.com>

⁹¹⁶ Oliphant, Roland, “Russia and NATO launch rival war games,” The Telegraph, 26 May 2015, <http://www.telegraph.co.uk>

⁹¹⁷ Oliphant, Roland, “Russia and NATO launch rival war games,” The Telegraph, 26 May 2015, <http://www.telegraph.co.uk>

⁹¹⁸ “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>

⁹¹⁹ Nilsen, Thomas, “Arctic Challenge 2017 set for take off,” The Barents Observer, 16 May 2017, <https://thebarentsobserver.com>

⁹²⁰ Nilson, Thomas, “Wheels up for airforce exercise in the skies over northern Scandinavia”, The Barents Observer, 26 May 2019, <https://thebarentsobserver.com>

DENMARK

1. Security Assets available for Operations in the North

In June 2016, Denmark announced a proposed increase in defense spending in the Arctic. The released budget reflected a modest increase in spending – \$18 million added to a budget of \$3 billion. Monies will enable Denmark to increase surveillance as well as boost their coast guard capacity to honour its commitment as an Arctic Council member.⁹²¹

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

Greenland and Faroes Military Bases

- A combined command, headquartered in Nuuk, Greenland⁹²²
 - 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 dormant as an airforce base⁹²³

Island Command Faroes

- Near Torshavn⁹²⁴

1.2 Equipment

1.2.1 Air

F-16 Fighter (45)



Photo Credit: RDAF F-16 MLU,

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

- 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 as an airforce base, could be used again
- 27 F-35A combat aircraft were selected in 2016 to replace the 30 currently operational F-16s after 2020.⁹²⁵

⁹²¹ McGwin, Kevin, "Keeping the Peace: Neither armed nor dangerous," The Arctic Journal, 27 June 2016, <http://arcticjournal.com>

⁹²² Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁹²³ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016.

⁹²⁴ "Tasks in the Arctic and the Northern Alliance," Forsvarsministeriet Ministry of Defence, 27 March 2015, <http://www.fmn.dk>

⁹²⁵ 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 Ulloriaq⁹²⁶

- 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

⁹²⁶ "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 order⁹²⁷

*Thetis class (300 ton) Multi-Role OPV/Frigates (4)*⁹²⁸

- 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 ships⁹²⁹
- 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.⁹³⁰

Patrol and coastal combatant ships DIANA Class (6)⁹³¹**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."⁹³²

*Ice-strengthened AGDLEK class large patrol craft (1)*⁹³³

- 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 Greenland⁹³⁴

1.3 Organizations and Operational Units (personnel)

The Arctic Command⁹³⁵

- "The Arctic Command was established on 31st October 2012, when the Island Command Greenland and the Island Command Faroes were united into a joint Arctic Command."
- Headquarters is in the Greenland capital of Nuuk. Also has a minor liaison element in Tórshavn in the Faroe Islands.
- The primary tasks of the Defence are maritime surveillance and enforcement of sovereignty.
- The Defense has initiated the acquisition of a KNUD RASMUSSEN class vessel, and nine ship-based SEAHAWK helicopters to replace the aging LYNX helicopters.

⁹²⁷ "The Military Balance 2012," IISS, 7 March 2012, <https://www.iiss.org>

⁹²⁸ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016

⁹²⁹ "Absalon L16," MilitaryFactory.com, last modified in 2016, <http://www.militaryfactory.com>

⁹³⁰ 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>

⁹³¹ "Facts and Figures: The Danish Armed Forces," Danish Defence, 2011, <http://forsvaret.dk>

⁹³² Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016

⁹³³ Wezeman, Siemon, T., "Military Capabilities in the Arctic: A New Cold War in the High North?," SIPRI Background Paper, SIPRI, October 2016

⁹³⁴ "North Atlantic," Danish Defence, no date listed, <http://forsvaret.dk>

⁹³⁵ "Tasks in the Arctic and North Atlantic," Forsvarsministeriet Ministry of Defence, last modified 12, December 2016, <http://www.fmn.dk/eng/allabout/Pages/TasksintheArcticandtheNorthernAtlantic.aspx>

- Due to increased military spending⁹³⁶ in Denmark in the coming years, the military is establishing a light infantry battalion that can be deployed to support the operations of the Arctic Command if necessary, among other national and international deployments.⁹³⁷

Fromandskorps (Frogman Corps)

- Navy SEAL- like unit made up of armed divers⁹³⁸
- Special forces unit based in Greenland⁹³⁹
- Can operate in Arctic and expanding from 130 – 150 troops⁹⁴⁰

Jaeger special forces⁹⁴¹

- Based in Denmark
- Available for Arctic duties and expanding from 200 – 300 troops

Small Sledge Patrol (Slaedepatrulje Sirius) in Greenland⁹⁴²

- 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
 - USA⁹⁴³

⁹³⁶ According to High North News in February 2018, “The new Defense Settlement for 2018-2023 provides a significant increase in Danish defense investments. The parties have agreed to increase allocations for 2018 by DKK 800 million and by 2023, they will increase to DKK 4.8 billion, which equals an annual increase of more than 20 percent.” (<http://www.highnorthnews.com/denmark-increases-defense-spending-and-prepares-for-submarine-chase/>)

⁹³⁷ O’Dwyer, Gerard, “Special forces, allies to benefit from Denmark’s defense spending deal,” Defense News, 5 February 2018, <https://www.defensenews.com>

⁹³⁸ “Denmark’s Arctic Assets and Canada’s Response – Sovereignty and Strategic Resources of the High Arctic,” CASR, May 2005, <http://www.casr.ca>

⁹³⁹ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁹⁴⁰ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁹⁴¹ Wezeman, Siemon, T., “Military Capabilities in the Arctic: A New Cold War in the High North?,” SIPRI Background Paper, SIPRI, October 2016.

⁹⁴² “North Atlantic,” Danish Defence, no date listed, <http://forsvaret.dk>

⁹⁴³ “Greenland Command/ISCOMGEEENLAND: 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 incidence of Arctic wide exercises has decreased significantly in recent years, reflecting difficult east-west relations.

AMALGAM DART⁹⁴⁴

“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.”

ARCTIC ANVIL

A major Pacific joint training effort between US and Canada.⁹⁴⁵

- Arctic Anvil 2016⁹⁴⁶
 - 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

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.”⁹⁴⁷

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.⁹⁴⁸

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.⁹⁴⁹

Arctic Council SAR Table Top Exercise

In October 2011 a two-day exercise in Whitehorse experts from the eight Arctic Council States (involving 32 delegates and 60 observers) “examined the strategic and operational aspects of the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, signed in Nuuk, Greenland, on May 12, 2011.” Aeronautical and maritime SAR scenarios were addressed and delegates agreed that “because of each country’s limited SAR resources and large areas of responsibility, an international response is needed.”⁹⁵⁰ 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.⁹⁵¹

⁹⁴⁴ Regehr, Ernie, “When Bears Still Fly: Responding to Russian Bomber Patrols in the Arctic”, The Simons Foundation, 10 November 2016, <http://thesimonsfoundation.ca>

⁹⁴⁵ Pugliese, David, “Canadian troops headed to Alaska for Exercise Arctic Anvil,” Ottawa Citizen, 22 July 2016, <http://ottawacitizen.com>

⁹⁴⁶ Pugliese, David, “Canadian troops headed to Alaska for Exercise Arctic Anvil,” Ottawa Citizen, 22 July 2016, <http://ottawacitizen.com>

⁹⁴⁷ Colclough, Bill, “Arctic Chinook 2016,” Coast Guard Alaska Official Blog, 2 September 2016, <http://alaska.coastguard.dodlive.mil/>

⁹⁴⁸ Colclough, Bill, “USCG to participate with AK Command in Arctic Chinook Exercises,” Alaska Native News, 23 August 2016, <http://alaska-native-news.com>

⁹⁴⁹ 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

⁹⁵⁰ “Arctic Council Search and Rescue Table Top Exercise,” Foreign Affairs and International Trade Canada, no date listed, <http://www.international.gc.ca>

⁹⁵¹ “Are We Ready,” OpenCanada.Org, 6 May 2013. <http://opencanada.org>

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 implementation of the 2009 Agreement on Emergency Prevention Preparedness and Response among Sweden, Finland, Norway and Russia.⁹⁵² Exercise Barents 2014 was carried out successfully⁹⁵³, 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.⁹⁵⁴

- Barents Rescue Exercise 2017 began on May 29 2017 and lasted for three days. According to The Arctic Institute’s summary, it went off without a hitch.⁹⁵⁵
 - “This year, the Northern Fleet’s rescue tug Nikolai Chiker, the new multirole modular speedboat Spasatel Kononenko, as well as search-and-rescue aircraft, will take part...”
 - “Norway will use ships, boats, Coastal Administration and Royal Navy Coast Guard ships, and some patrol aircraft from Royal Norwegian Air Force bases. Norwegian air traffic control centers and agencies in northern coastal cities and other state agencies will also take part.”
- The most recent exercise in began on May 21, 2019 included Norway and Russia and focused on a joint search and rescue operation and oil spill prevention.
 - “The participating units belong to military, emergency response organizations, pollution control, aviation controllers, metrological services and coastal administrations.”
 - Russia had four ships and a Ilushin-38 participate, and Norway had two Coast Guard ships and a Orion P-3 participate.

BOLD QUEST

Large series of US-led international military cooperation events launched in 2003.

May 2019: The Riekkö 19 field training exercise with “800 people and 200 vehicles. Most of the troops are from the Finnish Defence Forces’ Jaeger Brigade and Kainuu Brigade. Also participating are roughly 100 soldiers from the US and Norway, as well as four Norwegian CV90 combat tanks.” Bold Quest operations will also be held in Rovajärvi and Rovaniemi in Lapland as well as Rissala airfield in central Finland and the southern towns of Riihimäki and Turku. Altogether some 2,200 people are participating, including some 700 Finns. Staff from 14 countries are involved. This is the first time Bold Quest has been held on Finnish soil, and only the third time it has been outside of the US.⁹⁵⁶

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.⁹⁵⁷

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.”⁹⁵⁸ The focus of the exercise is “to improve and practise capabilities in high intensity and multi-threat operations during cold weather conditions.”⁹⁵⁹ 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.⁹⁶⁰

- Cold Response 2016 included activities ranging from land, to sea, to air.⁹⁶¹ 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

⁹⁵² “Barents Rescue Exercise: Making the Barents Region a safer place,” BarentSaga, no date listed, <http://www.beac.st/?DeptID=20413>

⁹⁵³ “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

⁹⁵⁴ “Exercise Barents 2015,” *The Barents Observer*, last modified 9 June 2016, <http://barentsobserver.com>

⁹⁵⁵ Muzik, Val, “The Arctic this Week Take 5: Week of May 29, 2017,” *The Arctic Institute*, 2 June 2017, <http://www.thearcticinstitute.org>

⁹⁵⁶ “US, Norwegian troops join military drill in northern Finland”, *The Barents Observer*, 16 May 2019, <https://thebarentsobserver.com>

⁹⁵⁷ “Whole World,” CBTO, last modified 17 June 2016, <http://www.ctbto.org/map/#ims>

⁹⁵⁸ Lundquist, Edward H., “Exercise Cold Response Participants Get Chilly Reception in Norway,” 22 March 2012, <http://www.defensemianetwork.com>

⁹⁵⁹ “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>

⁹⁶⁰ “NATO Exercise ‘Cold Response 2012’: A Crisis Response Operation or a Provocation to Russia?” *NATO Watch*, 3 May 2012, <http://www.natowatch.org>

⁹⁶¹ “CR-16,” Danish Defence, no date listed, <http://forsvaret.dk>

participate, while 1000 vehicles will be present on land.”⁹⁶² 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.⁹⁶³

EXERCISE CLOCKWORK

Exercise with Norway and Great Britain at Bardufoss in Norway:

- Currently, the Royal Marines do cold weather training annually in Norway. Moving forward, Royal Marines “will become joint with Norway on a long-term basis and integrated into Norway’s defence plan, providing UK troops a unique opportunity to train alongside a key ally”
- January 2019: “Eight hundred Royal Marines and their support arms are getting ready to deploy to Norway as Britain strengthens its focus on the Arctic.” 800 Marines will be going to Norway on an annual basis.⁹⁶⁴
- The British Army’s AH-64 Apache attack helicopters have, for the first time, flown inside the Arctic Circle as part of Exercise Clockwork held at Bardufoss, Norway. In a statement, the British Army said: “Training in the Arctic builds on the Apache’s battle-winning abilities that have already been proved on combat operations in the maritime and desert environments.”⁹⁶⁵
- “As part of the deployment to the Royal Norwegian Air Force Station in Bardufoss, 4 Regiment Army Air Corps (4 Regt AAC) has deployed three Apache attack helicopters to the Arctic Circle for the first time.”⁹⁶⁶

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 Peace⁹⁶⁷, but was said to be cancelled in 2014 due to tensions with Russia.⁹⁶⁸

- “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.”⁹⁶⁹

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.⁹⁷⁰ 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.”⁹⁷¹

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 USA⁹⁷²

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

⁹⁶² Staalesen, Atle, “Russian inspectors at Cold Response,” The Barents Observer, 3 March 2016, <http://thebarentsobserver.com>

⁹⁶³ Staalesen, Atle, “Russian inspectors at Cold Response,” The Barents Observer, 3 March 2016, <http://thebarentsobserver.com>

⁹⁶⁴ Ricks, Rebecca, “Arctic Strategy: Hundreds Of Royal Marines Prepare For Norway Deployment”, Forces Network, 22 January, 2019, <https://www.forces.net>

⁹⁶⁵ “British Army’s Apache helicopters deploy to Arctic”, Army Technology, 16 January, 2019, <https://www.army-technology.com>

⁹⁶⁶ Ricks, Rebecca, “Exercise Clockwork: Taking To The Skies Over The Arctic Circle”, 30 January, 2019, <https://www.forces.net>

⁹⁶⁷ 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>

⁹⁶⁸ Pettersen, Trude, “USA cancels joint exercises with Russia,” The Barents Observer, 5 March 2014, <http://barentsobserver.com>

⁹⁶⁹ Pettersen, Trude, “USA cancels joint exercises with Russia,” The Barents Observer, 5 March 2014, <http://barentsobserver.com>

⁹⁷⁰ “U.S. Navy eyes greater presence in the Arctic,” Reuters, 2014, <http://www.reuters.com/>

⁹⁷¹ Fonesca, Joseph R., “Report on Rosneft Arctic Projects,” Marline Link, 19 December 2014, <http://www.marinelink.com>

⁹⁷² “Greenland Command/ISCOMGEENLAND: Search and Rescue Exercise Greenland Sea 2012, Final Exercise Report,” Island Commander Greenland, 21 August 2012, http://www.institutenorth.org/assets/images/uploads/attachments/SAREX_Greenland_Sea_2012_Final_Exercise_Report.pdf

needs.”⁹⁷³ 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.”⁹⁷⁴ 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.⁹⁷⁵

Past deployments include Task Force Iceland 2013 and Task Force Iceland 2011. There are currently no forces deployed on Operation Ignition.⁹⁷⁶

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.”⁹⁷⁷

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 1,250.⁹⁷⁸

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.”⁹⁷⁹

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.⁹⁸⁰

- 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.⁹⁸¹

⁹⁷³ “Iceland’s ‘Peacetime Preparedness Needs,’” NATO, no date listed, <http://www.aco.nato.int/icelands-peacetime-preparedness-needs.aspx>.

⁹⁷⁴ “CF-18s to Patrol Iceland’s Airspace,” Defence Watch, 26 March 2013, <http://blogs.ottawacitizen.com>

⁹⁷⁵ “Operation Ignition,” National Defence and the Canadian Armed Forces, 21 November 2014, <http://www.forces.gc.ca>

⁹⁷⁶ “Operation Ignition,” National Defence and the Canadian Armed Forces, 21 November 2014, <http://www.forces.gc.ca>

⁹⁷⁷ 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>

⁹⁷⁸ <http://www.cjoc-coic.forces.gc.ca/cont/rec-eng.asp>

⁹⁷⁹ Berthiaume, Lee, “Trudeau ends Harpers tradition of attending Arctic military exercise,” 29 August 2016, CBC, www.cbc.ca

⁹⁸⁰ “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>

⁹⁸¹ Nilsen, Thomas, “Crimea crisis puts Barents naval exercise on hold,” The Barents Observer, 14 March 2014, <http://barentsobserver.com>

NORTHERN SCREEN

- October 24 – November 7, 2018, the U.S. Marines with Marine Rotational Force-Europe 19.1 and Norwegian Army soldiers conducted bilateral cold-weather and mountain-warfare training. “The Marines practiced aircraft medical evacuations and discussed air-control tactics to ensure safety and success in extreme cold-weather environments.”⁹⁸²

NORTHERN WIND

- 10,000 personnel participated in Exercise Northern Wind from March 18 – 27, 2019 in Sweden’s “northeastern area where a possible land-attack from the Soviet Union was expected to come during the Cold War. From the border area to Finland at Haparanda towards Överkalix and Boden north of Luleå.”⁹⁸³

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 allies⁹⁸⁴ 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.⁹⁸⁵

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.”⁹⁸⁶ 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.”⁹⁸⁷

Due to Norway suspending military cooperation with Russia, Operation POMOR was cancelled in 2015 and has not occurred since.⁹⁸⁸

TRIDENT JUNCTURE

NATO’s biggest training exercise in recent years, Trident Juncture, was held from October 25 – November 7, 2018 in “Central and eastern Norway; the surrounding areas of the North Atlantic and the Baltic Sea, including Iceland and the airspace of Finland and Sweden.” All 29 NATO members plus Sweden and Finland participated in the exercise. The stated objective of the exercise is “to ensure that NATO forces are trained, able to operate together, and ready to respond to any threat from any direction.” The exercise included around 50,000 participants, 250 aircrafts, 65 vessels and upwards of 10,000 vehicles⁹⁸⁹. Examples include:

- “All three branches of the Canadian military – the Army, the Royal Canadian Air Force (RCAF) and the Royal Canadian Navy (RCN); four warships, eight fighter jets, two submarine hunting planes, an air refuelling tanker, and [nearly 2,000] ground troops and support personnel for joint operations.”⁹⁹⁰
- “The Marine Corps [made up] the largest U.S. service element, along with key assets from the Navy, Army and Air Force.”⁹⁹¹ American equipment: Navy aircraft carrier the USS *Harry S. Truman* and it’s escorts; “twelve Amphibious

⁹⁸² McLaughlin, Ashley, “Northern Screen: Joint CAS Training”, Official U.S. Marines Corps Website, 29 October, 2018, <https://www.marines.mil>

⁹⁸³ Nilsen, Thomas, “7,000 foreign soldiers ready for exercise in northern Sweden”, The Barents Observer, 26 February, 2019, <http://barentsobserver.com>

⁹⁸⁴ 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>

⁹⁸⁵ 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>

⁹⁸⁶ <http://mil.no/exercises/pomor2011/Pages/default.aspx>

⁹⁸⁷ Pettersen, Trude, “POMOR-2012 starts in one month,” The Barents Observer, 15 April 2012, <http://barentsobserver.com>

⁹⁸⁸ Pettersen, Trude, “Norway suspends military cooperation with Russia until end of 2015,” RCI Net, 12 December 2014, <http://www.rcinet.ca>

⁹⁸⁹ “Trident Juncture 18”, NATO Media Resources, last updated 31 October, 2018, <https://www.nato.int>

⁹⁹⁰ “Nearly 2,000 Canadian troops take part in NATO’s largest exercise since Cold War”, Radio Canada International, 25 October, 2018, <http://www.rcinet.ca>

⁹⁹¹ Friedl, Megan, “U.S. Joins NATO’s Trident Juncture Exercise”, U.S. Department of Defense, 18 October, 2018, <https://www.defense.gov>

Assault Vehicles, six Light Armored Vehicles, and 21 High Mobility Multipurpose Wheeled Vehicles” were used in the surface and air assaults.⁹⁹²

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.⁹⁹³

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.”⁹⁹⁴ 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.⁹⁹⁵

- Operation Vigilant Eagle suspended in 2014 due to tensions between Canada/US and Russia and, as of June 2016, has not restarted.⁹⁹⁶

VIGILANT SHIELD

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.⁹⁹⁷ 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.”⁹⁹⁸

CLEAN UP OF ANDREYEVA BAY ⁹⁹⁹

The clean-up involves, as just part of the challenge, “some 22,000 spent fuel assemblies...stored in the tanks, coming from 90-100 reactor cores powering the Soviet Navy’s Cold War submarines sailing out from the Kola Peninsula from the late 1950s till 1982.” The work is funded by Sweden, Finland, Belgium, France, Canada, Germany, the Netherlands, Norway, Italy and the United Kingdom through the Northern Dimension Environmental Partnership.¹⁰⁰⁰ “13 countries have provided €165m in funding since 2003 for nuclear decommissioning in Russia’s north-west. There have also been a number of bilateral projects, with Britain, Norway and other countries funding a long project to help clean up Andreyeva Bay.”

⁹⁹² Gale, Margaret, “24th MEU executes amphibious assault during Trident Juncture 18”, Defense Visual Information Distribution Service, 29 October, 2018, <https://www.dvidshub.net>

⁹⁹³ Staalesen, Atle, “U.S. Fighter Jets over Finnish Laplands,” The Barents Observer, 9 February 2016, <http://www.thebarentsobserver.com>

⁹⁹⁴ “OPERATION VIGILANT EAGLE: Air Terror Drill Intercepts, Investigates Hijacking in Simulated Air Terrorist Operation”, GlobalConflictMaps.Com, 3 January 2011. <http://www.globalconflictmaps.com>

⁹⁹⁵ Pugliese, David, “Selling Canada on the need for fighters,” Ottawa Citizen, 12 December 2010, <http://www2.canada.com>

⁹⁹⁶ Carpenter, Dan, “Joint Russia-U.S. Military Training Mission on Hold,” KTUU-TV, 9 September 2016, <http://www.ktuu.com>

⁹⁹⁷ Thatcher, Chris, “NORAD exercise puts defence of norther airspace to the test,” SKIES, 26 October 2016, <http://skiesmag.com>

⁹⁹⁸ Canadian Department of National Defence, “NORAD begins annual Vigilant Shield exercise,” Government of Canada, 17 October 2016, <http://news.gc.ca>

⁹⁹⁹ Walker, Shaun, “Russia begins cleaning up the Soviets’ top-secret nuclear waste dump,” The Guardian, 2 July 2017, www.theguardian.com

¹⁰⁰⁰ Thomas Nilsen, “In 2023, the risky part of Andreeva Bay nuclear cleanup starts,” *The Independent Barents Observer*, 08 December 2017.

<https://thebarentsobserver.com/en/ecology/2017/12/2023-risky-part-andreeva-bay-nuclear-cleanup-starts>

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)¹⁰⁰¹ 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.¹⁰⁰²

- Iqaluit hosted the 2015 Arctic Council ministerial gathering in April 2015. The meeting set the objectives for 2015-2017.
- The next ministerial gathering occurred in May 2017 in Fairbanks, Alaska, where the United States handed the council chairmanship over to Finland, who presented its action plan priorities for 2017-2019.¹⁰⁰³
- Canada's position as the chair of the Arctic Council came to an end in 2015.¹⁰⁰⁴
- The Arctic Council was blocked from signing a joint declaration in Finland in May 2019. US objected to inclusion of any language of climate change, and the rest of the Council would not put forward a watered down declaration. At the same meeting, US Secretary of State Mike Pompeo addressed the forum "welcoming the melting of Arctic sea ice, rather than expressing alarm about it", and commented on geopolitics and security which is highly unusual for the Council. This is the first time since the founding of the Arctic Council in 1996 that the ministerial meeting has ended without a joint declaration.¹⁰⁰⁵

The Arctic Circle¹⁰⁰⁶

"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."¹⁰⁰⁷

The 2016 Assembly was held October 7-9 in Reykjavik, Iceland¹⁰⁰⁸ and the 2017 Assembly will take place in Reykjavik from October 13-15.¹⁰⁰⁹

Arctic Coast Guard Forum

- Officially established in October 2015¹⁰¹⁰
- "...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."¹⁰¹¹

¹⁰⁰¹ 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>

¹⁰⁰² "NATO has 'no intention' to up presence in Arctic," The Local: Norway's News in English, 8 May 2013. <http://www.thelocal.no>

¹⁰⁰³ "Arctic Council meets in Alaska to discuss regional cooperation," The Arctic, 9 March 2017, <http://arctic.ru/>

¹⁰⁰⁴ "2015 Arctic Council ministerial meeting," Global Affairs Canada, 4 November 2015, <http://www.international.gc.ca>

¹⁰⁰⁵ "US climate objections sink Arctic Council accord in Finland", BBC, 7 May 2019, <https://www.bbc.com/>

¹⁰⁰⁶ Arctic Circle - <http://www.theartcticcircle.org>

¹⁰⁰⁷ Zabarenko, Deborah, "China, India, Singapore could join new Arctic Circle forum," Reuters, 16 April 2013, <http://in.reuters.com>

¹⁰⁰⁸ "About," Arctic Circle, last modified 9 June 2016, <http://arcticcircle.org>

¹⁰⁰⁹ "2017 Arctic Circle Assembly", UArctic, no date listed, <http://www.uarctic.org/>

¹⁰¹⁰ Braynard, Katie, "Establishment of the Arctic Coast Guard Forum," Coast Guard Compass, 30 October 2015, <http://coastguard.dodlive.mil>

¹⁰¹¹ Braynard, Katie, "Establishment of the Arctic Coast Guard Forum," Coast Guard Compass, 30 October 2015, <http://coastguard.dodlive.mil>

- The heads of the eight Arctic nations' coast guards met in June 2016,¹⁰¹² and again in March 2017,¹⁰¹³ to deepen their collaboration in the north.
 - In March 2017, the heads of coast guard services met to sign a joint agreement outlining shared protocols for emergency maritime response and combined operations in the Arctic.¹⁰¹⁴
- The Arctic Coast Guard Forum held a multi-lateral search-and-rescue (SAR) exercise (Arctic Guardian) in September 2017.¹⁰¹⁵
- The ACGF met in March 2018 to prepare for the second live exercise to be held in Finland in early 2019.¹⁰¹⁶
- An automated information exchange system (AIES) will be shared amongst Arctic countries' border services. Start date TBD.¹⁰¹⁷
 - "The AIES is a new step forward towards the establishment of effective information exchange between the member-states of the Arctic Coast Guard Forum," a FSB spokesperson explained."
 - The AIES was developed by the Russian Federal Security Service and has already been applied to the northern Pacific border agencies since 2005.

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."¹⁰¹⁸

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.¹⁰¹⁹

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."¹⁰²⁰

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."¹⁰²¹ A second meeting, in Chelsea in 2010,¹⁰²² 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,¹⁰²³ 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

¹⁰¹² Sevunts, Levon, "Arctic nations deepen Coast Guard cooperation," RCINet, 10 June 2016, <http://www.rcinet.ca>

¹⁰¹³ "Arctic coast guard services coordinate procedures for cooperative maritime activity," The Arctic, 23 March 2017, <http://arctic.ru>

¹⁰¹⁴ "Arctic coast guard services coordinate procedures for cooperative maritime activity," The Arctic, 23 March 2017, <http://arctic.ru>

¹⁰¹⁵ Torruella, Anika, "Arctic Coast Guard Forum to hold search-and-rescue exercises," IHS Jane's Navy International, 13 April 2017, <http://www.janes.com/>

¹⁰¹⁶ Sevunts, Levon, "Arctic nations develop coast guard co-operation," The Barents Observer, 13 March 2018, <https://thebarentsobserver.com>

¹⁰¹⁷ "An automated information system to be introduced in the Arctic," The Arctic, 4 July 2017, <http://arctic.ru>

¹⁰¹⁸ "Backgrounder," Arctic Economic Council, last modified in 2016, <http://arcticeconomiccouncil.com>

¹⁰¹⁹ Arctic Economic Council, "Arctic Council, 28 January 2014, <http://www.arctic-council.org>

¹⁰²⁰ "Arctic Economic Council selects new Chair and establishes Secretariat," Arctic Economic Council, 23 April 2015, <http://arcticeconomiccouncil.com>

¹⁰²¹ "The Ilulissat Declaration", Arctic Ocean Conference, 27 – 29 MAY 2008, http://www.oceanlaw.org/downloads/arctic/Ilulissat_Declaration.pdf

¹⁰²² 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>

¹⁰²³ Staalesen, Atle, "Formalizing the Arctic G5," The Barents Observer, 30 March 2010, <http://barentsobserver.com>

summary of the Chelsea meeting, the Arctic Ocean states have a “special responsibility...for the state of affairs in the region.”¹⁰²⁴Arctic 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.”¹⁰²⁵

They met again in June 2013 in Ilulissat, Greenland. According to [defensenews.com](http://www.defensenews.com),¹⁰²⁶ the Defence Chiefs agreed to “strengthen cooperation in marine surveillance and expand joint military exercises. “Moreover, defense commanders agreed to identify and appraise the military and civilian capabilities in each country that can be used to support civilian missions in the Arctic over the next 12 months. “The new strategy, following a two-day meeting of defense commanders in the coastal Greenland town of Ilulissat that ended June 12, will focus on how the eight Arctic nations can bolster defense and security cooperation in the Arctic and how military resources can be better deployed to support civilian needs across borders.”

In addition:

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

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

Arctic Frontiers¹⁰²⁷

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 2017.¹⁰²⁸

International Cooperative Engagement Program for Polar Research (ICE-PPR)¹⁰²⁹

“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.”

¹⁰²⁴ “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>

¹⁰²⁵ “General Natynczyk and fellow northern Chiefs of Defence discuss shared Arctic interests”, DND News Release, 13 April, 2012, <http://www.forces.gc.ca>

¹⁰²⁶ O’Dwyer, Gerard, “Arctic Nations Set Cooperation Guidelines,” Defence News, 27 June 2013, <http://www.defensenews.com>

¹⁰²⁷ Arctic Frontiers - <http://www.arcticfrontiers.com>

¹⁰²⁸ “Home,” Arctic Frontiers, last modified 9 June 2016, [arcticfrontiers.com](http://www.arcticfrontiers.com)

¹⁰²⁹ Haun, Eric, “Senior Defence Officials discuss Polar priorities,” MarineLink.com, 1 March 2016, <http://www.marinelink.com>

“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.”

Nordic-Russia Meetings

The 2019 Arctic Forum gathered in St. Petersburg. Since the annexation of Crimea in 2014, Nordic leaders have frozen relations with Russia, although Finland has continued to “nurture relations.” The meetings revealed differences in Arctic perceptions with Russia focusing on resource extraction and buildup of infrastructure and military capabilities, others are focused on increased attention to climate concerns.¹⁰³⁰

At the same meetings, Rosatom CEO Aleksey Likhachev stated that by 2024, 92.6 million tons will be shipped through the Northern Sea Route, 12.6 million more than Trump's May Decree promise of 80 million.¹⁰³¹

Northern Forum¹⁰³²

Founded¹⁰³³ in 1991, the Northern Forum’s mission is “to improve the quality of life of Northern peoples by providing Northern regional leaders a means to share their knowledge and experience in addressing common challenges; and to support sustainable development and the implementation of cooperative socio-economic initiatives among Northern regions and through international fora.”

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

¹⁰³⁰ Staalesen, Atle, “A united Nordic front sits down with Putin”, The Barents Observer, 10 April, 2019, <https://thebarentsobserver.com>

¹⁰³¹ Staalesen, Atle, “Russian Arctic developers present a new dazzling target for Northern Sea Route”, The Barents Observer, 10 April, 2019, <https://thebarentsobserver.com>

¹⁰³² Northern Forum - <http://www.northernforum.org>

¹⁰³³ “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.”

OTHER PROJECTS INVOLVING THE ARCTIC

Arctic Fibre¹⁰³⁴

“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.”

Britain and the Arctic

September 30, 2018: British Defence Secretary Gavin Williamson announces new Defence Arctic Strategy.

- In 2019 four RAF Typhoons will patrol Icelandic skies for the first time. “This will allow the UK to work closely with allies to deter aerial threats to Euro Atlantic security. The mission will also provide the RAF with unique opportunities to test its skills in different environments”
- In 2020 operational commitments in the area will increase with the introduction of new P-8 Poseidon aircraft. “Based out of RAF Lossiemouth, the sub-hunters will help combat a range of intensifying threats, not least increasing submarine activity in the Arctic”¹⁰³⁵

See Exercise Clockwork for further information.

February 2019: “Nine P8 Poseidon planes will be deployed to the Royal Air Force Lossiemouth airbase in Scotland in 2020 to conduct reconnaissance in the North Atlantic and in the Arctic.”¹⁰³⁶

China and the Arctic

China is one of the most important rising powers, displaying an increasing interest in the Arctic. Chinese Read Admiral Yin Zhuo said, ““The Arctic belongs to all the people around the world as no nation has sovereignty over it...” China has an interest in Greenland’s mineral resources, exploration and research of Arctic (‘scientific diplomacy’), and the Northern Sea Route.¹⁰³⁷ In January 2018, China released its first white paper on Arctic policy. The document explains China’s vision and interests in the Arctic, and proposals for development of industries such as fishing and shipping, resource extraction, science and tourism.¹⁰³⁸

“According to a study by the Center for Naval Analyses, Chinese foreign direct investment now accounts for an eye-popping 11.6 percent of Greenland’s economy, as well as nearly 6 percent of Iceland’s GDP. Chinese actors have pursued (not always successfully) deals for key harbor real estate (in Iceland and Norway and Svalbard), as well as airfields, fiber-optic cables, and strategic minerals. In addition, Chinese funds built an aurora observatory in northern Iceland...China appears keen to shape the future of Arctic governance, and is maneuvering to be well positioned to exert influence as the Arctic nations decide the future of shipping, fishing, and other important developmental parameters.”¹⁰³⁹

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 1925.¹⁰⁴⁰

June 2017: A new paper co-released by China’s National Development and Reform Commission and the State Oceanic Administration outlines how the Arctic’s Northern Sea Route may be increasingly considered a crucial part of China’s “Belt and Road” trade initiative.¹⁰⁴¹

¹⁰³⁴ Arctic Fibre - <http://arcticfibre.com/>

¹⁰³⁵ “Defence Secretary announces new Defence Arctic Strategy”, GOV.UK, 30 September, 2018, <https://www.gov.uk>

¹⁰³⁶ “UK Announces Arctic Military Buildup to Counter Russia’s Activities – Reports”, Sputnik News, February 18, 2019, <https://sputniknews.com>

¹⁰³⁷ Humberto Zorro Cuervo, Mario, “China and the Arctic: The Ice Dragon,” The News Hub, 29 November 2014, <https://www.the-newshub.com>

¹⁰³⁸ “Full text: China’s Arctic Policy”, The State Council, The People’s Republic of China, 26 January 2018, <http://english.gov.cn>

¹⁰³⁹ Pincus, Rebecca & Berbrick, Walter, A., “Gray Zones in a Blue Arctic: Grappling with China’s Growing Influence”, War on the Rocks, 24 October, 2018, <https://warontherocks.com>

¹⁰⁴⁰ Kjetland Fjeldsbø, Tore Andre, “Peripheral Kingdom,” The Arctic Journal, 2 December 2015, <http://arcticjournal.com>

¹⁰⁴¹ Lanteigne, Marc, “China loops the Arctic into its Belt and Road vision,” News Deeply, 30 June 2017, <https://www.newsdeeply.com>

October 2017: China's "Vision for Maritime Cooperation under the Belt and Road Initiative lists three sea passages...The third passage is the Arctic route, joining the Indian Ocean route to form China's trade and investment circle."¹⁰⁴²

January 2018: China releases "China's Arctic Policy" that highlights China's policy goals and positions related to the Arctic.¹⁰⁴³

May 2018: China hosts 'Arctic Circle China Forum' in Beijing with more than 500 participants from 30 countries.¹⁰⁴⁴

August 2018: "At least two Chinese high ice class merchant ships were in commercial operations in the Arctic. China's shipbuilding industry is therefore ready for Arctic shipping."¹⁰⁴⁵

Chinese Icebreaker Xuelong

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."¹⁰⁴⁶ 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."¹⁰⁴⁷

July 2017: The Xuelong began its eighth arctic journey this week. "The expedition will be the first Chinese attempt to traverse the Northwest Passage. Researchers on board the Xuelong, or Snow Dragon, plan to study the acidification of the Arctic Ocean, as well as the presence of microplastics in Arctic waters, Shanghai Daily reports... This year's route will see it depart Shanghai, traverse the Northeast Passage and then continue on to the Northwest Passage."¹⁰⁴⁸

October 2017: Vessel completed its journey on 10 October 2017, having travelled "20,000 nautical miles in 83 days, including 1,995 nautical miles through ice formations," according to the Polar Research Institute of China.¹⁰⁴⁹

September 2018: "China's research icebreaker Xuelong returned to a base in Shanghai [September 26, 2018] after finishing the 9th Arctic research expedition. The Icebreaker, also known as the Snow Dragon, carrying a research team, spent 69 days on its journey. The expedition team has also deployed its first homegrown unmanned ice station and other unmanned observation equipment including underwater gliders, which enable China to extend its research on the Arctic Ocean into the winter, according to Zhu Jianguang, leader of the team. The Icebreaker traveled over 12,500 nautical miles, including 3,815 through ice, reaching 84.8 degrees north latitude...The expedition traveled north through the Chukchi Sea and into the Arctic Ocean during its extended mission."¹⁰⁵⁰

Chinese Icebreaker Xuelong 2

"China has launched its first domestically built polar research vessel and ice breaker, Snow Dragon 2 (Xuelong 2), at Jiangnan Shipyard Group in Shanghai on Monday... The construction of the vessel was started at the shipyard in December 2016. She will now conduct mooring tests and undergo additional equipment installation, and will soon initiate its sea trials...The vessel will be 122.5 meters long and 22.3 meters wide, with a displacement of 13,990 tonnes and a range of 20,000 nautical miles. She has a diesel-electric propulsion system, with two 16-cylinder and two 12-cylinder engines, both Wärtsilä 32-series designs, powering two 7.5 MW Azipods that give her a speed of up to 15 knots in open water and 3 knots when breaking ice. The icebreaker can sail on 60-day expeditions with 90 crew members and researchers. According to the Polar Research Institute of China, Xuelong is able to break through 1.5-meter (4.9 ft) thick ice at a maximum speed of 3 knots making it a PC3 icebreaker under the Polar

¹⁰⁴² Kenderdine, Tristan, "Arctic link reveals the full scope of China's belt and road ambitions," South China Morning Post, 20 October 2017, <http://www.scmp.com>

¹⁰⁴³ "China's Arctic Policy", The State Council: The People's Republic of China, 26 January, 2018, <http://english.gov.cn>

¹⁰⁴⁴ Nilsen, Thomas, "China seeks a more active role in the Arctic", The Barents Observer, 11 May 2019, <https://thebarentsobserver.com>

¹⁰⁴⁵ Xiaogang Lai, Sherman, "China's arctic policy and its potential impact on Canada's arctic security", Centre for International Maritime Studies, 17 April, 2019, <http://cimsec.org>

¹⁰⁴⁶ "Chinese icebreaker heads for 6th Arctic expedition," Xinhuanet News, 11 July 2014, <http://news.xinhuanet.com>

¹⁰⁴⁷ "Bidding to start on China's new ice breaker," Maritime Executive, 13 March 2016, <http://www.maritime-executive.com>

¹⁰⁴⁸ "Executive Summary for July 21st," Arctic Deeply, 21 July 2017, <https://www.newsdeeply.com/arctic>

¹⁰⁴⁹ "China's science vessel returns from Arctic," China Daily, 11 October 2017, <http://www.phnompenhpost.com>

¹⁰⁵⁰ Xinhua, "Icebreaker returns to Shanghai after completing Arctic research expedition", Xinhua News, 26 September, 2018, <http://www.xinhuanet.com>

Class of measurement. The ship will also have two-direction ice breaking capabilities with both its bow and stern.”¹⁰⁵¹

Chinese Nuclear Powered Icebreaker

“China is preparing to start bidding on a nuclear powered icebreaker, the first nuclear powered surface ship in the country’s history. An icebreaker powered by nuclear energy would give Beijing access to the Arctic and its resources. It would also pave the way toward nuclear-powered aircraft carriers, giving the People’s Liberation Army Navy unprecedented reach.”¹⁰⁵²

“China is working to develop a 33,069-ton nuclear icebreaker, which would be even bigger than the epic nuclear-powered vessels built by Russia. South China Morning Post reported that while the purpose of the ship has not been specified, the plan is to have a 152-metre long, 32-metre wide and with a displacement of 30,000 tonnes. China General Nuclear Power Group (CGN) has invited bids for the contract to build the vessel and it is described in the tender documents as an ‘experimental platform’. The deadline for interested parties to tender was [March 20, 2019], with no bids permitted from outside mainland China.”¹⁰⁵³

European Union

France has urged 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.” The EU’s claim to influence would be that “five of the eight permanent members [of the Arctic Council] are European countries.”¹⁰⁵⁴

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”.¹⁰⁵⁵

“A three-year, €6.5 million (\$7.7 million) research project has been launched to address safety and efficiency in Arctic ship operations. Funded by the EU’s Horizon 2020 program, SEDNA sets out to develop a risk-based approach to Arctic navigation, ship design and maritime operations.”¹⁰⁵⁶

ICELAND

Germany’s Bremenports GmbH, Icelandic engineering firm Efla, and two Icelandic municipalities have entered an agreement to construct a deep vessel port. Bremenports GmbH will own 2/3 of the venture. The port may also be a hub for Greenlandic commodities exports and Icelandic hydrogen. The development phase is expected to take 3 - 5 years.¹⁰⁵⁷

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 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.¹⁰⁵⁸

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.”¹⁰⁵⁹

¹⁰⁵¹ “China Launches its First Domestically Built Icebreaker, Snow Dragon 2/ Xuelong 2”, DefPost - A Comprehensive Aerospace & Defense Portal, 10 September, 2018, <https://defpost.com>

¹⁰⁵² Mizokami, Kyle, “China Is Planning a Nuclear-Powered Icebreaker”, Popular Mechanics, 25 June, 2018, <https://www.popularmechanics.com>

¹⁰⁵³ Pai, Laxman, “China Builds 30,000-tonne Nuclear-Powered Ship”, Marine Link, 20 March, 2019, <https://www.marinelink.com>

¹⁰⁵⁴ Synon, M.E., “France wants EU Empire to Expand into Arctic Circle”, Breitbart News Network, 18 July 2014, <http://www.breitbart.com>

¹⁰⁵⁵ “An Integrated EU Policy for the Arctic,” European Commission, 27 April 2016, <http://europa.eu>

¹⁰⁵⁶ Haun, Eric, “EU Project Aims to Improve Arctic Shipping Safety,” 14 August 2017, Marine Link, <https://www.marinelink.com>

¹⁰⁵⁷ Sigurdardottir, Ragnhildur, “Iceland Builds Arctic Port as Global Shipping Routes Get Redrawn”, 11 April, 2019, Bloomberg, <https://www.bloomberg.com>

¹⁰⁵⁸ Keefe, Joseph, “IMO adopts Polar Code Safety Requierements,” Marline Link, 9 December 2014, <http://www.marinelink.com>

¹⁰⁵⁹ Fonesca, Joseph R., “IMO Training for Mariners in the Arctic Finalised,” MarineLink, 10 February 2015, www.marinelink.com

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.”¹⁰⁶⁰

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.¹⁰⁶¹

Japan: Independent underwater vehicle Urashima developed by JAMSTEC¹⁰⁶²

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 2030.¹⁰⁶³

¹⁰⁶⁰ Turander, Elinor, “DNV GL launches interactive Arctic Risk Map to communicate region’s complex risk picture,” DNVGL, 26 August 2014, <http://www.dnvgl.com/>

¹⁰⁶¹ Lakshmi, Aiswarya, “Japan, Finland Cooperation for Arctic,” MarineLink.com, 14 March 2016, www.marinelink.com

¹⁰⁶² “Unmanned Vessel to Explore Arctic,” The Japan News, 11 July 2014, <http://the-japan-news.com/>

¹⁰⁶³ Brumfiel, Geoff, “Navy Funds A Small Robot Army To Study The Arctic,” NPR, 15 February 2015, www.npr.org