On 17 November 2015 the Russian Air Force attacked an Islamic State/ISIS position in Syria, a commonplace occurrence but for its choice of weapon: the new KH-101 cruise missile. This stealthy new weapon, with an estimated range of up to 5,000 kilometres, was used against an adversary with no anti-aircraft or early detection capability. There was no military rationale for its employment, meaning the strike can only be understood as a political message to the West – namely, that the Russian military has developed new capabilities, new confidence and a longer reach.

From a Canadian perspective, Russia’s new military assertiveness on the global stage is not only unsettling from a political standpoint, it has begun to revive certain strategic threats that most defence analysts had gratefully relegated to the past. Weapons like the KH-101 – or its nuclear equivalent, the KH-102 – offer Russian bombers or submarines a first-strike capability against most North American targets from the largely unpatrolled waters immediately adjacent to the Canadian Arctic archipelago. Carrying these weapons are new or refurbished Russian nuclear attack submarines (SSNs), which continue to be built and upgraded despite that country’s failing economy and rapidly depleting foreign currency reserves.

This is not to suggest that Russia intends (or is even remotely likely) to launch such a strike against North America from the Arctic, or elsewhere. However, Moscow’s diplomatic modus operandi over the past decade has increasingly centred on threats and military posturing. If relations between Russia and the West continue to deteriorate, the Arctic may increasingly be used as a kind of posturing ground, a highly visible place where the Russian military signals its government’s displeasure with the West and displays what it considers its ‘resistance’ to American political and economic pressure. Within this framework, a Russian decision to surface submarines or to publicize
the fact that it has resumed its patrols in that area would achieve this goal in dramatic fashion. Russia’s repeated bomber flights to the edge of North American airspace represent a clear example of such tactics. While Canadian and American defence planners recognize the extremely low probability that this posturing could degenerate into anything more dangerous, they may be forced by circumstances to focus more on the possibility of a Russian attack as relations deteriorate. In such an unfortunate scenario, Canada and the United States may feel forced to revisit joint Arctic maritime defence.

In fact, the Canadian and American militaries have been here before and, to understand the North American response to increased Russian activity in the Arctic basin, history offers an interesting guide. In the mid-1980s the Arctic Ocean emerged as a region of particular concern for the US Navy. Analogous to the current concerns over the KH-101, the Soviet Union’s development of the long-range SS-NX-24 cruise missile seemed to give Soviet submarines the option of launching a stealthy first strike against North American targets from within Canadian Arctic waters. In part a response to these capabilities, American naval strategy underwent a significant and aggressive shift north. Articulated for the first time in 1984 by Admiral James D. Watkins, the New Maritime Strategy was a broad concept for the global conduct of war with a focus on defeating Soviet submarines in circumpolar waters.1

In support of this strategy came a new emphasis on detection of Soviet submarines in the region. During the 1970s, the Canadian Defence Research Board, in cooperation with American laboratories and defence agencies, established detection systems at chokepoints within the Arctic archipelago to locate vessels attempting to slip through. By the time of the new US maritime strategy, however, Canadian-American priorities had shifted to the Arctic basin, where the two allies sought to construct something far more ambitious. According to newly declassified documents, the goal was an under-ice listening system strung along the continental shelf northwest of the Queen Elizabeth Islands, capable of ‘looking’ far out into the Arctic Ocean to track Soviet submarines across most of the polar basin. While this Canadian-led joint program never moved past the research phase, it demonstrated the seriousness with which the two governments viewed the Soviet threat from the Arctic and the lengths that the two states were willing to go to counter it.

While many of the details concerning this program remain classified, field testing appears to have begun in earnest in 1986. In an exercise labeled Nansen 86, Canada’s Defence Research Establishment Pacific (DREP) partnered with American agencies to deploy an experimental array suspended from an ice plug2 at the mouth of Nansen Sound off the northwest coast of Ellesmere Island. The target was an American SSN operating in the vicinity. Initial tracking results were good and the Canadians noted their ability to monitor the boat out to a range of about 550 km – or roughly one-quarter of the distance between the sensors and the USSR’s northern submarine bases along the Kola Peninsula.3

The work was considered a success but mounting sensors on the bottom of the sea ice presented problems. To begin with, ice moves and a permanent system needed a more permanent setting. Secondly, the jagged ice pinnacles (called pingos) that protrude downwards from the ice canopy limited the sensor’s angle of detection, resulting in a pie-shaped area in which tracking could be successful. In spite of these limitations, Nansen 86 was a success and the next year the decision was made to mount a new array consisting of approximately 100 hydrophones on the edge of the continental shelf in the Lincoln Sea – roughly 110 km north of Ellesmere Island.4 This operation was labeled Iceshelf 87 and, again, involved a US Navy SSN invited by DREP to operate off the Canadian coast. This system was to be connected to a relay station at Stuckberry Point, Ellesmere Island, by underwater cable, and then by radio link to Canadian Forces Base Alert, roughly 70 km to the east. These experiments continued into 1988 with Iceshelf 88, when DREP and its American partners again tested acoustic reception and background noise filtering while tracking an American SSN. A separate series of experiments was being run concurrently to the southwest at
Nansen Sound as the teams of scientists tried to determine the optimal location for their new systems.5

Developing these sensor networks was understood to be a long-term project. In 1988, DREP estimated that another five to seven years of research would be required simply to get the technology to a point where it could begin to be deployed. Nevertheless, the initial results suggested that this was very possible. More than a decade of joint under-ice detection experiments in the chokepoints of the Northwest Passage had built a solid base in Arctic acoustics and that knowledge, technology and experience was transferred to the polar basin activities. The 1987 experiments in the Lincoln Sea, using a bottom-mounted array, offered an estimated detection capability that covered the majority of the Arctic basin (during the summer). By 1988, DREP was anticipating even broader coverage using multiple sensor nodes spread hundreds of kilometres apart along the edge of the continental shelf.6 Figure 1 illustrates the intent for this system against the anticipated future threat from newer, quieter Soviet boats (with the map showing the range in which a 50% possibility of detection could be expected).

Research into Arctic Ocean surveillance appears to have been abandoned after the collapse of the Soviet Union in 1991. With the once-powerful Soviet submarine fleet literally rusting in port there was no need to continue with such an expensive program.7 Canada’s detection systems in the Arctic archipelago were allowed to fall into disrepair and an Arctic sub-surface monitoring capability remained an after-thought until 2000 when the receding sea ice and new prospects for commercial shipping in the north inspired the Department of National Defence (DND) Maritime R&D Overview Group to recommend a renewed effort to maintain Canada’s under-ice knowledge as part of the broader National Maritime Surveillance Strategy of the Canadian Forces.8 Efforts to re-establish the capability were started in 2008 through Canada’s experimental Northern Watch program, located in Barrow Strait. Work on Northern Watch has been fraught with difficulties but it has been continued in an effort to monitor surface and sub-surface transits through the Northwest Passage. What has not been discussed publicly is the possibility of renewing Canada’s efforts to re-extend that capability into the Arctic Ocean.

The reasons for this focus on the archipelago over the polar basin are very simple. Northern Watch is largely intended to monitor surface traffic through one of the most transited sections of the Northwest Passage. As resource shipping, tourist expeditions and other activity increase in the region that kind of situational awareness will become increasingly essential – not only from a conventional defence perspective but for a broad array of public safety, law enforcement and regulatory requirements. The Arctic Ocean, conversely, is unlikely to see any traffic beyond nuclear submarine operations for quite some time,9 and the existential threat posed by the Soviet Union in the late 1980s has obviously been downgraded for Russia, if not entirely dismissed. As such, Canada and the United States are not likely to revisit that Cold War program in the near term and, in a time of constrained defence spending, that is likely for the best.

In spite of its many headline-catching activities, Russia is not seeking conflict in the region or even to project power beyond
its littoral zone. The majority of Russia’s Arctic exercises take place within its own territory and territorial waters and should primarily be seen as domestic exercises by a regime looking to brandish its nationalistic credentials with military posturing. A realistic appraisal of Russia’s strategic interests points to a requirement for peace, stability and cooperation in the Arctic region. Stability is essential since much of Russia’s future oil and gas development will have to take place in its north and any sign of conflict will make foreign capital and providers of badly needed technology wary about investing in the region. In the near term, the probability of Russian activity provoking a return to these kinds of Cold War-era detection systems is, therefore, very low and, to its credit, the Canadian government has not overreacted with investments in conventional military capabilities for the Arctic.

Nevertheless, the events since the annexation of Crimea in 2014 have demonstrated the possibility of a new and prolonged geopolitical conflict that some commentators are already calling a new Cold War. If global politics should continue to degenerate and the Russian government feels it to be in its political interest to expand its Arctic military posturing from bomber flights to include persistent submarine operations, then defence calculations in Ottawa and Washington may change. Today, signs of renewed Russian emphasis on the Arctic have begun to emerge even if they are not yet close to the point of causing serious fear akin to what defence analysts felt in the late 1980s. Moscow is investing considerable sums into Russia’s nuclear submarine fleet, including refurbishing existing classes and constructing new SSN and ballistic missile submarine (SSBN) classes. President Vladimir Putin has also put significant emphasis on the north as both a strategic resource base and a region requiring military protection while labeling NATO the principal external military danger to Russia. Amendments to Russia’s 2001 Maritime Doctrine, adopted in July 2015, have also drawn the country’s maritime focus to the Arctic and Atlantic.

These activities and statements may not portend future aggression but, nevertheless, the effect has been to heighten tension and generate unease within Canada and the United States. This perception of a renewed Russian threat has, for instance, already moved North American Aerospace Defence (NORAD) Command to advocate for new all-domain responsibilities – meaning an expansion of its surveillance and response duties to water, ice and perhaps even land. The new Canadian government has also earmarked $133 million over five years for Defence Research and Development Canada.
(DRDC) to “enhance all domain situational awareness” of the air, sea and underwater approaches in the Arctic.\textsuperscript{15}

The probability of conventional conflict in the North American Arctic is extremely low and the situation very different from what defence planners faced when last they considered the defence of the Arctic Ocean area. Still, the danger exists that a prolonged period of geopolitical tension and the large-scale return to Arctic Ocean patrol routes of Russian submarines may force a similar Canadian and American return to the region. These detection systems have remained a highly classified secret and only now can we understand how seriously Canada and the United States took this threat, and how much they were willing to invest to address it. Furthermore, this system’s initial promise showed that large-scale tracking is not only possible but was well on its way to becoming a reality before the end of the Cold War. If fear and mistrust come to define East-West relations in the 21\textsuperscript{st} century, as they did in the 20\textsuperscript{th}, then these plans may yet be dusted off once again. 🛰️

Notes
2. An ice plug is a semi-permanent feature connected to the shore.
5. Thorleifson, “Overview of Surveillance in the Arctic Basin.”
6. Ibid.
7. During the early 1990s there was still some interest in developing sensor systems inside the Arctic archipelago, however these too were abandoned on the basis of cost by 1994. See Adam Lajeunesse and William Carruthers, “The Ice has Ears: The Development of Canadian SOSUS,” Canadian Naval Review, Vol. 9, No. 3 (Fall 2013), p. 6.
9. There are many reports which make this assessment. See for instance: Arctic Council, Protection of the Arctic Marine Environment (PAME) working group, “Arctic Marine Shipping Assessment,” 2009.

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This map illustrates Russia's militarization of the Arctic.