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IMPROVED SITUATIONAL AWARENESS IN THE ARCTIC

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AIM

1. Situational Awareness (SA) is a necessity for safety and sovereignty for every country in the world. In order that Canada may increase and sustain situational awareness in the Arctic region, steps must be taken to increase surveillance capabilities. In fact, the solution proposed in the paper is to implement tools to enable persistent surveillance and this should be conducted by the Royal Canadian Navy (RCN). The RCN plans to increase its capacity for surveillance in the Arctic region, which is the best course of action to ensure the protection that Canada intends for its people and national interests. In favor of focusing foremost on the capability of surveillance in the Arctic, the RCN should specifically consider which methods and tools best enhance and enable intelligence, surveillance, and reconnaissance (ISR). Two solutions detailed in this paper are the aerial platform of the MQ-4 Triton and shipboard platforms and systems for ISR.

INTRODUCTION

2. The Arctic region is the northernmost region on our planet with lands and waters under the sovereignty of the United States, Finland, Denmark (Greenland), Iceland, Norway, Russia, Sweden, and Canada.¹ Since this region is not as populated as others, there are more resources that these sovereign countries, along with others, are increasingly eyeing with interest. The portion of the Arctic located within Northern Canada amounts to about 40 percent of the country's land mass.² Conversely about one percent of the total populous of Canada resides in the lands of Northern Canada.³ However, the Canadian government is well aware there is a need to safeguard the citizens of the region and protect its national interests. The reasons that ISR

¹ Keith Battarbee and Erik Fossum, *The Arctic Contested* (P.I.E. Peter Lang S.A., 2014), Brussels, 239-241.

² Bone, Robert. *The Canadian North: Issues and Challenges* (Oxford University Press, 2012), Ontario, Canada, 3-6.

³ Ibid.

capability for surveillance is recommended is the optimal condition for situational awareness provided by the data, images, and video captured by ISR.

DISCUSSION

3. Canada must increase and retain a high level of situational awareness of movement and activities in the Arctic region. It is becoming increasingly clear that international interests are spilling over beyond the eight Arctic states and now includes other nations which are taking action to pursue their interest in the region. Such action is seen in the expedition, led by the German vessel *Polarstern*, which is currently in the Laptev Sea to conduct geographical studies. Onboard the vessel there are 19 countries represented including Belgium, China, Poland, Spain, and Switzerland. China has also released a statement claiming its status as a “near-Arctic” state.⁴ In January 2018, China issued its first White Paper on the Arctic and confirmed interests tied to expanding the Belt and Road trade through use of a “Polar Silk Road”.⁵ The intent is to use shipping routes to include the Northern Sea Route (NSR) located north of Siberia and will connect with the Russian markets, as well as markets in Northern Europe. Moreover, China commissioned the development of a nuclear powered icebreaker. The China National Nuclear Corporation (CNNC) is reported to have joined in the effort with the Shanghai university that won the bid on the project.⁶ Of more interest is the report that CNNC has an invitation to bid on a similar project for Russia’s planned project to explore building a nuclear powered icebreaker. Russia is, of course, the main economic and political power making maneuvers to show their status as a legitimate stakeholder in the Arctic.⁷ Since its show of territorialism in the 2006

⁴ Lanteigne, Marc, “Arctic Politics and Foreign Policy”, *Over the Circle* (blog), 14 October 2019, <https://overthecircle.com/>.

⁵ Ibid.

⁶ Marc Lanteigne and Mingming Shi, “China Stakes its Claim in the Arctic”, *The Diplomat*, 29 January 2018, <https://thediplomat.com/2018/01/china-stakes-its-claim-to-the-arctic/>.

⁷ Ibid.

incident where a Russian flag was planted on the ocean floor, directly beneath where the United States planted a flag (about a hundred years prior), Russia has continued making statements about its claim to more land and waters in the Arctic region.⁸ The implication of an alliance of sorts between China and Russia on the Arctic matter is of concern not only to the United States, but to all other Arctic states. Increasing Canada's capability to keep abreast of movements in and around the Arctic region is the best way to ensure Canada can keep its borders secure and keep its national interests secure.

4. The RCN would benefit from addition of ISR platforms and systems onboard its fleet. The most important product of ISR capability is that it enables better decision making by leaders at the operational level. In order to determine effective COAs and the associated resources required, commanders must have knowledge of the operational environment. ISR gains situational awareness for relevant activities to include: terrain, weather, and both friendly and adversarial forces. Specific to the solution proposed for capabilities required for Canada to sustain situational awareness in the Arctic, a focus on persistent ISR systems and applications is most pertinent. Persistent ISR means a near 24/7 and 365 days of surveillance. ISR systems consist of the following: a platform and operating crew; collection sensors; command and control and communications equipment; mission-planning and tasking equipment; processing, exploitation and dissemination equipment; and logistics, training and maintenance support.⁹

⁸ Georgetown Securities Studies Review. "American Needs a New Strategy", Last Accessed 20 October 2019, <https://georgetownsecuritystudiesreview.org/2019/10/14/america-needs-an-arctic-strategy/?fbclid=IwAR0ULz6a9TwNCvKm6sb5Pidvt6r13J72nVEwmD5fj5khIUxNNvCOqkG0HXk>

⁹ Canadian Armed Forces. Royal Canadian Air Force Doctrine. "Intelligence, Surveillance, and Reconnaissance", Last Accessed 22 October 2019, <http://www.rcaf-arc.forces.gc.ca/en/cf-aerospace-warfare-centre/aerospace-doctrine.page>

5. This type of platform can be implemented onboard ships which are used in the Arctic region, enabling a broader view during surveys in the region. The Canadian government has projects in queue to develop and launch ships with capabilities for search and rescue, ice breaking, and regional law and sovereignty engagements. The proposed investment in 15 Canadian Surface Combatant (CSC) ships is one of these projects.¹⁰ Another project is the addition of the Harry DeWolf-class ships for Arctic and Offshore Patrol. The Canadian government states the intent of these ships, “to assert Canadian sovereignty in the Arctic and coastal Canadian waters, and support international operations as required”.¹¹ Addition of an ISR platform will expand the view that Canada has on the Arctic region. This applies to the potential for data gained for geographical, weather, and maritime conditions and traffic in the region. The RCN does have a proposal for the Canadian government to invest in ISR capability. The capability proposed is for the Royal Canadian Navy Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) Unmanned Aircraft System (UAS). The ISTAR is an airborne platform proposed to be operated from the RCN’s Halifax-class frigate and used with a helicopter. Specifications for the ISTAR put the radius of scanning at 50 nautical miles.¹² Mainly, this proposed investment is a step in the right direction for Canada to maintain situational awareness through ISR capability. Two items against the solution this proposal gives for situational awareness is that (1) the proposal was recently submitted to the Canadian government, with a projected delivery date (once approved and funded) of the year 2027.¹³ The

¹⁰ Government of Canada. “Sea Defence Project Ships: Canadian Surface Combatant”, Last Modified 18 April 2019, <https://www.canada.ca/en/department-national-defence/services/procurement/canadian-surface-combatant.html>

¹¹ Government of Canada. Royal Canadian Navy. “Arctic and Offshore Patrol Ship Project”, Last Modified 12 June 2019, <http://www.navy-marine.forces.gc.ca/en/fleet-units/aops-home.page>

¹² Government of Canada. “Defence Capabilities Blueprint: Royal Canadian Navy Intelligence, Surveillance, Target Acquisition and Reconnaissance Unmanned Aircraft System”, Last Modified 23 September 2019, <http://dgpaap.forces.gc.ca/en/defence-capabilities-blueprint/project-details.asp?id=1297>

¹³ Ibid.

timeline of this investment does not indicate the ISR capability is critical for the RCN. (2) the specifications indicate a smaller lens with which the RCN can view images and data. Other unmanned ISR platforms already in use by other countries have a greater range in the sensor suites and radar, as compared to the ISTAR.

6. The ISR technology solution that will increase Canada's visual surveillance further is the unmanned aerial vehicle (UAV) platform. Of the UAVs models currently deployed, the MQ-4 Triton offers the most bang for the buck in ISR capabilities. The MQ-4 Triton was developed by Northrop Grumman, with the slogan, "Making the Oceans Smaller", initial data on the performance of the MQ-4 suggests the UAV is living up to that standard.¹⁴ Specification highlights for the MQ-4 Triton are as follows: monitoring capability of 1 million square nautical miles (in a single mission) with a radar capability to cover 300 nautical miles; flight time of 24 hours with an altitude capability of up to 50,000 feet (above the path of commercial flights); 360 degree sensor suite; and real-time video.¹⁵

7. As a component of the Royal Canadian Air Force Doctrine, ISR is described as a joint capability that synchronizes and integrates the planning and operation of all collection capabilities...to disseminate the resulting information to the right person, at the right time, in the right format, in direct support of current and future operations."¹⁶ Since the Air Force considers ISR a joint capability, the intent as stated in the doctrine is that ISR is used to support the Air Force requirements as well as sister services and the entire government. The potential for

¹⁴ North Grumman. "MQ-4C Triton: Capabilities", Last Accessed 20 October 2019, <https://www.northropgrumman.com/Capabilities/Triton/Pages/default.aspx>

¹⁵ Department of the Navy. United States Navy Fact File: MQ-4C Triton", Last Modified 21 February 2019, https://www.navy.mil/navydata/fact_display.asp?cid=4350&tid=500&ct=4

¹⁶ Canadian Armed Forces. Royal Canadian Air Force Doctrine. "Intelligence, Surveillance, and Reconnaissance", Last Accessed 22 October 2019, <http://www.rcaf-arc.forces.gc.ca/en/cf-aerospace-warfare-centre/aerospace-dctrine.page>

reciprocity between government and defence entities will only enhance the effect of ISR information and data.

8. Through use of UAV platforms for ISR capabilities, RCN stands to reap huge benefits in their most important resource, its people. To word it plainly, use of UAVs saves bloodshed. A huge factor in consideration of investing in the UAV platform is the potential to decrease the risk of harm and loss of life for the RCN. In addition to less exposure of RCN members to dangerous and hazardous conditions and environments, the UAV option makes use of ground crews who are trained to use the UAV equipment and this training is a faster training track than some traditional aerial training. The ground crew sizes are also smaller (averaging 5 crew members per shift) than traditional air crews, but still enough in numbers to rotate through the control room, enabling a more constant monitoring of ISR data and images.¹⁷ It is this aspect of unmanned, remotely controlled aerial craft that delivers a persistent ISR capability. A major argument against investing in UAVs for the military is cost. The buy-in price is expensive. With budgets on a continued trend of being cut for the military, cost is a huge factor. However, this cost can be countered against the lower cost for human capital, medical expenses resulting from injuries, and retirement of older craft that is more complex and more expensive to maintain. Finally, the point of persistent surveillance may also yield a cost savings. Since there is potential for a greater quantity of data captured during each shift, mission costs are reduced.

9. The Canadian government and the RCN must evaluate how to best gain situational awareness for Canada's coastal and open waters, to include activities in the Arctic region. Perhaps as a precursor to more advanced unmanned aerial platforms, the Canadian government

¹⁷ Department of the Navy. United States Navy Fact File: MQ-4C Triton", Last Modified 21 February 2019, https://www.navy.mil/navydata/fact_display.asp?cid=4350&tid=500&ct=4

has invested in a Maritime Miniature Unmanned Aircraft System (MMUAS), which is named PUMA. The MMUAS was launched into use with Kingston class ships in 2019.¹⁸ The Kingston class ships are normally stocked with surveillance equipment, but the MMUAS broadens the scope of view for the ships using optical and infrared cameras that take both images and video. Specifications for the MMUAS include two hour flight duration and altitude capability of up to 10, 500 feet with a 12 nautical mile range.¹⁹ Obviously, the Canadian government sees the potential in using UAVs for maritime surveillance. Likewise, the proposal to invest further into ISR platforms and systems onboard RCN vessels is a good indicator that the importance of ISR capability in regards to situational awareness is on the radar. While evaluating investment of money and resources, it is crucial to consider the broader picture and not make determinations solely within the vacuum of budget.

10. Among considerations to evaluate is the trend of other countries increasing their surveillance capabilities and increased maritime traffic in the Arctic. A snapshot of which countries are using UAV technology includes South Korea, Japan, and the United States, which have all invested in the MQ-4 Triton.²⁰ Recently, Germany also announced its intent to invest in the MQ-4 Triton.²¹ The performance of the MQ-4 Triton is proving the investment well worth it for these countries with an interest in expanding ISR capacity and capability. Note among these countries, only the United States has sovereignty over a portion of the Arctic region. However, each of these countries shares a common interest in the economic potential presented with

¹⁸ Government of Canada. Royal Canadian Navy. “Advanced Unmanned Aircraft to Provide Eye in the Sky for Kingston-Class Ships”, Last Modified 10 April 2019, <http://www.navy-marine-forces.gc.ca/en/innovation-view.page?doc=advanced-unmanned-aircraft-to-provide-eye-in-the-sky-for-kingston-class-ships/jsagj4mt>

¹⁹ Ibid.

²⁰ Military Factor. “Northrop Grumman MQ-4C Triton Maritime Patrol Unmanned Aerial Vehicle (UAV)”, Last Accessed 21 October 2019, https://www.militaryfactory.com/aircraft/detail.asp?aircraft_id=983

²¹ Ibid.

maritime use of Arctic region. Now that climate conditions have opened up more passages in the Arctic, increased use of the passages is a present and future reality that must be monitored.

11. As a matter of security, the RCN should be empowered with the proper tools to more closely monitor maritime activity in the Arctic. Persistent ISR capabilities utilized by the RCN is the best solution to the problem of adequately monitoring the vast and remote Arctic region. Also, as a matter of sovereignty, the Canadian government may consider the repercussions of incidents occurring with the vessels, incidents ranging from pirating to oil spills must be contained effectively, expeditiously, and according to national and international laws. The Canadian government recognizes the increase in maritime traffic in the Arctic region. As of 2017, the increase of maritime traffic was about 22 percent over 2016.²² The maritime traffic is inclusive of large government research vessels, cargo ships, and even cruise ships. The Standing Committee on Foreign Affairs and International Development (FAAE) issued a report for the House of Commons about the sovereignty of Canada in the Arctic.²³ In this report, the FAAE acknowledges the Arctic as a national imperative and that the world's gaze is shifting north (to the Arctic). Moreover, the FAAE makes the case for Canada to enable its military and technological assets to plan for the shift in political, economical, and geographical interests in the Arctic, not only for the immediate future, but for decades to come. The issue of climate change alone guarantees that waterways in the Arctic will continue to broaden, as "global warming" looms as an ever present danger to the ice levels across the northern regions.²⁴ In addition to issues of economy and government or politics, climate change is coming to the forefront of

²² Government of Canada. "Canada's Arctic and Northern Policy: Arctic and Northern Policy and Framework", Last Modified 10 September 2019, <https://www.rcaanc-cirnac.gc.ca/eng/1562939617400/1562939658000>

²³ Parliament of Canada. House of Commons. "FAAE Committee Report", Last Accessed 20 October 2019, <https://www.ourcommons.ca/DocumentViewer/en/42-1/FAAE/report-24/page-54>

²⁴ Keith Battarbee and Erik Fossum. *The Arctic Contested*. P.I.E. Peter Lang S.A., Brussels, 2014.239-241

Canada's priorities. Persistent ISR capabilities will enable Canada's RCN to gain more situational awareness of ice levels and other weather and geographical trends.

CONCLUSION

12. Situational awareness is of use for operations during both war and peacetime. As discussed in this paper, all global, economic, and political trends indicate an uptake in maritime activities and international interests in the Arctic region. Therefore, it is clear that situational awareness in the Arctic is for Canada a national imperative. Fortunately, Canada does have the advantage of lessons learned from other countries who have invested in ISR capabilities, specifically for the MQ-4 Triton. The RCN can easily and readily garner those lessons of successful outcomes in surveillance activities and apply it towards its own determination of making the push for obtaining and implementing persistent ISR tools and capabilities.

RECOMMENDATION

13. The recommendation proposed in this paper is to increase surveillance capabilities for Canada to use in monitoring maritime activities in the Arctic. The RCN requires a greater concentration of fleet equipped with ISR systems and, more so, must be equipped with UAV with ISR systems controlled shipboard. These tools will enable the persistent surveillance that allows the RCN to increase situational awareness in the Arctic region. In order to gain interest and investment for ISR platforms and systems, the RCN must recognize the benefits of surveillance capacity and capabilities and the position of Canada's national interests in relation to these capabilities.

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