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AUSTRALIA'S FROZEN UNDERBELLY: WHERE LONG-TERM THREATS MEET GEOPOLITICS

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JCSP 46

Solo Flight

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CANADIAN FORCES COLLEGE – COLLÈGE DES FORCES CANADIENNES

JCSP 46 – PCEMI 46

2019 – 2020

SOLO FLIGHT

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By Major Julian McMahon

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Word Count : 4,673

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INTRODUCTION

“Men Wanted: For hazardous journey. Small wages, bitter cold, long months of complete darkness, constant danger, safe return doubtful. Honour and recognition in case of success”.¹ Ernest Shackleton’s original call for volunteers to venture down to the Antarctic sums up how the conditions of this distant land were viewed in 1901. Antarctica is still one of the most remote places on earth, and statistically the world’s coldest and driest continent.² Its isolation from the world has meant that it has no indigenous inhabitants. As the final frontier, Antarctica is a time-capsule for the earth’s carbon emissions, and has biodiversity that has been uncorrupted by many of the pollutants which affect the rest of the world. The limited levels of radio and light pollution produces an excellent environment for monitoring the electromagnetic spectrum and increases the visibility of objects in space.³ This paper will discuss the geopolitical and strategic importance of Antarctica. It will focus on Australia’s strategic partners in the region and how the Australian Defence Force (ADF) can be used to advance Australia’s strategic interests in Antarctica.

ANTARCTIC TREATY SYSTEM

In the 1960s under the shadow of the Cold War, a critical agreement was struck between nations on how Antarctica should be best managed and preserved. The

¹ Nancy Koehn. *Ernest Shackleton, Exploring Leadership*. New Word City, 2010.

² David Walton. *Antarctica: global science from a frozen continent*. Cambridge University Press, 2013.

³ Anne-Marie Brady. "China’s expanding Antarctic interests." *Implications for Australia*. Australian Strategic Policy Institute (ASPI)–Special Report (2017).

Antarctica Treaty was unique for a number of reasons. Firstly, the requirement to keep below 60 degrees latitude nuclear free was significant. Secondly, the treaty essentially recognised sovereignty in an unorthodox way – anyone that was conducting scientific research in Antarctica had unimpeded access to enter another countries' territorial claim.⁴ Legal scholars often argue that it is this aspect of the treaty that make it of limited use, given that a country is not able to enforce the boundaries of their territorial claim. However, it may be this factor that has aided its treaty's longevity and success.⁵ As Antarctica has been quarantined for scientific research there is an abundance of untapped living and non-living natural resources. Examples of living resources are krill, whales and seals; and non-living being rare earth minerals, oil and gas. There are one-of-a-kind natural resources such as carbon dioxide emissions trapped in the ice – these provide millions of years of climate change records.⁶ It is the remoteness of Antarctica, and its heavily restricted operating environment that have made it so valuable for scientific research.

The non-nuclear aspect of the Antarctic Treaty has several ramifications for the capabilities of major powers, but strongly favours Australia and New Zealand's policy of being nuclear-free. The importance of a coherent policy regarding nuclear weapons and the required deterrence measures are now more relevant than ever – they remain a true existential threat. The US' maximum pressure campaign against Iran is a key example of

⁴ Arthur Watts. *International law and the Antarctic treaty system*. Vol. 11. Cambridge University Press, 1992.

⁵ Jacob Reed. "Cold War Treaties in a New World: The Inevitable End of the Outer Space and Antarctic Treaty Systems." *Air and Space Law* 42, no. 4 (2017): 463-486.

⁶ Jeffrey McGee. "Framing Australian Antarctic policy: the 20-year Antarctic plan and beyond." *Australian Journal of Maritime & Ocean Affairs* 9, no. 1 (2017): 25-41.

a major powers actions to limit the proliferation of nuclear weapons.⁷ The unique nature of the non-nuclear requirements of the Antarctic Treaty cannot be understated. The US has had previous diplomatic issues with New Zealand's nuclear free policy – which resulted in the infamous incident where New Zealand refused to let a US nuclear powered ship enter its harbour.⁸ Antarctica's nuclear free status has enabled it be used as part of the global monitoring system to check for nuclear weapons testing.⁹ Contemporary examples of nuclear capabilities gaining primacy include Israel's unilateral strike to destroy a nuclear site in Syria; the US' Operation Left of Launch, to destroy North Korea's nuclear missile delivery mechanisms; and Operation Olympic Games, a joint Israel, US cyber operation to disrupt Iran's nuclear enrichment facilities. It is not just rogue states that have brought relevance to this topic, China and Russia's development of advanced delivery systems such as hypersonic rockets were the catalyst for the US' departure from the Intermediate-Range Nuclear Forces (INF) Treaty.¹⁰ Furthermore, the US' withdrawal from the Nuclear Deal with Iran, the Joint Comprehensive Plan of Action (JCPOA), was a significant development.¹¹ For Australia, the Antarctic Treaty's prohibition of nuclear technology provides it an offset to the major powers' capabilities of nuclear-powered submarines and ice-breakers. Notably, these capabilities when operating in the Northern hemisphere, in environments such as the Arctic, afford major powers significant advantages.

⁷ Kenneth Katzman. "Iran: Internal politics and US policy and options." *Congressional Report. Congressional Research Service* (2019).

⁸ Sam Bateman. "Coming back to the US fold: New Zealand defence and security policies." (2010).

⁹ Masa-Yuki Yamamoto. "Infrasonic waves in Antarctica: a new proxy for monitoring polar environment." (2013).

¹⁰ Kingston Reif. "Trump to Withdraw US from INF Treaty." *Arms Control Today* 48, no. 9 (2018): 23-24.

¹¹ Paul Kerr. "Iran Nuclear Agreement and US Exit." Congressional Research Service, [Library of Congress], 2018.

The Antarctic Treaty started with twelve members: Australia, Argentina, Belgium, Chile, France, Japan, New Zealand, Norway, the Soviet Union, South Africa, US and United Kingdom. The total involvement today consists of 54 signatories and 29 consultative parties. A key difference to the Arctic is Antarctica's ice sits on a sizeable land mass – this has led to territorial claims, some of which are overlapping and still unresolved. This land mass creates the possibility of future mining opportunities. If you look at the proximity of countries such as South Africa, South America, New Zealand and Australia it is evident why it is in their strategic interest to have territorial claims. The largest of the claims is Australia's with 42%. The signatories to the Antarctic Treaty meet once annually. Recently the proposal for areas in eastern Antarctica to become a marine sanctuary was not supported by Russia or China.¹² The frustration of many nations is that the focus of operating in the Antarctica should be for scientific research and not political advantage. Perhaps a new era of increased competition has begun. The current situation in Antarctica cannot be understood without a contemporary understanding of the geopolitical considerations of the major stakeholders involved. It is this interplay of competing priorities and geopolitical strategic decisions that manifests itself in Antarctica.

There is an argument that territorial claims for future resource extraction in Antarctica will drive conflict. The 2048 revisiting of the Antarctic Treaty is assessed by

¹² Jessica Hayes. "Failure to Agree on New Antarctic Protection Calls Group's 'Credibility into Question': The Bid to Protect a Million Square Kilometres of Eastern Antarctica again Fails to Win Unanimous Backing from the 26 Country Members Attending a Conference in Hobart." *ABC Premium News*, 2019.

some scholars to mark the time when countries will seek additional territorial claims on the continent.¹³ Counter-initiatively, the lead author of Australia's Antarctica Policy, Dr Tony Press, is a passionate advocate of collaboration in the Antarctic and dismisses this notion.¹⁴ His view is that the agreed ban on mining by the international community is long standing and separate to the Antarctic Treaty. There is an alarmist narrative from scholars that indicate that the 2048 review will result in conflict. Dr Press emphasises it is actually the fishing activities in the Southern Ocean that hold the greatest risk for conflict. While it is true the current cost of non-living mineral extraction is cost prohibitive, Dr Press' argument that resource competition is unlikely must be tempered by the fact that his consulting company on Antarctic is heavily financed by Chinese donors.¹⁵

COMPETING REGIONAL INTERESTS

The two largest Asian democracies that have significant geopolitical influence in Antarctica are India and Japan. Both these countries face existential threats from their neighbours. India with the possibility of nuclear war with Pakistan, and Japan with North Korea. The island territorial disputes over the Senkaku/Diaoyu/Tiaoyutai Islands are a source of ongoing conflict between Japan and China.¹⁶ Similarly, the tensions between India and China endure over their support for a major trade route (economic corridor) through Pakistan as part of the Belt Road Initiative (BRI).¹⁷ The US and Australia's

¹³ Anne-Marie Brady. "Diplomatic Chill: Politics Trumps Science in Antarctic Treaty System." *World Politics Review* 19 (2013).

¹⁴ Marcus Haward. "Australia and the Antarctic Treaty." *Polar Record* 46, no. 1 (2010): 11-14.

¹⁵ ANU TV, "Australia's Antarctic Strategic Interests in the 21st Century," YouTube Video, 1:07:00, September 16, 2014, https://www.youtube.com/watch?v=7clW3yqe_tE&t=39s

¹⁶ Zhongqi Pan. "Sino-Japanese dispute over the Diaoyu/Senkaku Islands: The pending controversy from the Chinese perspective." *Journal of Chinese Political Science* 12, no. 1 (2007): 71-92.

¹⁷ Harsh Pan. "India's response to China's Belt and Road initiative: A policy in motion." *Asia Policy* 24 (2017): 88-95.

interests have in recent years been in alignment much more with India and Japan – notably as part of the strategy to use these countries as strategic hedges to respond to China’s rise. The Japan, India, US and Australian quad partnership that was reached at Papua New Guinea’s 2018 Asia Pacific Economic Cooperation Conference is an example of this renewed cooperation. One way that Australia is seeking stronger relationships with India and Japan is through greater military engagement.

Australia has steadily been growing its military engagement with India and Japan over the last five years. Australia in 2019 conducted a large-scale operation with the Indian Navy.¹⁸ A further example of cooperation is India’s contribution to the Australian 2018 Exercise Pitch Black in Northern Australia. Similarly, Australia has conducted engagement with Japan to support their counter-terrorism capabilities for the 2021 Olympic Games.¹⁹ Australia has been heavily involved in providing advice to Japan on how to rebuild their internal authorities for use of force which had been intentionally inhibited in the post-World War II environment. Japan has had a level approach to diplomacy with Australia over the last few decades. One flashpoint however was their whaling activities in the Southern Ocean. For years an activist branch of green peace, called the Sea Sheppard conducted disruption activities against Japanese whaling shipping fleets. In 2017, however, their previously successful operations met a significant setback when the Japanese government provided its vessels with real time satellite

¹⁸ Vinay Kaura. "Incorporating Indo-Pacific and the Quadrilateral into India’s strategic outlook." *Maritime Affairs: Journal of the National Maritime Foundation of India* 15, no. 2 (2019): 78-102.

¹⁹ Yuki Tatsumi. *US-Japan-Australia security cooperation: Prospects and challenges*. Stimson Center, 2015.

imagery to enable them to avoid interdiction. This is one area that still have divergent view points between that Australian and Japanese government.

Opportunities exist to expand Australia's engagement with these two countries in Antarctica. The Indian Armed Forces provide the logistical support to the Indian Antarctic program, which provides an opportunity for increased ADF involvement. This renewed relationship may be used to offset India's involvement in the Antarctic through its historical ties to Russia. India, as with many of the other countries that provide contributions, is motivated to showcase as a growing power that is committed to the international order. Their involvement in Antarctica also demonstrates their authority over the Indian Ocean.

China and Russia have increased their investment in Antarctica over recent decades. Their expansion is much more predominant in the Arctic, however their contributions to Antarctic continue to develop. While the Arctic is characterised by militarization, the Antarctic is focused purely on scientific research. The divide between research organisations of these totalitarian regimes however is not as clear as it is in democracies. The example of the Russian research vessel that remains in the Arctic year-round could be considered a capability that is dual-use.²⁰ Australia in recent years has notably pushed back on China's development of military capability under the cover of academic research.²¹ It is not only the dishonest use of academic institutions for military purposes but also trade relationships. The incorporation of New Zealand into the BRI has

²⁰ Mathieu Boulègue. "Russia's Military Posture in the Arctic." *Chatham House, London* (2019).

²¹ Alex Joske. "Picking flowers, making honey." *Australian Strategic Policy Institute, October 30* (2018).

generated considerable concern within the Five Eyes community. The challenges it brings into focus are the competing priorities of economic growth and security.

The US is the greatest financial contributor in the Antarctic. However, Australia has provided a non-trivial level of funding to the Australian Antarctic Division over many years. The incorporated development plans for the Division has included major infrastructure investments in Australia's southern island of Tasmania and the procurement of an ice-breaker vessel.²² In conjunction, Australia has undergone innovation reforms to increase its ability to produce high-end technology, and released long-term strategies for the development of space and cyber capabilities. As the former Prime Minister of Australia, Kevin Rudd, predicted Australia without a population of 50 million people would financially be able to sustain sovereign capabilities that the military relies on – this has led to a focus on the US relationship.²³ Technology programs such as DroneSail, a US company that in 2017 completed the first autonomous circum-navigation of Antarctica, is an example of technology this is being leveraged across the alliance. This venture was funded in part by the Australian Commonwealth Scientific and Industrial Research Organisation. Further developments can be measured by the increase in Australian companies that specialise in the construction of low earth orbiting satellites and inertial navigation systems. Similarly, New Zealand has made industry developments to launch a number of rockets into space from their North Island.²⁴ This technological

²² "Australia: Tasmanian Antarctic Gateway Strategy is Getting Results." *MENA Report* (2019).

²³ "Push Population to 50 Million to Stave Off China, Says Rudd." *The Australian*, 2019.

²⁴ Eleanor Ainge Roy. "Aiming for the Stars: How New Zealand's Space Industry is Causing Turbulence." *The Guardian (Online)*, 2020.

innovation supports the Antarctic mission directly and indirectly. However, the Chinese influence in New Zealand's technology sector has generated concerns among the alliance.

China's BRI has been a controversial expansionist activity, that affords China clear military advantages. Not only have they invested in industry but have also undertaken a campaign to gain wider political influence, as documented by the scholar Dr Anne-Brady.²⁵ The funding of political parties in Australia from China has also been controversial. The foreign ownership of land, specifically China's investment in Tasmanian land, as the gateway to the Antarctic is troubling.

The notion that the west is fighting a second cold war against China, with perhaps Antarctica being one of the battlegrounds is misguided. The fundamental difference is that unlike the Soviet Union, China is a major trading partner with many countries it is in direct competition against. It has been stated by scholars, that perhaps the US, China relationship is more important than the US' relationship with all the other countries combined. This puts Australia in a unique position between these two great powers. As Australia is humbly small in comparison to these two giants it may be able to have some influence. As described by one Chinese pundit, Australia is the chewing gum of the bottom of China's shoe.²⁶ Nevertheless, Australia's influence as part of an alliance may be formidable. This is precisely why the deep security connection to the US, and economic connections to China, could have some influence through the Antarctica Treaty

²⁵ Anne-Marie Brady. *Magic Weapons: China's political influence activities under Xi Jinping*. Vol. 18. Washington, DC: Wilson Center, 2017.

²⁶ Helen Davidson. "'Chewing Gum Stuck on the Sole of our Shoes': The China-Australia War of Words – Timeline." *The Guardian (Online)*, 2020.

System. The *2019 Chinese Defence White Paper*, states that it is seeking advantages on remote frontiers.²⁷ Perhaps this could be moderated by Australian influence.

SECURITY CONSIDERATIONS

There are three points to highlight regarding military advantages gleaned from operations in Antarctica. Firstly, the ability for Australia to contribute to a coalition for collective security; secondly, the broader generation of capabilities that can be used for regional issues such as illegal immigration and fishing. Any capabilities that support these issues will be of lasting benefit – particularly to our closest neighbours in the Blue Continent, the collection of islands in the South Pacific. Finally, the development of dual use technology will provide Australia advantages in the cyber and space domains.

Australia and New Zealand have an incredibly strong bond that was forged on shores of Turkey during World War I at Gallipoli. The bonds with the United States (US) were cemented with Pearl Harbor. During World War II a fundamental shift occurred in thinking from Australia's security demands being underwritten from the British to the Americans. The inability of the British Navy to protect the port of Singapore was the turning point. The ANZUS Treaty is the unique security bond that ties together these three countries, that was borne out of state-on-state conflict. In recent times it has been the threat of terrorism. The US' 9/11, Australia's Bali Bombings and New Zealand's Christchurch massacre demonstrate the effects generated by non-state actors. Increasingly the security challenges are generated not directly from the actions of state and non-state actors, however, by natural or man-made disasters. It has not been the traditional war

²⁷ "China Issues White Paper on National Defense in New Era." *People's Daily*, 2019.

time events that have generated the most considerable loss of life. The US hurricanes in New Orleans and Florida, Australia's bushfires and New Zealand's devastating earthquakes. The policy shift now seeks to accommodate disaster response into the security architecture. This is no more relevant than the disruption and economic loss that COVID-19 has brought. The two consequences that will likely arise from these events. Firstly, better long-term climate change analysis with the operational advantage of improved weather forecasting technology²⁸; and secondly, the increased reliance of local supply chains – particularly with respect to technology.

Barack Obama in 2015 conducted a tour of the Pacific to announce the US' pivot from the Middle East to the Pacific to counter the China's influence in the region.²⁹ Australia is heavily invested in the INDOPACOM, filling the billet of the deputy commander. Interestingly, this Area of Operations which stretches from the Arctic to Antarctica is gaining increasing importance in global affairs. The recent change of naming of this combatant command speaks to the growing importance of the Indian Ocean. Although one may see Antarctica as an isolated outpost it is actually intertwined with the regional security architecture more than ever. As David Killen mentions, Australia's grand strategy has always been to keep free trade open and support the rule based global order.³⁰ How Australia continue to maintain this order, through its commitment to its alliances and treaties will be significant. On closer examination of its

²⁸ ANU TV, "Australia's Antarctic Strategic Interests in the 21st Century," YouTube Video, 1:07:00, September 16, 2014, https://www.youtube.com/watch?v=7clW3yqe_tE&t=39s

²⁹ Michael Memoli. "Asia Pivot Features Steps Vs. Terror: Obama Says 10-Day Trip was no Distraction." *Chicago Tribune*, 2015.

³⁰ Wade Stothart. "Navigating uncertain times: The need for an Australian 'grand strategy'." *Australian Defence Force Journal* 196 (2015): 10.

personnel contribution to the Australian Antarctic Division, military ties become apparent. Given that the Director of the Australian Antarctic Division is an ex-Australian Army logistician. The last two station chief commander have had military background. The current being a former Australian Army Infantry Officer and his predecessor was a Royal Australian Navy Officer. There have also been long term contributions from the Royal Australian Airforce.³¹

China's relationship with Australia in Antarctica is a complex one. The development of three Chinese bases in Australia's claimed territory has raised concern. The COVID-19 response from China against Australia call for an independent investigation to the outbreak is telling. The threat of essentially economic sanctions through targeting mining, food exports and the foreign students is a window into things to come.³² The public awareness to counter Chinese influence in the Antarctic has been supported by a series of articles produced by the Australian Strategic Policy Institute, and supported by a national broadcaster the Australian Broadcasting Corporation. This information dimension is crucial to inform the debate on resourcing Antarctica. The Australian Antarctic Division's transparent use of social media platforms and strong support of academic research being widely available are components of this strategy. The senate inquiries revealed Australia's lack of enforcing inspections of non-militarization of Antarctica.³³

³¹ AusAntarctic, "Australian Antarctic Station Leaders," YouTube Video, 4:09, December 12, 2018, <https://www.youtube.com/watch?v=kAuS5Ffk6rQ>.

³² Ben Doherty. "China and Australia: How a War of Words Over Coronavirus Turned to Threats of a Trade War." *The Guardian (Online)*, 2020.

³³ Malcolm Roberts, "Chinese Influence in Antarctic", YouTube Video, 10:09, October 22, 2019, <https://www.youtube.com/watch?v=Mrd4-yKU-qQ>

If World War I and II provided to the ADF the grounding for the Five Eyes network, the War on Terror, campaigns in Afghanistan and Iraq, provided an increase understanding of the power of the space and cyber domain. Specifically, the advantages of technology such as Machine Learning and Autonomous Systems. The regional disruption of Illegal immigration, surveillance boats and aircraft; Timor Leste and Solomon Islands catalysts – as well as disaster relief in Vanuatu and Fiji, for Amphibious Ships; it is Antarctica that might provide the next chapter.³⁴ The increasing importance of logistic networks, communication and space technology.

Australia invested heavily in the technology sector under the Turnbull government. The theory was that, innovation brings productivity and productivity brings prosperity.³⁵ These initiatives attracted investment from the CIA's industry wing In-Q-Tel in Sydney. The creation of Defence industry in Adelaide, the building of ships and submarines was created. The Royal Australian Airforce has secured a first of its kind project with Boeing to create unmanned systems that will accompany the F35 joint strike fighter on missions.³⁶ All this to be said to illustrate that Australia is aligning itself to future trends. The launching of the Australian Space Agency and development of Information Warfare Division, that harnesses the Australian Signal Directorate cyber capabilities. These trends all set the framework for increase importance of Antarctic

³⁴ UNSW Canberra, "East Timor 20 – INTERFET and the Army", YouTube Video, 28:02, October 24, 2019, <https://www.youtube.com/watch?v=rUqTIEvBiDc&list=PLLY36E3-1931eB07QMGLe5oHIYAd0L0pJ&index=10>

³⁵ Silicon Block, "Silicon Block Virtual Fireside with Malcolm Turnbull and Russel Howcroft", YouTube Video, 1:03:02, April 30, 2020.

³⁶ "Australia: Boeing Unveils Unmanned Combat Jet Developed in Australia." *Asia News Monitor*, 2019.

operations. There has always been a connection between advances in space technology and operating in remote locations. NASA current testing of capabilities in both the Antarctic and Arctic regions are well documented.³⁷ Their testing of degrade communication from Antarctica recently provides an example of the dual use potential of much of this technology. The ability for militaries to have redundant communication systems that can operate in degraded environments is critical to Multi-Domain operations.

China and Russia's use of Antarctica to launch and alternative system to the US' Global Positioning Systems is telling of this region's strategic importance. Given that a critical vulnerability of many of the systems employed today by militaries rely on GPS. The precision guided munitions are heavily employed and would be severely disrupted. Australia is uniquely positioned in the region to support the satellite constellations in orbit. Western Australia for example is one of the only locations in the world that has NASA and the European Space Agency's satellite dishes in close-proximity. Pine Gap in the centre of Australia has been a critical link for these systems. The Canberra based Honey Suckle Creek station actually relayed the footage of the 1969 moon landing. The Womera Test site, that had been previously used for nuclear testing provides opportunity for rocket testing. The geographic advantage of future launch capability, and the ability to monitor satellites from a disperse array of locations. From the Cocus Islands, mainland capabilities, sub-Antarctic islands and Antarctica itself. The Chinese development of Dome A in the highest point in Australia's claimed Antarctic territory has highlight the

³⁷ David Brown. "This Robot's Journey to an Icy Alien Moon Starts Beneath Antarctica." *New York Times (Online)*, 2020.

need for development of strategic locations.³⁸ The range of orbits that Australia could have an influence due to this geography is critical to the Five Eyes collection capability. It is not just having bases in Antarctica, but the advantage of having arrayed nodes that can provide support to Multi-Domain operations.

In terms of Australia's Defence and noting that it has claim to 42% of the territory, this provides an Economic Exclusion Zone that needs to be protected. The *Australian Defence Force's White Paper*, albeit dated given its 2016 release, indicated that Australia's approaches and interests are what need to be protected.³⁹ The capability development by the Royal Australian Navy and Airforce, in their respective Plan Mercator and Jericho respectively.⁴⁰ The Australian Army's reform through Plan Beersheba made three combat like brigades and support Australia's ability to conduct expeditionary operations.⁴¹ *Plan Mercator* has provided expeditionary capacity, *Plan Jericho* notably has enhanced the ability for C130 and C17 missions over extended distances, and *Plan Beersheba* has created greater flexibility in the force. Conceptual thinking that has come out of the Army in Motion and Accelerated Warfare provide flexibility in the military support to Operation Southern Discovery (Australia's Military contribution to Antarctica). The civilian strategy to create independent capabilities separate from military, by acquiring an icebreaker was a correct move. The size of the military sector of the Australian government is always going to have limits. Through

³⁸ Jackson Gothe-Snape. "Australia declares China's plan for Antarctic conduct has 'no formal standing'", ABC News, <https://www.abc.net.au/news/2019-07-30/antarctica-china-code-of-conduct-dome-a/11318646?nw=0> (accessed March 02, 2020).

³⁹Rhea Matthews. "Australia's 2016 Defence White Paper: A Summary." *United Service* 67, no. 2 (2016): 21.

⁴⁰ Royal Australian Air Force. "Plan Jericho." *Air Force* (2015).

⁴¹ Craig Bickell. "Plan Beersheba: The combined arms imperative behind the reorganisation of the Army." *Australian Army Journal* 10, no. 4 (2013): 36.

diversify the portfolio of support to Antarctic operations, by virtue of the fact, that they have to be non-military is a real strength. The challenge for Australia's Defence is that it has three oceans to defend: Indian, Southern and Pacific – the capabilities required to complete this mission will support Australia's sovereignty Antarctica.

The military capabilities that can operate in the Antarctic are required to cover long distances, with high safety margins, and are expeditionary in their nature. Recent events that highlight the need for these capabilities. In 2014, the ADF was called upon to conduct a search and rescue operation to find Malaysian Airlines 370 (MH370) that had crashed in the Indian ocean.⁴² There have been many other incidents that haven't garnered as much media attention however place a burden on the ADF's search and rescue capability. The February 2019 request to respond to a stabbing of a ship's captain in the Indian Ocean, 2400 nautical miles from Australia's west coast, is but one example. The ADF is called upon to provide solutions to these complex maritime problems, that generally involve multinational crews which are sailing in international waters. The requirement for the ADF to be able to conduct search and rescue missions in the Indian, Southern and Pacific Oceans is needed. The ability to solve these problems generates credibility and is view as a leadership in the region. Furthermore, the growth of cruise-liner tourism to Antarctica, necessitates the need for government to provide a counter-terrorism response option. The mandate of offshore recovery operations that resides within Australian Special Forces requires the resourcing of the appropriate force projection platforms.

⁴² "MH370: Hunt for Missing Malaysian Airlines Plane to be Suspended if Current Search Unsuccessful." *ABC Premium News*, 2016.

The ADF does have some experience to responding to illegal fishing in the sub-Antarctica region. For example, in 2015 when a Spanish fishing trawler sought to illegally harvest Patagonian tooth-fish in the Southern Ocean Australia's military responded.⁴³ Royal Australian Navy assets were deployed to interdict the vessel. This event highlighted to the ADF the importance of having capabilities that can quickly reach remote location in the Southern Ocean. Since this event the procurement of the Joint Precision Airdrop System has mitigated delays in response times. This has also reduced the need for serviceable runways when resupplying Australia's stations in Antarctica.

It could be argued that the contribution of military personnel and assets to the Antarctic mission detracts from warfighting capability. On the contrary, the challenges of the environment and logistic challenges make it particularly useful. As a Canadian officer described survival training in Antarctica as assisting in preparations for warfighting in Afghanistan, in addition there has been several longitudinal studies on the effects on personnel working in isolation.⁴⁴ These skills are directly transferable to military applications. As Australia in recent years has undertaken contribution warfare to the coalition, operations in Antarctica provide an opportunity for independent campaigning.

The comparison between the Australia's operations in Antarctica and Canada's in the Arctic can be of use. Australia and Canada, have similar political systems, scale of

⁴³ Felicity Ogilvie. "Crackdown on Patagonian Toothfish Poaching in the Southern Ocean." *ABC Premium News*, 2015.

⁴⁴ Lawrence Palinkas. "Psychological effects of polar expeditions." *The Lancet* 371, no. 9607 (2008): 153-163.

population and military capabilities such as diesel-powered submarines. The Canadians have used extensively the Ranger network to monitor activity in the Arctic. This isn't possible for Antarctica; however, the sensor network of the Northern approaches can be useful. The search and rescue experience of Canada would be of particular importance. Canada's advance space program experience would also benefit Australia's growing industry.

ENDURING THREATS

The need to develop technology that enables operations in astute environments is enduring. A critical failure in the last decade was the lack of investment in emerging telecommunications networks such 5G. This has mean that companies like Huawei have generated concerns over national security.⁴⁵ There are essentially four market leaders, two Chinese and two Scandian companies. This has left Australia and its coalition allies exposed. These types of national capabilities cannot be effectively outsourced without assuming significant risk.

The threats associated with Climate Change have a difficult acceptance within both the US and Australia. The US and Australia are experiencing a unique political phenomenon with respect to climate change. Fossil fuel lobbyist groups in both countries are creating barriers to progress. The fact that with changes in leadership in America and Australia, through Trump and Abbott having an effect. This was evident through both countries' decisions to withdrawal from the Paris agreements. The fact that the US has

⁴⁵ Silicon Block, "Silicon Block Virtual Fireside with Malcolm Turnbull and Russel Howcroft", YouTube Video, 1:03:02, April 30, 2020.

become energy independent for the first time in decades through fracking, there is unintended consequences to the global system. This compounded with the unprecedented event of the cost of a barrel of oil becoming negative shows significant disruption to this industry (collapse of the Organization of the Petroleum Exporting Countries (OPEC)).⁴⁶ It is not the issue of generating renewable energy, the storage has been the problem. The conflict generating issues from the Middle East would be significantly changed if the complexities and drivers of energy generation. Although difficult to conceptualise at this stage in 30 years when the Antarctic becomes key it could have some influence. Major energy projects such as the Snowy Hydro System 2.0 as well as other initiatives involving major battery storage are having a strategic effect. The worlds-largest battery in the southern-hemisphere in Adelaide and Tasmania's giant battery project are two examples. The fact that the Antarctic Treaty is reviewed in 2048 is overstated – nations will seek to progress their capabilities independent of this deadline.

CONCLUSION

The capabilities that reside in Defence that are well suited to Antarctic operation are the logistic elements and planning support. It is important that the ADF provides a contribution to protecting Australia's sovereignty in Antarctica. This means that an enduring, physical presence on the continent is required. A Whole-of-Government approach is needed to achieve this challenge, infrastructure support and funding from outside of Defence is needed. Revisionist powers such as China and Russia expansion in the Antarctic will need to be closely monitored. The US has arrived at the conclusion that

⁴⁶ Rachel Fox. "Dow Sinks as Oil Prices Turn Negative for the First Time in History." *Investor's Business Daily*, 2020.

they are deficient icebreaker capabilities, mostly aimed at Arctic operations, however their development will provide capability for Antarctica. The ADF's support to Antarctica will need to be tempered as to not violate the terms of the Antarctic Treaty System. The rise of dual-use technology and the ability to generate military capability quickly to respond to aggression in the region will need to be considered. As tourism grows to the Antarctic, the need to protect citizen then venture down south will be needed. As Australia settles into its role as a middle power its opportunities to provide leadership will become more important – perhaps for no greater challenge than combatting climate change. The opportunities for technological innovation and the industry that will be created within Australia will perhaps be of the greatest national benefit. The outlook must be for the long-term. Antarctica, as the last unspoilt resources, provides unique global and regional benefits for Australia.

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