

Canada's Long-Term Strategic Limitations: Technology and Strategic Choice in Defence Debates, 1887-1959

John Keess

Volume 45, Number 1, 2023

Science and Technology in Military Contexts
Science et technologie en contexte militaire

URI: <https://id.erudit.org/iderudit/1111978ar>
DOI: <https://doi.org/10.7202/1111978ar>

[See table of contents](#)

Publisher(s)

CSTHA/AHSTC

ISSN

0829-2507 (print)
1918-7750 (digital)

[Explore this journal](#)

Cite this article

Keess, J. (2023). Canada's Long-Term Strategic Limitations: Technology and Strategic Choice in Defence Debates, 1887-1959. *Scientia Canadensis*, 45(1), 45–67. <https://doi.org/10.7202/1111978ar>

Article abstract

In surveys of Canadian military history, decisions on force design — which involves choosing between investments in different military technologies — are usually framed in the political criteria of sacrificing or preserving Canadian sovereignty. This article argues that Canadian strategic choice is not shaped by either politics or technology, but by the relationship between military technology and Canadian geography. The relationship between these factors provides a strategic context which then shapes the choices open to policy-makers. These contexts reflect two modes: those where there is a direct military threat to Canadian security and those where there is a relative one. The article employs three case studies, debates on Canadian naval policy (1887-1918), changing approaches to defence cooperation with the United States between 1918 and 1945, and debates on Canadian air defence in the early Cold War (1945-1959), to examine how decision-makers understood and acted on absolute threats and the technologies which underwrote them.

Canada's Long-Term Strategic Limitations: Technology and Strategic Choice in Defence Debates, 1887-1959

John Keess

Abstract: *In surveys of Canadian military history, decisions on force design — which involves choosing between investments in different military technologies — are usually framed in the political criteria of sacrificing or preserving Canadian sovereignty. This article argues that Canadian strategic choice is not shaped by either politics or technology, but by the relationship between military technology and Canadian geography. The relationship between these factors provides a strategic context which then shapes the choices open to policy-makers. These contexts reflect two modes: those where there is a direct military threat to Canadian security and those where there is a relative one. The article employs three case studies, debates on Canadian naval policy (1887-1918), changing approaches to defence cooperation with the United States between 1918 and 1945, and debates on Canadian air defence in the early Cold War (1945-1959), to examine how decision-makers understood and acted on absolute threats and the technologies which underwrote them.*

Résumé : *Dans les études sur l'histoire militaire du Canada, les décisions relatives à la conception des forces — qui impliquent de choisir entre des investissements dans différentes technologies militaires — sont généralement encadrées par le critère politique du sacrifice ou de la préservation de la souveraineté canadienne. Cet article soutient que le choix stratégique canadien n'est pas déterminé par la politique ou la technologie, mais par la relation entre la technologie militaire et la géographie canadienne. La relation entre ces facteurs fournit un contexte stratégique qui façonne ensuite les choix qui s'offrent aux décideurs politiques. Ces contextes reflètent deux modes : ceux où il existe une menace militaire directe pour la sécurité du Canada, et ceux où il existe une menace relative. L'article s'appuie sur trois études de cas, les débats sur la politique navale canadienne (1887-1918), l'évolution des approches de la coopération en matière de défense avec les États-Unis entre 1918 et 1945, et les débats sur la défense aérienne canadienne au début de la guerre froide (1945-1959), pour examiner comment les décideurs ont compris les menaces absolues et les technologies qui les sous-tendent, et comment ils ont agi en conséquence.*

Keywords: Strategy, Ship-building, Air Defence, First World War, Cold War

When George Stanley published *Canada's Soldiers: The Military History of an Unmilitary People* in 1954 as the first general survey of Canadian military history, he enjoyed plenty of material related to individual campaigns, ranging from the capture of Quebec in 1759 to the capture of the Scheldt Estuary in 1944. Stanley struggled, however, to connect these campaigns into a coherent narrative of strategic choice—in other words, a narrative about the process by which military and political leaders paired military means to policy choices.¹ Stanley ascribed changes to changing strategic approaches as the product of Canadians' collective personality, whom he described as “[having] displayed small interest in the problems of defence, either of the past or of the present day ... an “unmilitary people, [who] have through historical necessity, fought to preserve

© The Author, 2024. Published by Érudit on behalf of the Canadian Science & Technology Historical Association. All rights reserved. John Keess, “Canada's Long-Term Strategic Limitations: Technology and Strategic Choice in Defence Debates, 1887-1959,” *Scientia Canadensis* 45, no. 1 (2023): 44-67.

their freedom and their identity.”² Desmond Morton, who studied under Stanley at the Royal Military College, experienced similar issues when crafting his own survey three decades later. In *A Military History of Canada*, Morton warned his readers that “most Canadians have treated issues of peace and war with an energy-saving indifference,” and explained effective or ineffective military policy as the product of the individual personalities of decision makers, either bad leaders who “have felt entitled to use the armed forces to pursue satisfying careers or to acquire distinctions for themselves,” with “heroic exceptions” in the form of “honest” professional officers and “contentious politicians.”³ Neither of these explanations, however, provide the kind of structural explanation behind Canadian strategic decision-making over time. This article will turn to a study of military technology to provide one.

This article will argue that Canadian strategic choice is shaped by changing technological contexts which reflect two modes: contexts where there is a *direct* military threat to Canadian security and contexts where the military threat is *relative*. Relative threats, in which a hostile power menaces Canadian allies, are the most common. In these cases, such as the outbreak of the First World War in 1914 or the Korean War in 1950, Canadian political leaders needed to decide how much they were willing to commit to preserve Canada’s position in an alliance system. The decisions on “how much” are difficult to make. Canadian contributions are rarely large enough to be decisive, but Canadian military potential is large enough that allies expect a contribution above a token level.

Absolute threats, where the technological context renders Canadian territory both vulnerable to, and valuable for, the conduct of major military operations, are rarer.⁴ They are also more challenging. In these cases, any threat to Canadian territory is an immediate threat to the territory of the United States, the only great power that poses an existential military threat to an independent Canadian polity. In cases of absolute threats, therefore, Canadian leaders must cooperate with outside powers to ensure that Canadian territory does not become a threat to the United States lest the Americans intervene to provide “help” in securing Canadian territory, with or without Canadian permission.⁵ This article examines three instances where Canadian decision-makers addressed absolute threats: the naval crisis of the early twentieth century, inter-war defence planning and joint planning with the United States for continental defence during the Second World War, and the air defence debate of the 1950s. In each of these cases, although Canadian policy-makers tried to define strategic issues in political terms, they ultimately had to make choices defined by the relationship between military technology and Canadian geography.

Technology and Strategic Choice in the Canadian Naval Debate, 1887-1918

Canadian confederation occurred at a strategically awkward moment for the British Empire. British political thinking in the early Victorian era, from the 1830s through the 1860s, emphasised colonial self-sufficiency. In military terms, this meant that responsible legislatures should invest in military forces designed to protect their territories and paid for by the constituencies to whom they were accountable—in other words, policy-makers in London did not want their counterparts in Ottawa to raise troops for service in India,

they just wanted the colonial governments to raise enough of a militia to bolster British garrisons in North America.⁶ By giving colonial governments control over these forces, leaders in London eased pressure on the British treasury without raising uncomfortable questions about taxation and representation.

This combination of decentralisation and coordination was made possible by advances in industrial technologies, where the development of practical telegraph systems in the 1830s and 1840s allowed railway companies to minimise delays imposed by mechanical breakdowns.⁷ Other industries soon applied the telegraph in similar ways, which made way for the tighter integration of dispersed facilities and operations. Growing international telegraph and railway networks gave British industrialists access to raw commodities from around the world through new international markets, both inside and outside the formal empire.⁸ This technological advancement did more than just make industry efficient—it enabled a generation of liberal British leaders to establish a new political economy for their domains. During the 1840s and 1850s, many Canadians—along with Australians, New Zealanders, and others—substituted a monolithic British identity for what historian of the British Empire John Darwin calls a “Britannic nationalism,” which combined emerging national identities with a sense of belonging to a “British world,” defined by shared values, institutions, and norms.⁹ Beginning with Confederation in 1867, this “British world” soon included self-governing dominions with control over almost all national affairs—not subject to the London but protected by the power of British rule of the global financial markets, industrial leadership, and the might of the Royal Navy (RN).¹⁰

Paradoxically, while technologies such as the telegraph made it easier to decentralise political decisions about local issues to the legislatures of self-governing colonies, these same technologies made it more important to centralise the navy which guarded the oceans. Geography lay at the heart of the paradox, because while fast, reliable long-distance communications made it easier to concentrate navies for military advantage just as well as they could distribute the movement of trains for economic advantage. Ship designs evolved to reflect this changing technological balance. In the 1850s and 1860s, French, American, and British navies began building a new class of ships, called “ironclads,” by adding steel plate to wood-hulled ships propelled by coal-powered steam engines. Although early ironclads had limited range and seaworthiness, they proved useful in the American Civil War and many European conflicts of the 1860s and 1870s. Because ironclads were slow, and armour was heavy, these vessels were vulnerable to torpedoes and a new generation of powerful cannon mounted on smaller ships.¹¹

By the 1880s, however, shipbuilders had overcome many of the technical difficulties of battleship design. Major naval powers started building a new generation of battleships, combining heavy armour and long-range guns. These new ships could withstand gunboat attacks while carrying enough firepower to make short work of smaller flotillas. An ascendant group of naval theorists in Europe and the United States, the “blue water” school, posited that these modern battleships rendered the oceans “indivisible.” If a major naval power could combine these new, fast battleships with a worldwide telecommunications network based on coaling stations, telegraph cables, and new wireless signalling technology, they would be able to find an enemy fleet and concentrate before

the enemy could. Since a concentrated fleet would be able to overwhelm a dispersed fleet, a few early naval battles might determine the course of the entire war.¹²

The move towards blue-water navies in the 1880s set off a naval building race that soon risked becoming unaffordable for the British parliament. In response to a new German naval building programme in 1898, the parliament at Westminster passed a new *Naval Defence Act* the following year, which mandated that the Royal Navy maintain a larger fleet of capital ships than the next two naval powers combined.¹³ Soon the French, Americans, Japanese and Russians also began major fleet expansions, and the cost to keep up with them only grew as technology improved. In 1906, the British launched the HMS *Dreadnought*, a new class of battleship employing five sets of twin 12-inch quick-firing guns, a new steam turbine engine, and thick armour plate. Because the *Dreadnought* was better armed *and* faster *and* better armoured than any other capital ship, it made existing fleets obsolete—indeed, the word “dreadnought” took on two meanings: as a proper noun for the original ship, and as a common noun to describe any battleship employing a similar mix of technologies. The naval race between the world’s major naval powers, already expensive before 1906, grew costlier as British shipyards raced to produce new classes of dreadnoughts and faster, but less armoured, battlecruisers.¹⁴ The British treasury could not keep up, and the Admiralty retired the two-power standard in 1909 in favour of a 60 per cent superiority over Germany. Even this concession did not last long, as the Imperial German Navy outpaced the 60 per cent standard in 1910.¹⁵

The “blue water” problem struck at the tension holding the liberal empire: the legislatures and constituencies of self-governing dominions were willing participants in the imperial project precisely because they were self-governing and linked together by cultural, economic, and security ties. The dominions contributed to the military strength of the empire by paying for militia forces paid for by taxation designed to augment British forces in their own respective geographical areas, all while being linked together by the British fleet. The British fleet, however, was just that—*British*, paid for by British funds and responsible to the British parliament, not the empire as a whole. From a Canadian point of view, therefore, military security depended on a naval force not visible to the Canadian public or accountable to the Canadian parliament. At the inaugural Colonial Conference in 1887, British foreign secretary Lord Salisbury argued:

The power of concentrating military and naval force upon a single point is increasing under the influence of scientific progress. Put all these things together, and you will see that the colonies have a very real and genuine interest in the shield which their Imperial connection throws over them, and that they have grounds for joining with us in making the defence of the Empire effective, a ground which is not purely sentimental, which does not rest merely upon their attachment to this Country, but which is based on the most solid and reasonable foundations of self-interest and security.¹⁶

Salisbury was right: the British fleet was really an imperial fleet, because the security of the far-flung Empire depended on British naval preponderance. But because the imperial navy could not be responsible to several parliaments and only the British parliament made foreign policy, British political leaders were asking their counterparts in Canada, Australia, and New Zealand to submit to subsidisation without representa-

tion. It was a tough sell. During the 1887 conference, Australian and New Zealander delegates, fearing isolation in the event of a British naval loss to Japan or Germany, acquiesced in exchange for assurances that the Australia Squadron would remain in the South Pacific. The Canadian delegates did not. Unlike the Australians and New Zealanders, the Canadians worried about entanglement, not abandonment. The last time Canadian soldiers had fought an existential conflict was in the War of 1812, a war which originated as a dispute between the British and the United States over maritime rights.¹⁷ Every Canadian government following Confederation, regardless of political stripe, maintained that the best contribution they could make to imperial defence lay in making Canadian territory more secure by mobilising Canadian resources under Canadian control. Because although the *British North America Act* of 1867 did not provide Parliament in Ottawa the power to declare war or neutrality, it did allocate the financial and administrative responsibility for raising military forces to the new Parliament in Ottawa. Successive Canadian governments had thus enacted a de facto veto on foreign wars by refusing to commit resources to them. Sir John A. Macdonald and the Tories used this veto in 1885 when they declined a British request for Canadian contingent to be sent to an imperial campaign in Sudan, for instance.¹⁸ When the Liberals under Wilfrid Laurier authorised a Canadian contingent for the South African War in 1899 to appease a growing imperialist constituency, moreover, the prime minister tried to fit the decision into the traditional mold of Canadian defence policy. Besides declaring that the obvious precedent was, in fact, not a precedent, Laurier made sure that the Canadian contingent sailed as a “special force,” and not a component of the regular militia.¹⁹ The gambit failed, and part of the Liberals’ French-Canadian caucus resigned from the party in protest.

This tension between defence of Canadian territory *in support of the empire* and *the defence of the empire* as a means of guaranteeing Canadian security was even more pronounced when discussing the naval question. The South African veldt was far away from the Canadian prairie and Laurier could at least try to establish political distance between the Canadian contingent in South Africa and Canadian policy. The revolution in naval technology at the turn of the century, however, made it difficult to translate this geographic distance into political distance. Modern navies could move across oceans in a matter of days, guided by information which travelled that same distance in a matter of hours. The tension only grew as growing British naval tonnage imparted a heavier burden on the British treasury, which in turn grew to pressure on the Dominions to make more financial contributions towards the fleet. Dominion governments, however, grew more recalcitrant to pay into such a fleet at the turn of the century. While the Australian colonies—which joined together as a self-governing federation in 1901—and the New Zealanders had borne some of the cost for this arms race promised in 1887, the new Australian government refused to renew the subsidy payments after the British Admiralty broke the agreement by redeploying the Australia Squadron to European waters in 1904 without the Australian government’s permission.²⁰ This episode led Australian parliamentarians to demand a national navy under their direct control.²¹ If the Admiralty could not design a fleet to reconcile the unity of the ocean with heterodoxy of the empire, they would have to make do with fewer ships—or find a way to work with a series of scattered dominion fleets.

In fact, the Canadians had already been moving towards building their own fleet. In 1895, a retired RN officer founded the first overseas branch of the Navy League in Toronto. These early Canadian navalists proposed a modest programme of creating a Canadian naval militia prepared to augment the Royal Navy in ships under Canadian control, but the League soon advocated more active participation in imperial defence.²² Laurier moved to avoid a debate about building a new navy by building on a pre-existing maritime force, the Fisheries Protection Service (FPS). The FPS was established in 1868 to patrol the Atlantic coast, enforce Canadian fishing laws, and monitor American fishing boats.²³ Laurier and Prefontaine reasoned that if they could transform the FPS into a dual-use force, armed with light weapons in peacetime but “militarised” and equipped with heavier weapons in wartime, they would be capable enough to provide for the direct protection of Canadian territorial waters without being integrated into the Royal Navy. This dual-use FPS, backed by a part-time naval militia, would provide just enough naval capability: Canadian vessels could offset the need to deploy some RN ships to Canadian waters, but the limited range and capability of FPS ships precluded them from participation in any imperial adventures, thus pre-empting objections from the *Nationalistes* who had objected to participation in the South African War.²⁴ Parliament voted the funds, and Canadian Government Ship (CGS) *Canada* arrived from the Vickers shipyard at Barrow-in-Furness in the summer of 1904 while the Polson Iron Works in Toronto launched CGS *Vigilant* a few months later.²⁵

Although the Admiralty opposed any form of coastal fleet as a distraction from building up a proper blue-water capability, by 1907 it was clear that the Canadian and Australian governments would not subsidize the RN. Edward Marjoribanks, the First Lord of the Admiralty, conceded that naval “contributions from the Colonies should necessarily only be in the form of money,” and that the dominions should consider their own navies of “smaller craft ... are necessarily incident to the work of a great fleet of modern battleships.”²⁶ With the British and the Australian governments at a stalemate over subsidies, Laurier hoped his little fleet could make it through the politically dangerous waters of the naval debate.

Unluckily for Laurier, the Australian government and the Admiralty soon came to a new understanding. By 1909, British naval experts worried publicly that the Germans might surpass the British in ship construction, and public support for increased naval spending grew both in Britain and the dominions.²⁷ Forgetting the hard feelings from the 1904 Australian squadron redeployment, parliamentarians in New Zealand offered to subsidise the construction of a capital ship, the HMS *New Zealand*, for use by the Royal Navy, and the sitting governments in Australia and Canada felt pressure from naval lobbies in their countries to do the same. Australia's Prime Minister Andrew Fisher bent first. Admiralty officials, recognising that Fisher was not likely to secure funding for a large direct contribution, instead recommended that the Australians build a national navy along British lines—instead of an HMS *Australia*, they could build a fleet of Her Majesty's *Australian Ships* (HMAS), designed as a fleet unit of the Royal Navy. With the Australian compromise in hand, the British called for an “emergency” imperial conference to discuss the issue in July.²⁸ Laurier found himself outflanked by the Australians, New Zealanders, and British, not to mention the Conservative opposition in Ottawa,

Table 1: Proposed Naval Plans, 1904-1913

Ship Category	Class	Number	Notes
1904 Proposal			
Light Cruisers	CGS Canada / CGS Vigilant	2	Original plan for a militarised FPS never put to a bill. To be supported by a naval militia.
1909 Admiralty Proposal			
Battlecruisers	Indomitable	1	Deployed as a single squadron; fall to RN control in wartime.
Cruisers	Bristol	3	
Destroyers	River (presumed)	6	
Submarines	C Class	3	
1910 Authorised fleet			
Heavy Cruiser	Boadecia (later Diadem)	1	Split between two coasts; released to RN by parliament.
Cruiser	Bristol	4	
Destroyers	River (presumed)	6	
1911-1913 – Borden’s proposed fleet			
Battleships	Unknown; likely Indefatigable or King George V class	3	RN control
Cruisers	Bristol	Unknown	RCN control

Note that neither Milner nor any other source this author could find lists the class of capital ships Borden proposed to sponsor for the R.N. The Australians ordered the HMAS Australia, an Indefatigable-class dreadnought, in 1909 following the naval conference; however, a Canadian contribution might have taken the form of the King George V Class, which was laid down in 1911. Milner, Canada’s Navy, 15–30.

who demanded direct contributions to the RN. Given the choice between naval subsidies for the RN or a national blue-water fleet, Laurier chose the fleet.²⁹

Laurier tried to build a Royal Canadian Navy (RCN) sufficiently “royal” enough for imperialists and sufficiently “Canadian” for nationalists. He failed. Following the 1909 conference, the Liberals passed the Naval Act and began building a mixed fleet of cruisers and destroyers (See Table 2). As ever, Laurier looked for compromise, and the Act divided the fleet between both coasts and required parliamentary consent to release RCN ships to RN control in wartime.³⁰ The new service took possession of its first hulls in October 1910, when the outdated British cruiser *Niobe*, along with some British instructors, entered Halifax harbour to train up Canadian sailors.³¹ The rest of the fleet never arrived. During the 1911 federal election, Conservative leader Robert Borden criticised the fleet as a “hazardous experiment” that undermined imperial unity, while the *Nationalistes* under Henri Bourassa attacked it for being a de facto commitment to imperial direction on foreign affairs. The attacks on the naval issue from both directions ate away at support for the Liberals in Quebec and played an important role in Laurier’s election loss.³² No matter how much he might try to compromise about fleet composition and basing, Laurier could not escape the technological constraints on military decision-making and the political consequences of military choice.

Nor could Borden. Once elected, the new prime minister proposed his own naval policy—a mix of a smaller RCN ships built in Canadian shipyards and a subsidy to the construct three dreadnoughts in British shipyards (See Table 1). In exchange for this subsidy, the prime minister wanted a right of consultation on foreign policy and some RN contracts for smaller, simpler naval vessels to go to Canadian shipyards.³³ This compromise proved no more practicable than Laurier's, and Liberal senators defeated the revised naval bill in the upper chamber in 1913. When war came, Canada's sailors played a marginal role. The *Niobe* and *Rainbow* remained mostly inactive on the coasts, while Admiral Charles Kingsmill, the Director of the Naval Service (DNS), built up a small fleet of auxiliary vessels for convoy escort. Much of the naval protection afforded to Canada came from ships of the RAN's blue-water fleet stationed out of Halifax.³⁴ Canadians benefitted from the Admiralty proposal for dominion fleet units—just not theirs.

A technological paradox made the naval question insoluble to Canadian statesmen at the turn of the century: while improved communications and transportation technologies made the political economy of a liberal empire possible, the navy required to defend that liberal empire required the kind of centralisation which made it impossible for a single fleet to be responsible to multiple legislatures. Unfortunately for Laurier, the naval technology of his time made it impossible to design a Canadian fleet that would be militarily useful in a conflict, and his attempt to argue that a blue-water RCN would be both purely “Canadian” but also a meaningful contribution to imperial defence appealed neither to voters concerned about imperial entanglements nor those concerned about imperial shirking. The fact that his successor, tried and failed to strike his own compromise on similar grounds tells us an important truth about the relationship between technology and strategy: while strategic choices will always be made by political leaders, the shape of those choices will be shaped by the relationship between technology and geography.

Canadian Strategic Choice and Continental Defence, 1918-1945

Although the Canadian Parliament attained full independence in foreign affairs during the inter-war period, geography and technology still limited strategic choice. Following the First World War (1914-1918), the 1926 Balfour Declaration and the 1931 Statute of Westminster gave formal independence in foreign affairs to the self-governing dominions, including Canada. Outside the empire, other major powers recognised a distinct Canadian international personality when they recognised independent Canadian delegations to the League of Nations in 1919 and independent Canadian embassies in the United States (1927), France (1928), and Japan (1929). On a political level, this independence guaranteed the Canadian government the right to declare neutrality in a great power conflict. In practice, strategic thinkers in Canada, Britain, and the United States concluded that the interplay of modern military technology and Canadian geography would render such formal neutrality meaningless.³⁵ Whatever might be written in international treaties, or parliamentary statutes, the continued existence of blue-water fleets and the development of modern long-range bombers between 1919 and 1945 meant that Canadian decision-makers would have to deal with similar strategic dilemmas as their counterparts a generation earlier.

Concerns surrounding the interaction of technology and geography dominated Canadian post-war defence planning. Colonel James Sutherland-Brown, appointed Director of Military Operations and Intelligence (DMO&I) in 1920, put most of his effort into Defence Scheme No. 1, a contingency plan for war with the United States. His plan seems quizzical in retrospect, and many historians have made a sport of taking jabs at Sutherland-Brown: Desmond Morton describes his planning as a symptom of a “peacetime service [drifting] gently from reality” and James Eayrs diagnosing the colonel with “strategist’s cramp ... a kind of creeping paralysis of the imagination when it comes to assessing the influence of a changing political and technological environment upon the fortunes of his country.”³⁶ Yet it is a mistake to write off Sutherland-Brown, a decorated staff officer and one of the first graduates of the Imperial Defence College, as an eccentric acting on his own. In fact, Sutherland-Brown wrote the plan between 1920 and 1921 under the direction of General Sir Arthur Currie, then serving as Inspector-General of Canadian military forces, and, after Currie’s retirement, with the knowledge and support of both the Chief of General Staff (CGS), Major-General H.C. Thacker, and the Director of the Naval Service (DNS), Rear-Admiral Walter Hose.³⁷

Sutherland-Brown’s concern had roots in pre-war thinking about Canada’s strategic position. Although the Admiralty stopped planning for a war with the United States in 1904, the British War Office continued to plan this eventuality until 1913. While British admirals did not worry about armed conflict with the United States, British generals worried that the 1902 naval alliance with Japan might lead to such a conflict. In 1899, President William McKinley’s administration had established the “open door” doctrine, which positioned the United States as the protector of Chinese sovereignty—principally against Japan which already occupied Chinese territory. If conflict broke out between the United States and Japan, the British and, by extension, Canada would be dragged in regardless of whether Ottawa declared itself neutral.

What concerned Sutherland-Brown, Currie, and others was not an immediate threat of American annexation but the objective strategic value of Canadian territory, for both sides in the event of a war between the United States and Japan.³⁸ This concern persisted among planners well into the 1930s. Even after the formal end of the Anglo-Japanese alliance in 1921, Thacker kept Defence Scheme No. 1 alive. When A.G.L. McNaughton replaced Thacker as CGS, he cancelled Defence Scheme No. 1—but at the same time, McNaughton also made sure to expand the scope of a second contingency plan for armed neutrality, Defence Scheme No. 2, to consider the potential of both a Japanese attack on Canadian naval facilities in British Columbia as well as an American seizure of Canadian territory to prevent those facilities from falling into Japanese hands. Perhaps the most important endorsement of Sutherland-Brown’s thinking came from staff at the US Army War College. There, in the late 1930s, American officers drafted their own plan for an invasion of Canada, “Crimson,” as part of a wider war against the British Empire, code-named “War Plan Red.” Notably, American naval planners determined that Canada could not be neutral in a crisis, as they would either be too weak to secure their own territory, or if they were strong enough to secure it, might decide to join the conflict partway through. Thus, even “defensive” forces in Canada might act as a shield behind which a new weapon—the bomber aircraft—could mount raids

on American cities.³⁹ Sutherland-Brown's planning was thus far more than a product of "strategists' cramp," as it fell into a long tradition of military thinking informed by a careful assessment of technological change that stretched from the blue-water era to the bomber era, and which mirrored thinking in both Britain and the United States.

The threat of an involuntary guarantee only ended when Prime Minister William Lyon Mackenzie King and President Franklin Delano Roosevelt concluded the terms of a voluntary one. After his re-election in 1935, King began discussing trade issues with Roosevelt, and this political relationship soon grew into a political alliance and personal friendship. As their friendship deepened, so too did the range of issues up for discussion—most notably, security. The change in defence relations happened quickly. In January 1938, Canadian military officers visited Washington in a professional capacity for the first time.⁴⁰ Seven months after the incognito visit, Roosevelt assured a friendly audience at Queen's University that:

We in the Americas are no longer a far away continent, to which the eddies of controversies beyond the seas could bring no interest or no harm. Instead, we in the Americas have become a consideration to every propaganda office and to every general staff beyond the seas. The vast amount of our resources, the vigor of our commerce and the strength of our men have made us vital factors in world peace whether we choose it or not ...

The Dominion of Canada is part of the sisterhood of the British Empire. I give to you assurance that the people of the United States will not stand idly by if domination of Canadian soil is threatened by any other Empire.⁴¹

The president took his host and everyone else by surprise, including his Secretary of State, William Cordell Hull. From the point of view of Canadian military planners, however, Roosevelt merely expressed what Sutherland-Brown and McNaughton anticipated a decade earlier—that the Americans would not tolerate an insecure northern flank, and that the introduction of long-range bomber aircraft in the 1930s only exacerbated the security dilemmas imposed by the development of "blue water" fleets fifty years earlier. Fortunately for those Canadian officials interested in maintaining their status as an independent state, the personal diplomacy of King and Roosevelt allowed the two leaders to address the problem diplomatically. In August 1940, two months after the fall of France in June 1940, Roosevelt invited King to Ogdensburg, New York to discuss terms for a formal alliance. They agreed to form the Permanent Joint Board on Defence (PJBD), comprised of officers from both countries, to draft contingency plans. Although PJBD plans and recommendations were not binding, they were considered at the Cabinet level. Their first plan, the Basic Defence Plan No. 1, published in October 1940, allocated "strategic direction" of Canadian forces to American command in the event of a British collapse. The second plan, ABC-22, drafted in April 1941 went further. ABC-22 gave the US Chiefs of Staff control of Canadian home defence forces if the United States joined the war without a British collapse. Both the Canadian Chiefs of Staff and the Cabinet balked. It was one thing to volunteer for cooperation before an involuntary guarantee could be imposed, it was quite another to willingly fall under for discretionary offensive operations. The Americans agreed to a change of language, and the final draft of ABC-22 called for "coordination of military effort" instead of unified "strategic direction."⁴²

While American presumption about the control of Canadian military forces might have offended many in Ottawa, many Canadians grew to admire their neighbours. However push the Americans might seem, their industrial, economic, military, and scientific might provided most Allied leaders, Mackenzie King included, with confidence in an eventual Allied victory. The best illustration of that superiority was the development and deployment of atomic bombs in August 1945. Before August 1942, scattered British and American atomic weapons research had showed little promise of producing a usable bomb on a useful timescale. Three years later, the tripartite British-American-Canadian Manhattan Project had produced two operational designs. The American lead, however, did not last long. Soviet spies had infiltrated the programme during the war and sent vital nuclear information back to Moscow, allowing them to test a near-copy an American weapon in August 1949.⁴³

Mackenzie King did his best to stay away from great-power politics. When Igor Gouzenko, a Soviet cipher clerk, defected to the RCMP with evidence of Soviet spy rings in the Manhattan Project in September 1945, the prime minister did his best to keep it quiet and defence spending low. Even the foundation of the North Atlantic Treaty Organization (NATO) in April 1949 and the first Soviet atomic bomb test four months later did not spur a significant increase to the defence budget. After the North Korean invasion of South Korea in June 1950, however, Prime Minister Louis St-Laurent, who replaced King in 1948, and many in his Cabinet, accepted the need for limited rearmament. The prime minister, like many Western leaders, worried that a divided Korea might be a feint to distract their attention from Europe, or maybe even a threat closer to home.⁴⁴ Although St-Laurent needed to grapple with the new threat posed by new nuclear technology, he soon found that the relationship between this new technology and Canadian geography resembled the dilemmas faced by Laurier and Mackenzie King.

The experience of planning for continental defence in the 1930s and 1940s demonstrates that the relationship between technology and geography played a more important role for defining Canadian strategic choice than formal political commitments. During the naval debate at the turn of the century, Laurier, Bourassa, and Borden argued both in terms of how a national navy the *de jure* obligations and liabilities of a self-governing dominion and the *de facto* barriers to declaring neutrality in an international crisis. When the statute of Westminster removed *de jure* requirement for Canada to go to war alongside Britain in 1931, however, the strategic problems posed by modern technology remained. Whether Canadian governments liked it or not, the advent of modern blue-water navies and modern bomber aircraft made it possible for great powers on the other side of the Pacific or Atlantic oceans to mount operations against Canadian territory, which remained an ideal staging ground for further attacks against the United States. As bomber aircraft grew more capable in the 1950s, and the bombs they carried grew more destructive, these trends would only get accelerate.

Air Defence and Canadian Strategic Choice, 1945–1959

The debate surrounding nuclear deterrence and continental air defence in the 1950s resembled those questions of naval defence at the turn of the century in important ways. During the naval building race, acolytes of the blue-water school argued with

Dominion governments who wanted proximate visible protection from hostile ships. At the mid-century, advocates of a nuclear striking force capable of deterring enemy aggression clashed with advocates of air defence, who wanted direct protection from an enemy surprise attack. As in the naval defence debate, Canadian decision-makers found themselves balancing the technical realities of an absolute threat, which required cooperation with a larger power to build capabilities not tied to the direct defence of Canadian territory, and the problem of ensuring a national say in the use of that territory.

The technological and military balance between the United States and the Soviet Union placed Canadian airspace at the centre of the standoff between the superpowers. To offset the overwhelming advantage of Soviet conventional forces in Europe, American security guarantees to NATO allies rested on the deterrent power held by the bombers of the United States Air Force's (USAF) Strategic Air Command (SAC). Because SAC's bombers were mostly based in the continental US, they were vulnerable to a Soviet surprise attack over the North Pole and Canadian territory. Soon after the Soviets tested their first atomic bomb, they began to build more than 800 long-range Tu-4 *Bull* bombers.⁴⁵ The Americans took notice and expanded its radar networks, but worried about the weakness of their northern neighbours. Canadian officials also fretted. In 1951, the RCAF's Air Defence Command (RCAF ADC) and USAF Air Defense Command (USAF ADC) collaborated to share radar data and extend detection coverage farther north (see Map 1). This new system, called "Pinetree," was an improvement on older systems. Pinetree could both detect aircraft and provide ground control intercept (GCI) information to the USAF ADC and RCAF ADC, allowing ground controllers to guide interceptor aircraft onto the attacking bombers.⁴⁶ While Prime Minister Louis St-Laurent recognised the military need for Pinetree, he worried about the political implications of the new network. The USAF manned many Pinetree sites in Canada, mostly due to cost and a dearth of qualified Canadian operators. That meant that American military personnel on Canadian soil operated the lynchpin of a system protecting American bombers, not the Canadian population, from nuclear attack.⁴⁷

American scientists working on continental defence problems worried about Pinetree, for different reasons. General Hoyt Vandenberg, the USAF's Chief of Staff, liked Pinetree because it provided just enough warning to get SAC bombers off the ground in the event of a Soviet attack and consumed relatively few resources—resources he wanted to assign to build up the American bomber force.⁴⁸ "Just enough," however, meant different things to different people. In 1950 and 1951, the USAF and various federal agencies sponsored two scientific working groups on air defence and civil defence. The first of these reports, code-named Project Charles, concluded that Pinetree provided inadequate warning, and that "there is a real threat of a Pearl Harbor attack from one way mission TU-4s ... there would likely be no detection ... it will be impossible to avoid receiving severe damage."⁴⁹ The second group, code-named Project East River, concluded that passive civil defence measures, such as the construction of bomb shelters, would be pointless unless supplemented by robust air defences.⁵⁰ Vandenberg, however, rejected these recommendations. Just as blue-water theorists saw coastal flotillas of small ships as a pointless distraction from building more capital ships, Vandenberg was reluctant to build up air defence at the expense of the offensive bomber force that

could provide assured destruction, and therefore assured deterrence. The USAF did not have enough funds to build the kind of air-defence system envisioned by the Charles and East River groups *and* to build up the bomber fleet.

The Chief of Staff did not reject air defence entirely, however. In 1951, Vandenberg authorised a proposal by two MIT physicists to establish a permanent institute devoted to the problems of air defence. This new institution, the Lincoln Laboratories, attracted many of the same scientists who staffed Project Charles and Project East River. The concerned scientists immediately got to work on two levels. On a technical level, the Lincoln scientists attacked the problems associated with detecting, tracking, and destroying incoming bombers. On a political level, they organised a conference of experts in emerging technologies, with the aim of compiling a costed proposal to force Vandenberg's hand to build a serious air defence system.⁵¹ Given that such a system would need to stretch into the Canadian north, the Lincoln team invited representatives from Canada's Defence Research Board (DRB), the military's joint scientific research body, to collaborate on technical problems, and to send representatives for a conference scheduled for the summer of 1952.⁵² Back in Ottawa, nuclear physicist George Lindsey, a member of the DRB's Operational Research Group (ORG), got the task. He recruited an old friend, economist Dr R.J. Sutherland, into the ORG and began preparing for the conference.⁵³

As they prepared for the conference, Lindsey and Sutherland reviewed the Project Charles and Project East River reports with concern. The American delegates favoured three technical solutions: distant early warning (DEW) lines, improvements to Pinetree, and a series of aircraft-mounted early warning and tracking radars. The Lincoln scientists envisioned DEW as a guarantee against surprise attack. After Soviet bombers tripped the DEW, a fleet of radar aircraft would both confirm the track of the enemy aircraft heading south and get SAC bombers off the ground so they could conduct retaliatory strikes. The main battle, however, would occur in "Z1," or the main defended area covered by Pinetree's ground control intercept GCI radars (see Map 1).⁵⁴ Given that the main battle between bombers armed with high-yield nuclear bombs and interceptors armed with nuclear air-to-air missiles would occur over southern Canada, Canadian cities would likely suffer as nuclear weapons detonated during the aerial battle.⁵⁵ Even if the Americans found the money to build DEW, leaders in Ottawa would be unlikely to consent to the construction of an air-defence system that did not protect Canadian cities. As Sutherland later wrote to Lindsey:

In order to be effective the deterrent must be credible from the point of view of the enemy. In theory the actual strength of the deterrent does not matter provided the potential enemy can be convinced that it exists. In practice, and particularly from the point of view of the West, there is practically no possibility of successful deception. In the atmosphere of free discussion which prevails in the West any doubt concerning the reality of the deterrent would create a major crisis of political morale. This illustrates the point that the deterrent must be credible in our own eyes as will [*sic*] as those of the enemy. *The fact that we ourselves must be able to believe in the reality of the deterrent may well constitute the more demanding requirement.* [emphasis added].⁵⁶

On a technical level, the air-defence system supported the SAC as a *war-fighting force* by making a Soviet surprise attack unlikely to succeed. On a psychological and political level, the system supported SAC as a *deterrent* by convincing the Soviets that a surprise attack would likely fail — so long as air-defence advocates could convince their own leaders to build it. To spend such large sums on research and deployment, politicians needed public support, or at least acquiescence; and political leaders needed to convince the public, or at least parliament, that an air-defence system would protect against a Soviet nuclear attack. In his most influential public work, Sutherland tied the air-defence debate to Mackenzie King's approach to continental security, quoting the prime minister's comments from 1938:

We too, as a good friendly neighbour, have our responsibilities. One of them is to see that our country is made as immune from possible invasion as we can reasonably be expected to make it, and, that should the occasion ever arise, enemy forces should not be able to make their way, either by land sea or air, to the United States across Canadian territory.

Sutherland added:

These are not idle words. What Mackenzie King said was that Canada must not become through military weakness or otherwise a direct threat to American security. If this were to happen, Canada's right to existence as an independent nation would be placed in jeopardy.⁵⁷

The problem for advocates of a Canadian air-defence system, like those of Canadian navalists four decades earlier, was that it was hard to make a case for spending on military capabilities that served as extensions of British or American power, rather than the defence of Canadian territory — even if the only practicable means of defending that territory was deterrence in provided by more powerful allies. Fortunately for Lindsey, Sutherland, and Canada's population, DRB scientists had been working on air-defence problems for some time. In 1950, the DRB had awarded grants to Dr John S. Foster of McGill University to develop a new kind of semi-automated detection system. Although these simple microwave emitters could not provide tracking information and GCI like the Pinetree radars, they could act like a fence with bells on it, a simple warning that would get bombers off the ground and fighters in the air. And since the so-called "McGill fence," used so many automated components, it could be built much faster than Pinetree radars and manned at much lower cost. Through formal papers and informal talks, Lindsey, Sutherland, and Foster drafted a proposal to layer a series of McGill fences, beginning at the boreal treeline and extending north as more funds became available. These fences could then be covered by long-range interceptors with internal radars capable of fighting beyond GCI range (see Map 1).⁵⁸

These proposals proved popular with Cabinet and the armed services. Even better, the plan coincided with the desire of Air Marshal W.A. Curtis, the Chief of the Air Staff (CAS), to maintain domestic fighter programmes.⁵⁹ The CF-100 *Canuck*, a heavy interceptor designed and produced by Avro Canada, entered service in April 1953, and the government tendered a design contract for a successor aircraft, the CF-105 *Arrow*, a month later.⁶⁰ And while the Canadian government supported the creation of the binational Pinetree Line in southern Canada, Defence Construction Limited, a Crown corporation, built a McGill fence system, called the Mid-Canada Line, as a national

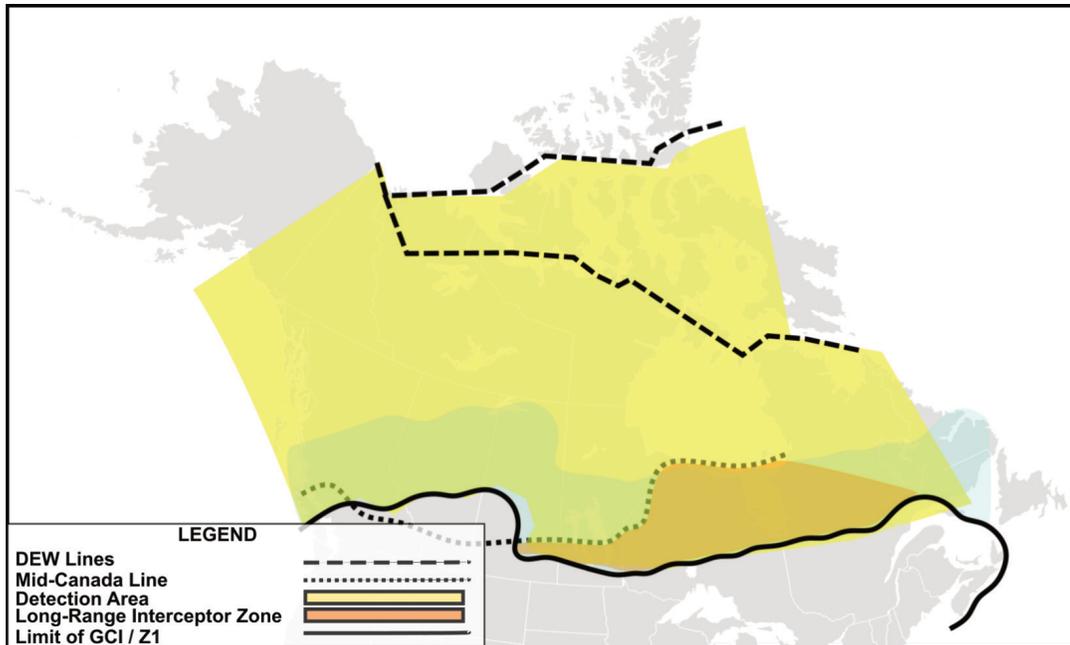


Figure 1. Air Defence Proposals from the Lincoln Summer Study Group, 1952. Source: G.R. Lindsey, “Operational Research Group Internal Memorandum No. 12 — The Summer Study on Air Defence at Project Lincoln,” September 1952, file DRBS 756-181-267-2, vol. 4220, RG 24-F-1, Library and Archives Canada (LAC). Credit: Author’s work. Background map vector created by Alan Rockefeller, used under a Creative Commons CC BY-SA-3.0 licence via the Wikimedia Foundation, https://upload.wikimedia.org/wikipedia/commons/thumb/c/c3/North_america_blank_range_map.png/512px-North_america_blank_range_map.png.

project between 1956 and 1958.⁶¹ If Canada’s allies did not have the tools to design a common defence that respected Canadian interests, then Canadian governments would build them.

By the time the Mid-Canada Line became operational, however, the air-defence problem started to shift from an absolute threat of Soviet attack and American intervention to a relative threat requiring a careful balancing of priorities. Dwight Eisenhower, elected US President in December 1952, proved to be an air-defence enthusiast, and he grew even more enthusiastic after the Soviet Union detonated a hydrogen bomb in August 1953.⁶² His administration poured money into an American-led DEW Line and an expanded Pinetree Line, both of which were integrated into an advanced computer network, the Semi-Automated Ground Environment (SAGE). Since the expanded Pinetree system provided GCI coverage much farther north than the original system, there was less need for a heavy fighter carrying a heavy radar long distances, and American aircraft companies began producing “good enough” fighters, such as the F-101 *Voodoo* and F-102B *Delta Dagger*, to fit these requirements at a much lower cost than the bespoke CF-100 and CF-105 programmes.⁶³

Meanwhile, the *Arrow* design team encountered numerous problems with avionics, engines, and weapons, all of which led to delays and cost overruns. What began as a limited programme to build an airframe with foreign components for \$1.5 million per aircraft in 1953 grew to separate airframe, weapons, and engines programme totaling \$8-9.5 million per aircraft in 1959 — excluding preproduction costs, which drove

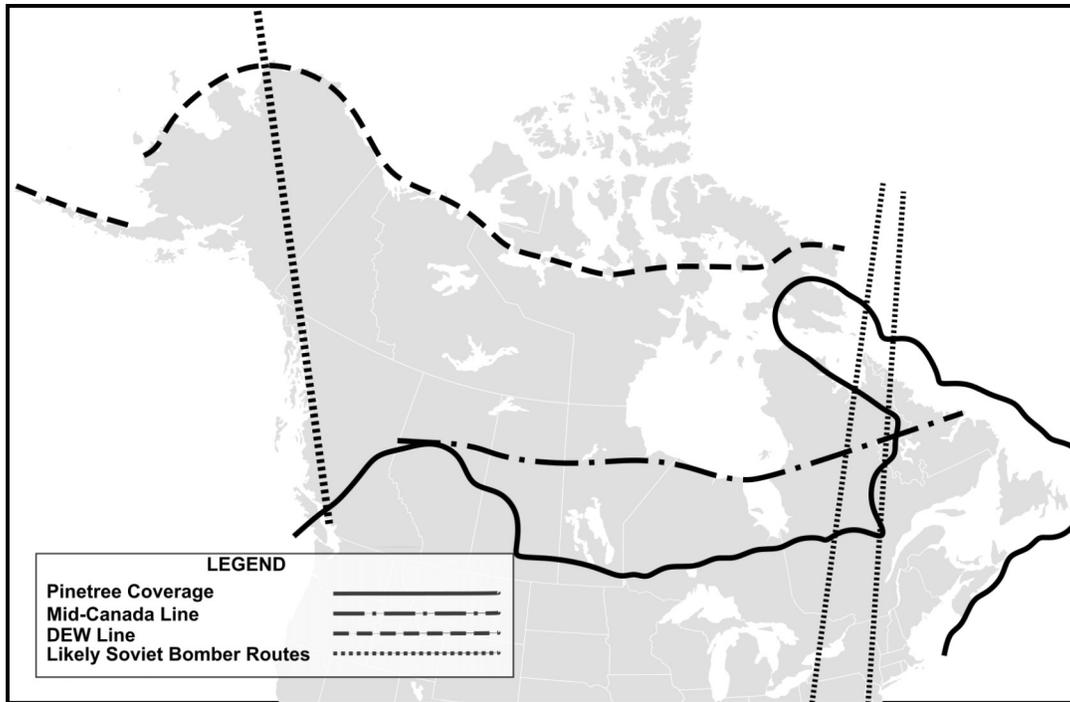


Figure 2. North American Air Defence, 1957. Source: P. Whitney Lackenbauer, Matthew J. Farish and Jennifer Arthur-Lackenbauer, “The Distant Early Warning Line (DEW) Line: A Bibliography and Documentary Resource List,” (Arctic Institute of North America), 2005, <https://pubs.aina.ucalgary.ca/aina/DEWLineBib.pdf>; “Pinetree Line Locations,” Canadian Civil Defence Museum, <http://civildefencemuseum.ca/pinetree-line-locations>; Military Communications and Electronic Museum, “Early Warning Systems — 1957,” Military Communications and Electronics Museum, <http://www.c-and-e-museum.org/Pinetreeline/misc/other/misc10a1.jpg>; Claudio Cioffi-Revilla, “Nuclear Deterrence Theory in the Early Cold War, 1945-1962,” Paper uploaded to Researchgate.net, 2 September 2020, 43; “SAGE: Semi-Automatic Ground Environment Air Defense System,” Lincoln Laboratory, Massachusetts Institute of Technology, <https://www.ll.mit.edu/about/history/sage-semi-automatic-ground-environment-air-defense-system>; Staff Report, “Protecting U.S. Power to Strike Back in the 1950’s and 1960’s” (Santa Monica, 1956). Credit: Author’s work. Background map vector created by Alan Rockefeller, used under a Creative Commons CC BY-SA-3.0 licence via the Wikimedia Foundation, https://upload.wikimedia.org/wikipedia/commons/thumb/c/c3/North_america_blank_range_map.png/512px-North_america_blank_range_map.png.

the real price past \$13 million for each jet.⁶⁴ As problems with the programme grew, the Cabinet Defence Committee (CDC) convened a review of the programme by an interdepartmental committee in 1955. The committee examined the development of the aircraft to date, compared the *Arrow* against alternative American aircraft, and assessed a new generation of American nuclear-tipped surface-to-air missiles (SAMs). Nuclear-tipped SAMs, which began testing in the mid-1950s, promised a much better dollar-per-kill ratio on Soviet bomber fleets than manned interceptors because they could carry large warheads — 10-20 kilotons (kt), as opposed to the small, 1.5 kt warheads envisioned for air-to-air missiles. A nuclear warhead used at high altitudes included many advantages against large bomber formations: Not only were they effective against aircraft, but because they detonated so high up, they were relatively safe for people on the ground.⁶⁵ Since nobody planned on fighting a nuclear war more than once, it did not matter that the missiles were single use.

Table 1 – Proposed Naval Plans, 1904-1913

Ship Category	Class	Number	Notes
1904 Proposal			
Light Cruisers	CGS <i>Canada</i> / CGS <i>Vigilant</i>	2	Original plan for a militarised FPS never put to a bill. To be supported by a naval militia.
1909 Admiralty Proposal			
Battlecruisers	<i>Indomitable</i>	1	Deployed as a single squadron; fall to RN control in wartime
Cruisers	<i>Bristol</i>	3	
Destroyers	<i>River</i> (presumed)	6	
Submarines	<i>C Class</i>	3	
1910 Authorised fleet			
Heavy Cruiser	<i>Boadecia</i> (later <i>Diadem</i>)	1	Split between two coasts; Released to RN by parliament
Cruiser	<i>Bristol</i>	4	
Destroyers	<i>River</i> (presumed)	6	
1911-1913 – Borden’s proposed fleet			
Battleships	Unknown; likely <i>Indefatigable</i> or <i>King George V</i> class	3	RN control
Cruisers	<i>Bristol</i>	Unknown	RCN control

Sources: *Air Defence Options and Assessments, 1955-1958*. Credit: Bukharin et al., *Russian Strategic Nuclear Forces*, 127; 344-36; Thomas B. Cochran et al., *Nuclear Weapons Databook: US-USSR Strategic Offensive Nuclear Forces 1945-1996*, 16, 127; Schaffel, *The Emerging Shield*, 268; “*The Threat to North America, 1958-1967*,” 28 November 1957, file 7-26-9, JIC Assessment — [Draft], vol. 20856, RG 24, Library and Archives Canada — Canadian Foreign Intelligence History Project.

While the technical and economic problems with building a beyond-GCI aircraft grew, closer military cooperation with the United States reduced the need for an independent Canadian air-defence system. Canadian military leaders recognised from ABC-22 in 1940 that the United States would invariably be the lead nation in the defence of North America, but that short of an actual crisis, it would be politically unacceptable to cede permanent control of the Canadian military to the United States. In 1953, RCAF and USAF officers convened a study group to outline a politically acceptable joint-command arrangement, and by 1956 they found a solution. Instead of building a joint command that “owned” air defence assets permanently, the study group proposed a system of shared operational *control* of air defence forces. In this system, American and Canadian interceptor squadrons fell under national commanders who both reported to a joint commander. This commander, in turn, received the authority to oversee the deployment and employment of RCAF ADC and USAF ADC from the respective national services, thus avoiding the politically difficult question of subordination. The chiefs of staff from both countries agreed to the proposal in late 1956, and the new government of John Diefenbaker authorised the formation of the new command, the Canada-US Air Defence Command, later known as the North American

Air Defense Command (NORAD), in June 1957.⁶⁶ As a binational command with a Canadian deputy, NORAD provided a means to negotiate and exercise the voluntary participation of Canadian forces in air defence — a guarantee against the exercise of an involuntary guarantee.

Technical improvements in missile technology combined with these political developments in the late 1950s to change the nature of continental air defence from an absolute to a relative problem. Many working on the air-defence problem had seen the change coming for years. The 1955 review committee, for example, acknowledged the importance of SAMs and the growing threat posed by intercontinental ballistic missiles (ICBMs), but insisted that to counter projected Soviet capabilities required an advanced, manned interceptor.⁶⁷ While the authors of the report noted the main Soviet threat would come from the extant Soviet bomber fleet until at least 1965, they also made the case that the CF-105 would still be necessary to defend against a new, theorized, generation of supersonic bombers.⁶⁸ In January 1958, two Canadian inter-service committees, the Joint Intelligence Committee (JIC) and the Joint Planning Committee (JPC), took a harder look the problem. The JIC and JPC concluded that the Soviet bomber fleet would cease to be a serious threat to SAC by 1965 at the latest — not because of a growing *Soviet* ICBM capability, but because of a growing *American* one. The drafters predicted that the Americans would begin building underground, blast-resistant (or “hardened”) ICBM silos sometime between 1961 and 1965. Since early Soviet ICBMs were too inaccurate to hit individual missile complexes, the Soviets would have had to hit them with bombers, but the Soviet bomber fleet was designed to hit large, “soft” airbases, not hardened, dispersed silos. The joint staff concluded that even if the Soviets threw all of their available aircraft into a massive first strike against hardened American ICBM silos, they would not destroy enough of them to prevent a devastating retaliatory strike.⁶⁹

In August 1958, Minister of National Defence George Pearkes, acting on the advice of most of the CSC, advised the CDC to cancel the programme. Cabinet agreed that the programme had become financially unsustainable, but delayed cancellation until February 1959 in the hope that foreign buyers of *Arrows* would make the programme financially viable.⁷⁰ Despite a last-minute American offer to buy some *Arrows*, they did not offer to buy enough of them to keep the programme worthwhile. On 20 February 1959, Cabinet formally cancelled the programme.⁷¹ Historian George Stanley criticised Diefenbaker’s integrated approach to air defence, complaining that:

The Canadian Government accepted the American policy of nuclear deterrent as its own ... There is today scarcely anything really co-operative about the defence of North America against a possible Russian attack. The weapons are American. The strategic decisions are American. The fingers on the triggers are American. Whether Canadians like it or not, their country is becoming more and more, America’s front line of defence, and expendable land-mass in the eyes of American strategists. Canada has come a long way since the days prior to 1914, when Sir Wilfrid Laurier refused to become involved in a military understanding with Great Britain lest it deprive the Canadian people of their freedom of action in international affairs. Today Canadians are obliged to accept a larger measure of dictation in defence matters from Washington than they were ever willing to take from London in the ninety years since Confederation.⁷²

Stanley missed the point. Whether or not Canadians wanted to accept nuclear deterrence as a valid strategy, Canadian airspace would have been a transit route for Soviet

bombers on their way to the United States, and the Americans would have defended themselves with or without Canadian permission. Nor was it Laurier's choice as to whether the United States, Britain, or any other naval power might have seized Halifax or Esquimalt in the early days of a global war. Despite his best efforts to find a political solution, Laurier could not compromise his way out of the technological and geographic roots of the issue. By contrast, efforts at continental integration in the 1950s helped transform an absolute threat to Canadian sovereignty to one that was relative to Canadian influence. Far from making Canada's populated areas an "expendable land mass," air defence cooperation ensured that these areas were *not* considered expendable.

This article began with a criticism of Stanley and Desmond Morton for their over-emphasis on individuals to describe changes in Canadian defence policy. Through their surveys of Canadian military history, they did an excellent job of describing how individuals made decisions, but they did not describe how the different technological contexts, shaped by a changing relationship between technology and geography rendered the *nature* of those decisions as fundamentally different. Laurier did a good job of preserving formal Canadian autonomy in political terms but a poor job of doing so as a strategic reality. If war had broken out between the United States and Japan or between the United States and the British Empire, it is unlikely that Laurier's FPS ships would have been capable of enforcing Canadian neutrality. His failure to build a blue-water fleet, meanwhile, meant that if Canadian neutrality had been ignored and he had been forced to call on the British for help, he would have done so from a position of colonial dependency, not imperial partnership. Diefenbaker's decision to sign the NORAD agreement, on the other hand, guaranteed a Canadian voice in continental defence, just as Mackenzie King's negotiation of the Ogdensburg Agreement achieved in 1940. A fair assessment of policy choices must include a fair assessment of the strategic context.

Acknowledgements: *The author would like to express his gratitude for Dr. Matthew Wiseman for organising this special edition, the publication team at Scientia Canadensis for making it possible. This article grew out of my dissertation work, and I am indebted to my supervisors, Dr. Howard Coombs and Dr. Doug Delaney. I would also like to acknowledge the invaluable support on Sutherland's work by Mr. Allan Sutherland, esq, and Mr. Paul Longtin. Finally, I am grateful to my colleagues the RMC History Department and the Centre for International and Defence Policy at Queen's University, and the reviewers for their helpful discussions.*

John Keess, CD, PhD is currently an Assistant Professor in the History Department at the Royal Military College of Canada and a Fellow at the Centre for International and Defence Policy at Queen's University. His professional experience includes service with Second and Third Battalions, The Royal Canadian Regiment, 2 Canadian Mechanized Brigade Group Headquarters, supporter experience in CANSOFCOM, and operational deployments to Afghanistan, the Middle East and Eastern Europe. His academic work centres on small-state strategy and Canadian Cold War history. He can be reached at john.keess@rmc.ca.

Endnotes

- 1 “Strategy” comes with many definitions in different academic literatures. For the purposes of this article, the author will use the definition provided by Hew Strachan, as process which is “iterative, a dialogue where ends also reflect means, and where the result — also called strategy — is a compromise between the ends of policy and the military means available to implement it.” See: Hew Strachan, “The Lost Meaning of Strategy,” *Survival* 47, no. 6 (2005): 52.
- 2 George F. Stanley, *Canada's Soldiers: The Military History of an Unmilitary People*, Revised Ed (Toronto: MacMillan, 1960), 1, 417—418.
- 3 Desmond Morton, *A Military History of Canada*, 5th ed. (Toronto: McClelland and Stewart, 2007), 317–18.
- 4 For a detailed description of Canadian military geography, this author recommends: R.J. Sutherland, “Canada's Long Term Strategic Situation,” *International Journal* 17 (1962): 199–223; C.P. Stacey, *The Military Problems of Canada: A Survey of Defence Policies and Strategic Conditions Past and Present* (Toronto: The Ryerson Press, 1940); Kim Richard Nossal, “The Imperatives of Canadian Strategic Geography,” in *Canadian Defence Policy in Theory and Practice*, edited by Thomas Juneau, Philippe Lagasse, and Srdjan Vucetic (Houndmills, 2020), 11–28.
- 5 Sutherland, “Canada's Long Term Strategic Situation,” 202. See also: Nils Ørvik, “Defence Against Help - a Strategy for Small States?” *Survival* 15, no. 5 (1973): 228–231.
- 6 John Darwin, *The Empire Project: The Rise and Fall of the British World-System, 1830-1970* (Cambridge: Cambridge University Press, 2011), 124–148.
- 7 Anton A. Huurdeman, *The Worldwide History of Communications* (Hoboken: John Wiley and Sons, 2003): 52–61, 66–72.
- 8 *Ibid.*, 112–124.
- 9 *Ibid.*, 25.
- 10 *Ibid.*, 143–144.
- 11 Jeremy Black, *Naval Warfare: A Global History Since 1860* (Lanham: Rowman and Littlefield, 2017), 1–14.
- 12 Azar Gat, *A History of Military Thought: From the Enlightenment to the Cold War* (Oxford: Oxford University Press, 2001), 471–472; Black, *Naval Warfare*, 26–34.
- 13 Sondhaus, *Naval Warfare*, 160–161.
- 14 *Ibid.*, 161, 192.
- 15 *Ibid.*, 203.
- 16 United Kingdom, Colonial Office, “Minutes of Proceedings of the Colonial Conference, 1887,” (London: King's Printer, 1887), 6.
- 17 For a good discussion on the motivations of both the Americans and the British in 1812, see: John Latimer, *1812: War with America* (Cambridge, Massachusetts: Belknap, 2007), 13–34. For a good discussion on the formation of a Canadian identity in this period, see: Jeffers Lennox, *North of America: Loyalists, Indigenous Nations, and the Borders of the Long American Revolution* (New Haven: Yale University Press, 2022).
- 18 Richard A. Preston, *Canada and “Imperial Defense”: A Study of the Origins of the British Commonwealth's Defense Organization, 1867–1919* (Toronto: University of Toronto Press, 1967), 161–164.
- 19 Carman Miller, *Painting the Map Red: Canada and the South African War, 1899-1902* (Ottawa: Canadian War Museum, 1993), 47–48.
- 20 Roger Sarty, “Canadian Maritime Defence, 1892-1914,” *The Canadian Historical Review*, 71, no. 4 (1990): 477–478.
- 21 Donald C. Gordon, *The Dominion Partnership in Imperial Defense, 1870-1914* (Maryland: John Hopkins Press, 1965), 208.

- 22 Graham R. Tweedie, “The Roots of the Royal Canadian Navy: Sovereignty versus Nationalism, 1812–1910,” in *A Nation’s Navy: In Quest of Canadian Naval Identity*, edited by Michael L. Hadley, Rob Huebert, and Fred W. Crickard (Montreal and Kingston: McGill-Queen’s University Press, 1996), 93–97; William Johnston, William G.P. Rawling, Richard H. Gimblett, and John MacFarlane, *The Seabound Coast: The Official History of the Royal Canadian Navy, 1867-1939, Volume I* (Toronto: Dundurn, 2011), 37–38.
- 23 Joseph Gough, *Managing Canada’s Fisheries* (Sillery, QC: Les Editions du Septentrion, 2006) 87.
- 24 Johnston et al., *The Seabound Coast*, 86–87.
- 25 Siobhan J. McNaught, “The Rise of Proto-nationalism: Sir Wilfrid Laurier and the founding of the Naval Service of Canada, 1902-1910”; Tweedie, “The Roots of the Royal Canadian Navy,” in *A Nation’s Navy*, 103–105.
- 26 United Kingdom, Colonial Office, “Minutes of Proceedings of the Colonial Conference, 1907,” (London: King’s Printer, 1907), 130.
- 27 Lawrence Freedman, *The Future of War: A History*, (New York: Public Affairs, 2017): 11–13; Johnston et al., *The Seabound Coast*, 132–133.
- 28 Gordon, *The Dominion Partnership in Imperial Defense*, 236–237.
- 29 Preston, *Canada and “Imperial Defense”*, 390–391; Johnston et al., *The Seabound Coast*, 141–155.
- 30 Marc Milner, *Canada’s Navy: The First Century*, 2nd ed. (Toronto: University of Toronto Press, 2010), 17. Brian P. Farrell, *Coalition of the Usually Willing: The Dominions and Imperial Defence* (London and New York: 2007), 274–275.
- 31 Johnston et al., *The Seabound Coast*, 159–160.
- 32 Milner, *Canada’s Navy*, 16–17. For a good account of the Quebec campaign, see: Patrice Dutil and David MacKenzie, *Canada 1911: The Decisive Election That Shaped the Country* (Toronto: Dundurn, 2011), 213–244.
- 33 Martin Thornton, *Churchill, Borden and Anglo-Canadian Naval Relations, 1911-1914* (London: Palgrave Macmillan, 2010), 54–72, 109, 117–120.
- 34 Milner, *Canada’s Navy*, 44–56.
- 35 John Hilliker, *Canada’s Department of External Affairs, Volume 1: The Early Years, 1909-1946* (Ottawa: The Institute of Public Administration of Canada, 1990), 111–134; J.L. Granatstein, *The Ottawa Men: The Civil Service Mandarins, 1935-1957* (Toronto: University of Toronto Press, 1982), 36–41.
- 36 James Eayrs, *In Defence of Canada, Volume I: From the Great War to the Great Depression* (Toronto: University of Toronto Press, 1964), 73; Morton, *A Military History of Canada*, 171.
- 37 Eayrs, *In Defence of Canada, Volume I*, 81–83.
- 38 Richard A. Preston, *The Defence of the Undefended Border, Planning for War in North America, 1867-1939* (Montreal and Kingston: McGill-Queen’s University Press, 1977): 216–218.
- 39 Preston, *Undefended Border*, 224–225.
- 40 Neville Thompson, *The Third Man: Churchill: Roosevelt, Mackenzie King, and the Untold Friendships that Won WWII* (Toronto: Sutherland House, 2021), 51–70, 76–78; C.P. Stacey, “AHQ Report No. 70: The Canadian-American Permanent Joint Board on Defence, 1940-1945,” 25 June 1954, AHQ Reports (Online Repository), Directorate of History and Heritage (DHH), <https://www.canada.ca/content/dam/themes/defence/caf/militaryhistory/dhh/reports/ahq-reports/ahq070.pdf>.
- 41 University of California, Santa Barbara, The American Presidency Project (Online Repository), “Franklin D. Roosevelt - Address at Queen’s University, Kingston, Ontario, Canada,” 18 August 1938, <https://www.presidency.ucsb.edu/documents/address-queens-university-kingston-ontario-canada>.
- 42 Stacey, “AHQ Report No. 70,” DHH; “AHQ Report No. 90: The Canadian-American Permanent Joint Board on Defence, 1940-1945,” 1 April 1960, 7-9, AHQ Reports, DHH, <https://www.canada.ca/content/dam/themes/defence/caf/militaryhistory/dhh/reports/ahq-reports/ahq090.pdf>. J.L. Granatstein, *Canada’s War: The Politics of the Mackenzie King Government*, (Toronto: University of Toronto Press, 1990): 131–132; J.L. Granatstein, *How Britain’s Weakness Forced Canada into the Arms of the United States: The 1988 Jeane Goodman Lectures* (Toronto: University of Toronto Press, 1989), 28–29.

- 43 Alex Wellerstein, *Restricted Data: The History of Nuclear Secrecy of United States*, (Chicago: The University of Chicago Press, 2021): 164–171.
- 44 Dennis Stairs, *The Diplomacy of Constraint: Canada, The Korean War and the United States* (Toronto: Toronto University Press, 1974), 80–81.
- 45 Oleg Bukharin and Pavel Podvig, eds., *Russian Strategic Nuclear Forces* (Cambridge, Massachusetts: MIT Press, 2001), 340. See also: Lawrence Aronsen, “Preparing for Armageddon: JIC 1 (Final) and the Soviet Attack on Canada,” *Intelligence and National Security* 19, no. 3 (2004): 490–510; Matthew Perl, “Comparing US and UK Intelligence Assessments in the Early Cold War: NSC-68, April 1950,” *Intelligence and National Security* 18, no. 1 (2003): 119–154.
- 46 Kenneth Schaffel, *The Emerging Shield: The Air Force and the Evolution of Continental Air Defense 1945-1960* (Washington, D.C.: Office of Air Force History, 1991), 209–211.
- 47 Although Cabinet approved the construction of the line in early 1951, political concerns prevented an “official” recognition of the project with an exchange of notes registered at the UN, until February 1953. Matthew Paul Trudgen, “The Search for Continental Security: The Development of the North American Air Defence System, 1949 to 1956” (PhD diss., Queen’s University, 2011), 201–223.
- 48 Schaffel, *The Emerging Shield*, 170–177.
- 49 “Letter from Air Commodore M.M Hendrick to CAS, ‘Project Charles,’” 3 July 1951, file DRBC 756-181-267-1, vol. 4220, RG 24-F-1, Library and Archives Canada (LAC).
- 50 Joseph T. Jockel, *No Boundaries Upstairs: Canada, the United States, and the Origins of North American Air Defence, 1945-1958* (Vancouver: UBC Press, 1987), 61–63. Though DRB studies featured as part of government studies on civil defence policy, they do not appear to have originated with the ORG. See: Andrew Burtch, *Give Me Shelter: The Failure of Canada’s Cold War Civil Defence* (Vancouver: UBC Press, 2012), 171.
- 51 Ken Young and Warner Schilling, *Super Bomb: Organizational Conflict and the Development of the Hydrogen Bomb* (Ithaca and London: Cornell University Press, 2019) 125–127.
- 52 G.R. Lindsey, “Project Lincoln – A Brief Outline of its Organization and Activities,” 22 May 1952, file DRBS 756-181-267-2, vol. 4220, RG 24 –F-1, LAC; G.W. Rowley, “Visit to Project Lincoln,” 1 August 1952, file DRBS 756-181-267, vol. 4200, RG 24-F-1, LAC. For more on Lindsey and his contributions to Canadian defence science, see George R. Lindsey; edited by Matthew S. Wiseman, *The Selected Works of George R. Lindsey: Operational Research, Strategic Studies and Canadian Defence in the Cold War* (Toronto: University of Toronto Press, 2019).
- 53 “Letter from Dr. N.W. Morton to Mr. B.G. Ballard, 5 February 1951, file DRBC 756-181-267-1, vol. 4220, RG 24-F-1, LAC.
- 54 G.R. Lindsey, “Operational Research Group Internal Memorandum No. 12 – The Summer Study on Air Defence at Project Lincoln,” September 1952, file DRBS 756-181-267-2, vol. 4220, RG 24-F-1, LAC.
- 55 “J.W. Mayne – Memorandum,” 12 September 1952, file DRBS 756-181-267-2, vol. 4220, RG 24-F-1, LAC; Letter from J.W Mayne to R.G. Clark, 27 August 1952, file DRBS 756-181-267-2, vol. 4220, RG 24-F-1, LAC; Lindsey, “Operational Research Group Internal Memorandum No. 12 – The Summer Study on Air Defence at Project Lincoln.”
- 56 “General Strategic Considerations Affecting Ballistic Missile Defence,” [s.d.], file 8, vol. 9, Lindsey-Sutherland Fonds (87/253), DHH.
- 57 William Lyon Mackenzie King, as quoted in Sutherland, 202.
- 58 Letter from G.R. Lindsey to R.J. Sutherland, 18 August 1952, file DRBS 756-181-267-2, vol. 4220, RG 24-F-1, LAC.
- 59 Randall Wakelam, *Cold War Fighters: Canadian Aircraft Procurement, 1945-1954* (Vancouver: UBC Press, 2011), 19–36.
- 60 Bertram C. Frandsen, “The Rise and Fall and Canada’s Cold War Air Force, 1948-1968,” (PhD diss., Wilfrid Laurier University, 2015), 169; Donald C. Story and Russell Isinger, “The Origins of the Cancellation of Canada’s Avro CF-105 Arrow Fighter Program: A Failure of Strategy,” *Journal of Strategic Studies* 30, no. 6 (2007): 1033–1034.

- 61 Matthew P. Trugden, "A Canadian Approach: Canada's Cold War Grand Strategy," *Journal of Military and Strategic Studies* 14, no. 3&4 (2012): 291–313.
- 62 James Eayrs, *In Defence of Canada, Volume III: Peacemaking and Deterrence* (Toronto: University of Toronto Press, 1974), 364.
- 63 "Report on the Development of the CF105 and Associated Weapons System, 1952-1958," 19 August 1958, file 50046-40 Part 6, vol. 4584, RG 25, LAC.
- 64 Memorandum to the Cabinet Defence Committee – Reappraisal of the CF105 Development Programme, 4 November 1955, file CSC 2-3-2 Part 5, vol. 20711, RG 24, LAC; "Report on the Development of the CF105 Aircraft and Associated Weapon System 1952-1958"; Frandsen, "The Rise and Fall and Canada's Cold War Air Force, 1948-1968," 228–234. Russell Steven Paul Isinger, "The Avro Canada CF-105: Decisions and Determinants," (MA thesis, University of Saskatchewan, 1997): 88–89; Story and Isinger, "The Origins of the Cancellation of Canada's Avro CF-105 Arrow Fighter Program: A Failure of Strategy."
- 65 In 1957, the US Department of Defense and Department of Energy felt so confident about safety that they allowed volunteer USAF officers to witness the test of an MB-1 *Genie* AAM from directly below the 1.5 kt detonation. The volunteers wore no special protective equipment. See Terrence R. Fehner and F.G. Gosling, *Atmospheric Nuclear Weapons Testing, Volume I: 1951-1963* (Washington, D.C.: U.S. Department of Energy, 2006), 51.
- 66 *Ibid*, 180–184.
- 67 "Memorandum to the Cabinet Defence Committee – Reappraisal of the CF105 Development Programme," 4 November 1955, file CSC 2-3-2 Part 5, vol. 20711, RG 24, LAC.
- 68 Story and Isinger, "The Origins of the Cancellation of Canada's Avro CF-105 Arrow Fighter Program"; "Memorandum to the Cabinet Defence Committee – Reappraisal of the CF105 Development Programme." See also: Podvig, 386–389.
- 69 JIC Assessment – [Draft], "The Threat to North America, 1958-1967," 28 November 1957, file 7-26-9, vol. 20856, RG 24, LAC (through Canadian Foreign Intelligence History Project, hereafter LAC – CFIHP).
- 70 John McLin, *Canada's Changing Defense Policy, 1957-1963* (Baltimore: John Hopkins University Press, 1967), 69-75; Isinger, "Decisions and Determinants," 84–102.
- 71 "Transcript of George Parkes, interviewed by Reginald Roy," 7 April 1969, Accession 1974-001, George Randolph Parkes Fonds, SC092, University of Victoria Special Collections and University Archives; Isinger, "Decisions and Determinants," 97–102.
- 72 Stanley, *Unmilitary People*, 413–414.