

A Fleet of its Compromises
The Canadian Navy's Cold War Submarine Posture

Une flotte de ses compromis
**La position sous-marine de la guerre froide de la Marine
canadienne**

A Thesis Submitted to the Division of Graduate Studies of the Royal Military College of Canada by

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For my parents.

You did the hard work.

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“The essence of all beautiful art, all great art, is gratitude.”

- Friedrich Nietzsche, *The Case of Wagner*
(Leipzig, C.G. Neumann, 1888 / *Nietzsche Source*,
Digitale Kritische Gesamtausgabe [eKGWB]), pg. 16

A journey of uncertainty and ill wind ends as I complete my Master’s thesis, and a new journey, hopefully one of promise and good fortune, will begin. In fact, as I write this, it is a week after the successful oral defence of my thesis (23 April 2018), and I am eagerly awaiting graduation. I have had many guides along the way. My successes are theirs as much as they are my own: it is upon their shoulders I stand.

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¹ Discussed in *Chapter Two*.

² *White Paper on Defence (1964)*, (Ottawa: Queen's Printer and Controller of Stationary, 1964),

While I was studying at Wilfrid Laurier University as an undergraduate, Roger Sarty, PhD, and Robert Litke, PhD (Professor *Emeritus*, Department of Philosophy) opened doors for me. Roger guided my interest in armoured warfare to a new tack toward a small, flickering interest in naval issues. In 2008 he urged me to write a book review for *The Northern Mariner*, the peer-reviewed publication of the Canadian Nautical Research Society, and I was promptly trapped. He illustrated to me, though I barely comprehended it at first, what an active professional historian is. Bob fostered my interest in philosophy and taught me how to think critically properly. I found the above quote by Nietzsche when I was working as a research assistant for Bob, and it provided a life-changing revelation. Faye Kert, PhD (CNRS) deserves thanks for her patience with my horrible delays in submitting book reviews. Eveline Escoto, and Jane Osborne, from WLU, and Isabel Campbell, PhD (CNRS, and DHH), have been my cheering section, willing to listen, commiserate, advise, and slap my wrist when I have needed it.

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All responsibility for errors in this document is mine alone.

Ambjörn L. Adomeit
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ABSTRACT

Described as “broken” and as an “international embarrassment,” the Canadian Navy’s procurement initiatives proved to be interminable and poorly developed through the course of the Cold War, and into the years beyond. This was not intentional on the Navy’s part: it urged civilian politicians to expedite their decision making process. It was, however, symptomatic of the federal government’s attitude toward military procurement, for the purposes of this thesis the Navy’s submarine fleet specifically, was one that stressed the continuation of civil initiatives over the Navy’s desires: the example used in this thesis is the welfare state initiated by Prime Minister William Lyon Mackenzie King. The Navy desired a large and fully modern submarine fleet throughout the Cold War, but it was forced to accept succeeding governments’ ambitions of creating a higher standard of living, and received funding only to support initiatives deemed necessary in order to meet Canada’s alliance commitments. The submarine service suffered from the lack of a cohesive, long term funding plan. This also meant that there was no long-term plan at the Cabinet level to maintain a subsurface capability regardless of its necessity: if the citizenry no longer wished to support the submarine squadron, it would fade away very quickly. It also meant that prioritizing an efficacious submarine succession programme was lacking. This thesis surveys four foundational factors that have impacted Canada’s submarine procurement programs since 1950: first, that the North Atlantic Treaty Organisation (NATO) needed conventional naval forces (not armed with nuclear weapons) to operate in the Cold War nuclear security environment. Canada filled this need with a small, anti-submarine warfare (ASW) surface fleet. Second, Canada needed to find a way to contribute to NATO, and it could provide a conventional navy on the same side of the Atlantic as its ally, the United States. Accordingly, Canada provided to the US Navy (USN) a conventional and dedicated anti-submarine (A/S) fleet with which to exercise and develop A/S techniques. Third, Canada needed to determine the extent to which it was willing to contribute to NATO. It decided that Canada would supply a surface fleet large enough to be useful to NATO in ASW exercises and efforts, but no more. The Navy would acquire for its own purposes just enough SSKs to stay relevant in naval policy discourse by helping to train allied fleets in ASW. Finally, Canada was compelled to contribute to NATO collective defence according to the ebbs and flows of Canadian domestic civilian attitudes, and the policies developed therefrom. The degree to which the Canadian governments during the Cold War funded the submarine service was based upon their understanding of the political capital gained by possessing the squadron, and of the military need for familiarity with subsurface technologies and strategies stemming from the presence of submarines in the world’s oceans. The acquisitions decided upon were consistent with successive Canadian governments’ political reasons to maintain a submarine fleet. However, in quantity, quality, and type, the Canadian Cold War submarine fleet was consistent with government policy to not spend more than was deemed absolutely necessary on defence. As a result, the fleet the Navy floated was-not in tune with its military leaders’ specific desires and military rationales for a submarine fleet. Therefore, the Navy had to settle for the few submarines it did because it had no other recourse, particularly given the political and fiscal realities of the time. Combined with a protracted and often ill-managed procurement process (a process for which the government knew it would pay no political costs), the result was a submarine posture which did meet Canada’s defence objectives but which was, for the Navy, a fleet far from its dreams and reflected the compromises that went into its making. It was a fleet, in other words, a fleet that ran silent, but also ran cheap.

RÉSUMÉ

Décrite comme «brisée» et comme une «gêne internationale», les initiatives d'approvisionnement de la Marine canadienne se sont avérées interminables et peu développées au cours de la guerre froide et au cours des années qui ont suivi. Ce n'était pas intentionnel de la part de la Marine: elle a exhorté les politiciens civils à accélérer leur processus décisionnel. Il était cependant symptomatique de l'attitude du gouvernement fédéral vis-à-vis de l'approvisionnement militaire, en particulier de la flotte sous-marine de la Marine qui insistait sur la poursuite des initiatives civiles - l'exemple utilisé dans cette thèse est l'État-providence initié par le Premier ministre William Lyon Mackenzie King - sur les désirs de la Marine. La Marine souhaitait une flotte sous-marine vaste et moderne pendant toute la guerre froide, mais elle a été obligée d'accepter les ambitions du gouvernement de créer un niveau de vie plus élevé et de recevoir des fonds pour appuyer les initiatives jugées absolument nécessaires pour respecter les engagements du Canada. Le service des sous-marins a souffert de l'absence d'un plan de financement cohérent et à long terme. Pire, cela signifiait aussi qu'il n'y avait pas de plan à long terme au niveau du Cabinet pour maintenir une capacité souterraine indépendamment de sa nécessité: si les citoyens ne voulaient plus soutenir l'escadre sous-marine, elle disparaîtrait très rapidement. Cela signifiait aussi qu'il manquait un ordre de priorité à un programme efficace de succession de sous-marins. Cette étude examine quatre facteurs fondamentaux qui ont influencé les programmes d'acquisition de sous-marins canadiens depuis 1950: premièrement, l'Organisation du Traité de l'Atlantique Nord (OTAN/NATO) avait besoin de forces navales conventionnelles (non armées d'armes nucléaires) pour fonctionner dans la guerre froide. Le Canada a répondu à ce besoin avec une petite flotte de surface anti-sous-marine (ASW). Deuxièmement, le Canada devait trouver un moyen de contribuer à l'OTAN et il pourrait fournir une marine conventionnelle du même côté de l'Atlantique que son allié, les États-Unis. En conséquence, le Canada a fourni à la marine américaine (USN) une flotte conventionnelle et spécialisée de sous-marins (A/S) pour l'exercice et le développement de techniques A/S. Troisièmement, le Canada devait déterminer dans quelle mesure il était disposé à contribuer à l'OTAN. Il a décidé que le Canada fournirait une flotte de surface suffisamment importante pour être utile à l'OTAN dans le cadre des exercices et des efforts de lutte contre la pollution par le sol, mais pas plus. La Marine acquerrait à ses propres fins juste assez de SSK pour rester pertinent dans le discours de politique navale en aidant à former des flottes alliées dans ASW. Enfin, le Canada a été contraint de contribuer à la défense collective de l'OTAN en fonction des flux et des reflux des attitudes civiles des Canadiens et des politiques qui en découlent. La mesure dans laquelle les gouvernements canadiens ont financé le service des sous-marins pendant la guerre froide reposait sur leur compréhension du capital politique acquis par la possession de l'escadron et du besoin militaire de se familiariser avec les technologies et les stratégies souterraines découlant de la présence de sous-marins. Les océans du monde. Les acquisitions décidées étaient conformes aux raisons politiques successives des gouvernements canadiens de maintenir une flotte sous-marine. Cependant, en quantité, qualité et type, la flotte de sous-marins de la guerre froide canadienne était conforme à la politique du gouvernement de ne pas dépenser plus que ce qui était jugé nécessaire pour la défense. Par conséquent, la flotte n'était pas en phase avec les désirs spécifiques de la Marine canadienne et les motivations militaires d'une flotte sous-marine. Par conséquent, la Marine a dû se contenter des quelques sous-marins qu'elle a fait parce qu'elle n'avait aucun autre recours, compte tenu notamment des réalités politiques et fiscales de l'époque. Combiné avec un processus d'approvisionnement prolongé et souvent mal géré (un processus pour lequel le gouvernement

savait qu'il ne paierait aucun coût politique), le résultat était une posture sous-marine qui répondait aux objectifs de défense du Canada, mais qui était, pour la Marine, de ses rêves et reflète les compromis qui sont entrés dans sa fabrication. C'était une flotte, en d'autres termes, une flotte qui se taisait, mais qui fonctionnait aussi à bas prix.

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LIST OF ACRONYMS

(N) – Navy (Canada; as in “Captain (N) John Doe”)
A/S – Anti-Submarine
ABM – Anti-Ballistic Missile
ACNS – Assistant Chief of Naval Staff (Canada)
ACNS(P) – Assistant Chief of Naval Staff (Plans) (Canada)
ACNS(A&W) – Assistant Chief of Naval Staff (Air & Warfare) (Canada)
ADM(M) – Assistant Deputy Minister (Matériel) (Canada)
ADM(P) – Assistant Deputy Minister (Policy) (Canada)
AIP – Air-Independent Propulsion
ASW – Anti-Submarine Warfare
AECL – Atomic Energy of Canada, Ltd.
BAERE – British Atomic Energy Research Establishment
C³I – Command, Control, and Communications
CAD – Canadian Dollar
CAF – Canadian Armed Forces (Also CF, “Canadian Forces”)
CANCOMARLANT – Canadian Commander Maritime Force Atlantic
CANLANT – Canadian Atlantic waters
CASAP – Canadian Submarine Acquisition Program (A later programme is given the acronym CSAP for clarity, because each programme was named “Canadian Submarine Acquisition Program.” CSAP has also been referred to as CSRP, “Canadian Submarine Replacement Program.”)
CCACD – Canadian Centre for Arms Control and Disarmament
CDC – Cabinet Defence Committee (Canada)
CDS – Chief of the Defence Staff (Canada)
CEM – Chief, Engineering and Maintenance (Canada)
CNS – Chief of Naval Staff (Canada)
CNTS – Chief of Naval Technical Services (Canada)
CPSP – Canadian Patrol Submarine Program
COMASWFORLANT – Commander Anti-Submarine Warfare Atlantic (Canada)
CSA – Chief, Submarine Acquisition (Canada)
CSSC – Conventional Submarine Survey Committee (Canada)
DCDS – Deputy Chief of the Defence Staff (Canada)
DDE – Destroyer
DDP – Department of Defence Production (Canada, component of NSST)
DEA – Department of External Affairs (Canada)
DG-S – Director General – Ships (Canada)
DND – Department of National Defence (Canada)
DOT – Department of Transport (Canada)
DUSW – Director of Undersea Warfare (Canada)
EAITC – External Affairs and International Trade Canada
EASTLANT – European Atlantic waters
ECS – Energy Conversion Systems, Inc. (Canada)
FDO – Force Development Objectives

FMS – Forward Maritime Strategy (United States)
FOSM – Canadian Flag Officer Atlantic, Submarines
GDP – Gross Domestic Product
GPF – General Purpose Frigate (Canada)
GIUK Gap – Greenland-Iceland-United Kingdom Gap (a vital SLOC)
GPF – General Purpose Frigate (Canada)
GUPPY – Greater Underwater Propulsive Power (USN)
HMS – Her/His Majesty’s Ship (Britain)
HMS/M – Her/His Majesty’s Submarine (Britain)
IAEA – International Atomic Energy Agency
ICBM – Inter-Continental Ballistic Missile
IMF – International Monetary Fund
km – kilometre
kn – knots (unit of speed; 1nm/h, or 1.852 km/h)
LSA – Logistic Support Agreement (Canada)
MAD – Mutual Assured Destruction
MARCOM – Maritime Command (Canada)
MIRV – Multiple Independent Re-entry Vehicles (a form of nuclear warhead)
Mark – also *mk*, meaning “version,” usually of a mechanical item.
MND – Minister of National Defence (Canada)
MOD – Ministry of Defence (Britain)
NATO – North Atlantic Treaty Organization
NCC – Naval Constructor-in-Chief
nm – Nautical Mile (1nm = 1.852 kilometres)
NORAD: North American Aerospace Defense Command
NSOS – Nuclear Submarine Option Study
NSST – Nuclear Submarine Survey Team
OKA – HMCS *Okanagan*
OSP – Operational Surveillance Patrol (Canada)
PBO – Parliamentary Budget Officer (Canada)
PC – Policy Committee (Canada)
PD – Project Definition (Canada)
POM Expenditures – Personnel, Operations, and Maintenance Expenditures (Canada)
R/V – Rendezvous
RAN – Royal Australian Navy
RCAF – Royal Canadian Air Force
RCN – Royal Canadian Navy
RFP – Request for Proposal (Canada)
RFSQ – Requests for Source Qualification
RN – Royal Navy (Britain)
SAC – Strategic Air Command (North America)
SACLANT – Supreme Allied Commander Atlantic (NATO)
SCEAND – Standing Committee on External Affairs of National Defence (Canada)
SDI – Strategic Defense Initiative (USA)
SJCD – The Special Joint Committee on Defence (Canada)
SLBM – Sea (or Submarine) Launched Ballistic Missile

SLCM – Sea (or Submarine) Launched Cruise Missile
SLOC – Sea-Line of Communication
SM6 – Sixth Submarine Squadron (Britain)
SME – Subject Matter Expert
SOUP – Submarine Operational Upgrade Program (Canada)
SQ – Source Qualification (Canada)
SR – Statement of Requirement
SSB – Diesel-electric submarine (*See* SSK) equipped with ballistic missiles
SSBN – Nuclear-powered ballistic missile submarine
SSCN – Nuclear-powered cruise missile submarine
SSGN – Nuclear-powered guided missile submarine
SSK – Diesel-electric powered submarine
SSN – Nuclear-powered fast attack submarine
SSX – Submarine vs. Submarine Exercise
TMA – Terminal Manoeuvre Area
TRUMP – *Tribal*-class Update Modernization Project (Canada)
U.S.A., U.S., etc. – United States of America
USS – United States Ship
USSR – Union of Soviet Socialist Republics
USN – United States Navy
VCNS – Vice-Chief of Naval Staff
WUPS – Work-Ups (Canada)

INTRODUCTION

“... [D]efence policy must adapt itself [to changes in technologies, peace, and the magnitude of threats to security], while principles [guiding Canadian responses to such changes] remain constant.”

- Paul Hellyer²

“It would be highly advantageous to discover a strategic rationale which would impart to Canada’s defence programs a wholly Canadian character. Unfortunately, such a rationale does not exist and one cannot be invented.”

- Dr. Robert J. Sutherland³

Sixty-four years ago, Samuel P. Huntington posed a challenge for all navies: “What function do you perform which obligates society to assume responsibility for your maintenance?”⁴ Even if this question can be answered convincingly, there exists a follow-on query: Where does the state which owns the navy intend to operate its naval forces, and what is the number and what are the types of naval forces maintained? Paradoxically, the answers to these questions inform the nature of a state’s navy, and are informed *by* the nature of a state’s navy.

If these questions are difficult for large navies to answer, they are even more so for small navies. Such challenges have been particularly difficult for the Royal Canadian Navy (RCN) to answer. The RCN has not justified its maintenance solely because naval forces are necessary for the direct maritime defence of Canada. Its tradition, reflecting Canada’s overall expeditionary

² *White Paper on Defence (1964)*, (Ottawa: Queen’s Printer and Controller of Stationary, 1964), 5.

³ Nicolas Tracy, *A Two-Edged Sword: The Navy as an Instrument of Canadian Foreign Policy*, (Montreal & Kingston: McGill-Queen’s University Press, 2012), 13.

⁴ Samuel P. Huntington, “National Policy and the Transoceanic Navy,” *Proceedings* (May 1954), (<http://blog.usni.org/2009/03/09/from-our-archive-national-policy-and-the-transoceanic-navy-by-samuel-p-huntington> [Accessed 22 May 2015]). Sixty-four years from time of writing.

strategic culture⁵ is *transoceanic*, meaning that it has been designed and deployed as a maritime force capable of operating in foreign waters far from home, in close proximity to landmasses on the other side of the Atlantic Ocean. These areas were primarily in the Atlantic, and in waters generally managed by NATO in European areas.⁶ Thus, the RCN has sought specific capabilities that would allow it to contribute to broader, collective western maritime security in war, peace and Cold War, promoting itself as a necessary component of allied maritime posture, including training, and policing littoral waters and fisheries. Amongst those specific capabilities has been a submarine service that has struggled to remain present in Canadian civilian dialogue while coping with the RCN's need to remain relevant in an age of swift technological development, and to remain relevant in the RCN's posture and contribution to collective Western maritime collective defence. This thesis investigates the Canada's submarine force from 1949⁷ until the acquisition of the *Victoria*-class submarines, in the late 1990s. This thesis argues that the Royal Canadian Navy, postured to contribute to the collective defence of the US-led Western alliance NATO in such a way as to reduce Canadian military spending while maintaining enough of a military presence on the global scale to be considered a legitimate member of military alliances. Canada's submarine fleets' existences have been and are reliant upon the decisions of successive governments to acquire submarines, how much to spend on them, what kind and how many to buy, priorities that have differed from administration to administration.

⁵ Christian Leuprecht and Joel Sokolsky, "Defence Policy 'Walmart Style,': Canadian Lessons in 'Not-so-Grand' Grand Strategy," *Armed Forces and Society*, 6 July 2014 (<http://www.afs.sagepub.com/content/early/2014/07/02/20095327X14536562>): 5-6.

⁶ Huntington, 3; Michael Whitby, "Boomers, Dragers and Black Boxes: The Operational Legacy of Canada's Oberon Class Submarines, 1983-1998," *The Northern Mariner / le marin du nord*, Vol. 23, No. 3&4 (2013), 367-398: 369.

⁷ NATO's founding date.

Canada has never had much of a subsurface capacity, and even now has only four boats. This forces one to question why Canada maintains a subsurface capacity at all. In order to resolve this quandary, this study begins with a discussion of essential sea power theories from the perspectives of Sir Julian Corbett, Rear Admiral Alfred Thayer Mahan, and Samuel Huntington. This examination is intended to identify the theoretical basis upon which the Canadian submarine service is built. *Chapter One* concludes with an examination of Canadian rationales for maintaining this “easy-riding”⁸ transoceanic⁹ conventional navy in a nuclear security environment.

Chapter Two examines the acquisition process and operational utilisation of the *Oberon*-class submarines during the latter half of the Cold War. This chapter details the Canadian government’s discussion as to whether Canada actually needed to have a submarine fleet, various proposals that Canada not only required a submarine fleet but specifically a nuclear-powered submarine fleet, and the government’s eventual decision to maintain a diesel-electric submarine (SSK) fleet. Canada looked at several options before deciding on the *Oberons*, which were sent out on Operational Surveillance Patrols (OSPs) in the late 1980s. *Chapter Two* also examines in brief the extremely complex priorities of domestic expenses. For instance, these expenses included health care, education, and economic development: William Lyon Mackenzie King, Lester Pearson, John Diefenbaker, and Pierre Trudeau were all determined to develop an effective welfare state based upon the work done by their predecessors, and the development of such a society demanded that the funds the navy desired be routed appropriately. Accordingly, Canadian governments, notably the government of Trudeau *père*, began to force the navy to account for every capital purchase it requested, echoing Huntington’s challenge in spirit if not by

⁸ Leuprecht and Sokolsky, 4, 6.

⁹ Huntington, 3.

word.¹⁰ The chapter ends with a discussion of the aging “O”-boats, and the Submarine Operational Upgrade Program (SOUP).

Chapter Three discusses the argument proffered by Minister of National Defence Perrin Beatty for nuclear-powered fast attack submarines (SSNs), and Canada’s internal debate whether to adopt the technologies offered by Britain’s *Trafalgar*-class SSNs or those of the French *Rubis-Améthyste*-class SSNs. Canada ultimately chose to purchase four of the UK’s Type 2400, or *Upholder*-class, SSKs.¹¹ The scope of the chapter ranges from why the nuclear submarines were again dropped in favour of SSKs, and why the *Upholders* were selected specifically, to why the nuclear boats were recommended in the first place, and finally addresses the question of why a conventionally powered fleet was adopted instead of the much more powerful alternatives available. One curious example of internal naval oversight is outlined wherein the Canadian Navy pulled out – by its own accord – of a cooperative effort with the Royal Australian Navy (RAN) during both nations’ *Oberon*-class succession programmes, albeit with some support from civilian policy makers. The two examples discussed in this chapter, Canada’s decision to drop the SSN project, and to abandon the Australians to their own auspices, illustrate both military and civilian oversight of military procurement recommendations and programmes, which resulted in changes to said programmes that were at the core of later Canadian procurement efforts, such as the *Upholder*-class submarine programme.

¹⁰ Maas, *Unpublished PhD Thesis* (2008), 84-85. Specifically, Maas discusses the Force Development Objectives (FDO) the various branches of the military were forced to create, which “detailed each major operational role of the armed forces, and outlined costs, priorities, and alternatives,” that would help develop plans for the military’s “structure, doctrine, training, and procurement for at least the next decade, and prevent ad hoc or reactive decisions.”

¹¹ The *Upholders* were renamed the *Victoria*-class when Canada took official possession of the boats in the late 1990s and early 2000s.

The argument in this thesis is that Canadian submarine acquisition programmes since 1949 have been guided by four elements. First, it was vital to NATO – and to Canada – to maintain a conventional navy not armed with nuclear warheads in the Cold War nuclear security environment; second, Canada needed to find a way to contribute to NATO; third, Canada needed to find a way to contribute to NATO in a manner consistent with allied naval strategy as part of NATO’s overarching allied “burden-sharing” obligations – including anti-submarine warfare (ASW) techniques that had been practiced and improved upon both during and following the Second World War. As a by-product thereof, Canada found a way to help train allies in ASW. Finally, acquisition programmes to make these contributions possible had to be made in a manner consistent with Canadian domestic fiscal and political realities.

If these four factors explain why Canada acquired and retained a submarine capability during the Cold War and beyond, one must still account for the lengthy, convoluted and often wasteful process by which decisions were made. Here the thesis draws upon Kim Nossal’s work. He has argued that Canadian weapons acquisition processes are characterized by two factors, part military and part civilian. These two factors rarely align in the military’s favour, and result in a situation which seems to all but guarantee that programmes to acquire major weapons systems for the Canadian Armed Forces (CAF) take longer than promised, costs more than promised, and that these programmes deliver less than promised. Canada’s political leaders promote an unrealistic view of the country as a major international actor, a perspective that is at odds with its true interests and global standing. Taken in by this rhetoric, the military, including the RCN, has had sometimes equally unrealistic expectations of how much fiscal and political capital governments are *obligated* to spend on defence. This unintentionally misleading behaviour has resulted in the military developing exaggerated expectations of what governments

have been willing to provide for its upkeep. Upkeep includes the acquisition of weapons platforms, weapon systems, the cost of technological advancements, and the number of acquisitions that Ottawa had promised. The second and related factor is that Canadian governments pay no political price for failing to live up to these inflated expectations. As result, they spend years deciding on which weapons and weapons systems to buy, and in the end acquiring systems in quality and numbers that, more often than not, reflect budgetary and political compromises rather than strategic assessments and concurrent operational needs. As argued here, the history of the RCN's submarine posture very much reflects this pattern of behaviour.

This thesis examines and explains the factors that inform the character of the Canadian submarine posture, and is not intended to defend this posture. Nor is this paper intended to address the question of whether or not the RCN's subsurface capability was or is adequate in either quantitative or qualitative terms. Canada's civilian government, consistent with the norms of civilian control of the military, reserved its right to be right or wrong and to adopt whatever process it deemed appropriate to arrive at its judgements, however much generals and admirals may have disagreed.¹² Submarine acquisitions have had to compete with other military acquisition programmes, including the replacement of much of the surface fleet with the new *City*-class frigates, as well as the purchase of the Aurora surveillance airplanes, Lockheed Neptune (P2V-7) A/S aircraft, and Leopard C₁ tanks.

There were times both during and following the Cold War when the Canadian government did indeed make poor decisions, many of which became public scandals. The navy also made mistakes, but it had to operate within the constraints placed upon it by the government

¹² For more on this concept, see Peter D. Feaver, "The Right to be Right: Civil Military Relations and the Iraq Surge," *International Security*, Vol. 35, No. 4 (Spring 2011): 87–125.

and was more obviously accountable for overspending and needlessly prolonged procurement programmes.¹³ The civilian governments of the day operated within their mandate of legitimate oversight of the military. While the military (in this case the naval branch) can make recommendations, it is the responsibility of the civilian government to examine, critique, and challenge these recommendations in order to understand them completely before making a decision and investing public funds on military capital expenditures.

In this respect, whatever criticisms can be made about the Canadian submarine posture from fiscal and strategic view points, and the process by which that posture came about, it can be said that the RCN did have “just enough” of a subsurface capability that Canada’s civilian leadership, in the final analysis, believed it was able to provide. For the RCN, the Canadian submarine posture over the years was never the “fleet of its dreams,” but rather a fleet that was the result of compromise decisions driven by strategic, fiscal, and political considerations. The details of why and how successive governments arrived at their procurement decisions is the subject matter of this thesis.

§I. Literature Review

The creation of scholarly accounts of Canadian military procurement is a niche project at best, and it is highly improbable that a casual perusal of a local bookstore would yield to a reader a thorough academic treatment of Canadian submarine procurement history and policy creation.

However, two authors do break the barrier separating popular history and scholarly study on the

¹³ Nossal, 19, 20. “...[D]efence procurement is not something Canadians do well.... Kevin Page, the parliamentary budget officer (PBO) between 2008 and 2013, openly characterized defence procurement in Canada as ‘completely broken.’” *See also* Phillipe Lagassé and Joel J. Sokolsky, “A Larger ‘Footprint’ in Ottawa: General Hillier and Canada’s Shifting Civil-Military Relationship, 2005-2008,” *Canadian Foreign Policy Journal*, Vol. 15, No. 2: 16-40, for a detailed discussion of an example of Canadian civil-military discourse.

topic. Julie H. Ferguson republished her iconic *Through a Canadian Periscope: The Story of the Canadian Submarine Service* in its second edition in time for the centenary celebration of Canada's submarine service in 2014, and is by far the most widely read – or cited – work on the topic. Its reputation as an iconic text derives more from its virtual monopoly in the field of Canadian subsurface capabilities, rather than from its academic merit. *Through a Canadian Periscope's* value is exemplified in Ferguson's efforts to collect oral histories from many of the navy personnel and politicians involved with the submarine service, and in the discourse she creates between the reader and the material she presents through the development of a comprehensive timeline of the service. As materials were being sourced for this thesis, three experts weighed in on the value of *Through a Canadian Periscope* as a resource. Paul T. Mitchell, PhD of the Canadian Forces College is one, if not the foremost, of Canada's leading scholars on submarine issues. He identified that the book is a significant resource, and one particular technical point supports his assessment: Ferguson's bibliography is a tremendous resource from which researchers can develop a direction of study.¹⁴ At the time of writing, her research material is located in Picton, Ontario, in the Naval Marine Archive as the *Julie H. Ferguson Fonds*. Commodore (RCN, Ret'd) Laurence Hickey, the subject-matter expert (SME) for this thesis, also acknowledges that Ferguson has created a valuable work, but he does caution that Ferguson's treatment of the topic material lacks the formal scholarly foundation that would increase the academic value of the book.¹⁵ Commander (RCN, Ret'd) Peter Haydon, however, is less complimentary. The circumstances surrounding the injection of Canadian naval personnel into the British Royal Navy's Sixth Submarine Squadron (SM6), in which Haydon took part, is discussed in Chapter Two; he also went on to serve in the First Canadian Submarine Squadron,

¹⁴ Mitchell-Adomeit E-Mail Correspondence, 31 August 2016.

¹⁵ Hickey-Adomeit E-Mail Correspondence, 9 April 2016.

and is therefore considered an authority for the purposes of researching this topic. Haydon's opinion of *Through a Canadian Periscope* is that it is full of errors. A confidential conversation with a veteran of SM6 and the First Canadian Submarine Squadron revealed that "Ferguson's [sic.] book cannot be trusted; she often invents sources." The significance of *Through a Canadian Periscope* for those who wish to study the Canadian submarine service cannot be ignored, but it is evident that barring a complete review of Ferguson's material – which this thesis does not claim to do – it remains both the first port-of-call for a researcher, and the interpretation of its content ought to be sprinkled liberally with salt. This thesis refers frequently to this book when explaining or clarifying a timeline, but attempts to rely on other evidence whenever possible. Ferguson self-published *Deeply Canadian: New Submarines for a New Millennium* in 2000 when Dundurn Press, the publisher of both editions of *Through a Canadian Periscope*, declined to publish it. This sequel to *Through a Canadian Periscope* presents an attempt to strengthen the argument for the preservation and expansion of Canadian subsurface capabilities, and attempts to shed light on the *Victoria*-class submarine acquisition.¹⁶ Unfortunately, the quality of research, writing, and argumentation is far below the standard of *Through a Canadian Periscope*, and this book is not included in this thesis' bibliography.

The second author to bring an element of academic scholarship to a piece of popular history is the late J. David Perkins. Perkins served in Canadian submarines as an enlisted man, becoming Chief Petty Officer aboard HMCS *Ojibwa* toward the end of his career. One example of his work is *The Canadian Submarine Service in Review*. A very easy read, Perkins' work is clear, and informative. This thesis has not made use of *The Canadian Submarine Service in Review* to any great extent beyond verifying facts or to provide general information surrounding

¹⁶ See *Chapter Three*. Julie H. Ferguson, *Deeply Canadian: New Submarines for a New Millennium*, (Beacon Press, 2000).

items found in primary documents: where this thesis concentrates on the policy surrounding procurement decisions, *The Canadian Submarine Service in Review* is a popular history book far outstripping *Through a Canadian Periscope* in accuracy and readability, but it is not comprehensive. The author had the opportunity to access the *J. David Perkins Fonds*¹⁷ in 2013 for another research project, and highly recommends this resource for it is as interesting and as well constructed as *The Canadian Submarine Service in Review* is, and offers a comprehensive view of the topic that is not loaded with tedious minutiae. A series of unforeseeable events prevented this author from accessing either the Ferguson or the Perkins fonds for this thesis.

Chapter One contains a discussion of maritime theory, focusing on the work of Sir Julian Corbett, Alfred Thayer Mahan, and Samuel P. Huntington. It may seem somewhat odd to include a discussion of the theories behind maritime warfare in a thesis discussing the development of military procurement policy. This discussion is not out of place: theory influences how governments and navies practice both application of theory and policy development: policy develops out of the practical application of theory, and theory is refined through its practical application, leading to further policy refinements. Corbett and Mahan were chosen for inclusion in this thesis for similar reasons. Their theories informed the nature and department of the navies in combat during both the First and Second World Wars, thereby influencing the development of Allied ASW, and informed the understanding of the use and capabilities of submarines in battle by the Germans. After the fall of Nazi Germany the Allies, as well as the Soviet Union, analysed German submarine tactics, and cemented the place of submarine warfare in their own offensive and defensive strategic thought, and military construction. Where Corbett and Mahan informed

¹⁷ National Defence Headquarters Directorate of History and Heritage (Ottawa, Ontario) CA ON00093 2011/19. The *J. David Perkins Fonds* consists of some two metres of documents. Thanks are extended to Isabel Campbell, PhD (DHH) for helping to facilitate that research trip.

the disposition of navies through to the end of the Second World War, Huntington belonged to the cadre of theorists analysing the lessons of the maritime components of the World Wars and applying them to the Cold War. Huntington's work finds its utility in this thesis through its prefatory developmental question: why should a country pay for a submarine service?

Huntington bridges the increasingly obsolete rules for navies consisting of big-gun ships with the increasingly technical nature of naval warfare after the Second World War, consisting as it did of missiles and nuclear payloads affixed to carrier-launched small aircraft.

War was a great deal more destructive after the Second World War, and countries needed to discover their place in the new bi-polar world order, divided as it was between the United States and the USSR, or to place themselves deliberately in a specific position therein. Michael Whitby, a historian with the Canadian Department of National Defence Directorate of History and Heritage (DND DHH) has authored two particularly useful articles to which this thesis refers regularly. His work, combined with that of Joel Sokolsky, Admiral Tim Barrett, and others, investigates the exercises Canadian submarine service embarked upon during the Cold War. Sokolsky, Joseph Jockel, Christian Leuprecht, Benjamin Zyla, Michael Rossignol, Karl Lautenschläger, Basil Germond and Dan Middlemiss address Canada's place in the new world order, and the decisions Canadian governments made in relation to it, particularly in terms of the scope of operation types the Canadian Navy would be committed to fulfilling: they discuss the size of Canada's economy in relation to its willingness to spend on the military, and address Canada's Cold War attitude of letting other NATO signatories spend more money and more effort on military endeavours so that Canada could spend more on domestic initiatives.

Chapter Two discusses the acquisition of Canada's *Oberon*-class SSKs, and the related politicking surrounding the procurement initiative. Lt. (N) Jason Delaney writes about the

difficulty Canada has had in procuring submarines: Throughout the two articles cited, the push for a Canadian submarine construction capability has been underscored. Few experts and supporters of the Canadian submarine service at the time supported offshore construction of the submarines the RCN sought to procure, preferring to build boats destined for Canadian use using Canadian industry: the huge cost made politicians balk at the idea despite the value it would have for the Canadian ship-building industry, and the national economy. *The Brock Report* attempted to set the precedent for a large, flexible surface fleet for Canada, and made the argument for a large nuclear-powered submarine fleet. Canadian policy makers had already decided to pursue a smaller navy that preferred surface ASW to subsurface capabilities: as such, Delaney, Frank Maas, Haydon, Mark Milner, and Rear Admiral Jeffrey Vanstone Brock's writings are referenced.

Chapter Three's discussion of the details of the initiatives to replace Canada's *Oberons* involves a discussion of Canada-United States political discourse arising from Minister of National Defence Perrin Beatty's attempts to acquire SSNs. Beatty, Leuprecht and Sokolsky, Theodore Guillory, Peter Haydon, Christopher Kirkey, Rossignol, Patrick Croften, and Adam Lajeunesse discuss the development of the "Three Ocean Navy," the rising importance of the Canadian Arctic in Canadian domestic and foreign policy creation, and the impact losing the long-awaited SSN programme had on Canada's navy, and national self-image. Here, Julie Ferguson's work in *Through a Canadian Periscope* becomes essential: by necessity *Chapter Three* discusses the acquisition process the Canadian government and the Navy followed, and illustrates how confused the Canadian naval procurement process became because of the lack of a consistent, long-term vision for the Navy.

CHAPTER ONE: Sea Power Theory

“To be tempted into taking the offensive in an area that is not the true area of the war and in which the enemy is naturally stronger, is not to show vigor but to play stupidly into the enemy’s hands.”

- Sir Julian Corbett¹⁸

The Royal Canadian Navy has restricted its sub-surface fleet’s operational role to one that permits Canada’s policy-makers to invest a minimum amount of federal funds into its submarines while maintaining expertise in the use of modern technologies and strategies. This approach has permitted Canada to remain an active member of the United States-led Western alliance, especially NATO, as a nation with a conventional navy. A conventional navy is one that uses neither nuclear weapons nor nuclear propulsion.¹⁹ The majority of navies sailing the seas are conventional navies. In the Cold War and post-Cold War eras, the Canadian navy deployed to take part in allied ASW exercises, but did take a greater role in international maritime affairs than simple training: for example, it deployed in the Cuban Missile Crisis in 1962²⁰, and deployed to the Persian Gulf post-9/11. The goal of the exercises was to contribute to NATO a conventional fleet that could work integrally with allied navies. These exercises were meant to help United States Navy (USN) personnel deployed on vessels with nuclear capabilities (whether weapons or propulsion) in particular, learn to integrate conventional forces into their larger strategic and battlespace planning. The scope of activity associated with this role is particularly relevant to Canada’s submarine fleet. Between the 1960s and the 1990s, Canada made its

¹⁸ Corbett as quoted in John B. Hattendorf, “Mahan is Not Enough: Conference Themes and Issues,” in James Goldrick and John B. Hattendorf, *Mahan is Not Enough: The Proceedings of a Conference on the Works of Sir Julian Corbett and Admiral Sir Herbert Richmond*, (Newport, RI: Naval War College Press, 1993), 7-12: 8.

¹⁹ Milner, *Canada’s Navy: The First Century*, 164.

²⁰ See Peter Haydon, *The 1962 Cuban Missile Crisis: Canadian Involvement Reconsidered*, (Toronto: The Canadian Institute of Strategic Studies, 1993).

Oberon-class submarines available to NATO as “clockwork mice,” moving, nearly silent SSKs for other naval forces to detect and “destroy,” without having a dedicated combat mission themselves.²¹

A great deal of the onus for establishing and maintaining a navy of any kind falls upon extant domestic polity, and is therefore not in the sole remit of the navy. When political representatives and citizens perceive it necessary to contribute to NATO’s collective defence goals by making domestic military expenditures, they demand domestic fiscal accountability. This chapter provides the strategic and foreign policy context for the development of the Canadian submarine service in the Cold War and beyond. It is important to assess the military theory with which civilian legislators had to cope in order to analyse accurately the merits of such policies and expectations.

Toward this end, this first chapter discusses three broad issues. First, a summary of two prevalent theories of sea power by two contemporary theorists is provided: those of Alfred Thayer Mahan, a formational theorist from the United States of America, and Sir Julian Corbett, a Briton. The latter discussion is as much a discussion of Corbettian naval theory as it is a critique of Mahanian theory. As well, the first section of Chapter One examines the impact of atomic weapons and of the bipolarity of power during the Cold War. A necessary component of this conversation is to ask whether navies maintained by middle- or small-sized military powers that used neither nuclear propulsion nor nuclear weapons could operate within the bipolar has any utility in the nuclear security environment of the period. Second, the question, “Of what

²¹ Michael Whitby, “‘Doin’ the Biz’: Canadian Submarine Patrol Operations Against Soviet SSBNs, 1983-1987,” in Colonel Bernd Horn (ed.). *Fortune Favours the Brave: Tales of Courage and Tenacity in Canadian Military History*. (Toronto: Dundurn Press, 2009), 287-332: 291. This is discussed further in *Chapter Two*.

worth were these technologies, given NATO's reliance upon the extended deterrence provided by the United States' nuclear arsenal, and its threat of a swift atomic response even to a conventional attack?" will be answered. Finally, the first section addresses whether there was a seapower theory that was applicable to the Cold War and the nuclear age. Samuel P. Huntington's concept of the transoceanic navy is introduced, and applied to the role submarines have in such navies.

The second section addresses Mahan's and Huntington's theories in pointed detail for the relevance of small navies. Both Mahanian and Huntingtonian maritime theory refer principally to great powers' navies, whose roles are to project power across oceans, into littoral seas, and ultimately ashore. Their theories pay only lip service to small navies' existence. Section two acknowledges that small navies exist, and asks what their roles were during the Cold War. Corbettian theory resonates strongly with a multitude of small navies, past and present, including Canada's. Canada chose to specialise in ASW in order to help NATO keep the North Atlantic sea line of communication (SLOC) between North America and Europe open, and under permanent general control, a concept described by Corbett.

The third section of Chapter One pertains to the Canadian experience in the Cold War. It asks, "What version of seapower theory did Canada adopt during the Cold War, based on its status as a medium political power and a small maritime power that operated overseas?"²² Canadian defence policy supported a foreign policy that adopted European security as its priority, but only insofar as it would meet Canada's goals in a fiscally responsible and accountable way in the eyes of the voting public. NATO wanted its members to contribute to

²² Benjamin Zyla, "NATO and Post-Cold War Burden-Sharing: Canada 'The Laggard?'" *International Journal*, Vol. 64, No. 2 "Canada at 60," 337-359: 349-350; Minister of National Defence, *Defence in the 70s: White Paper on Defence*, (Ottawa: Information Canada, 1971, [http://www.walterdorn.net/pdf/DefenceWhitePaper-1971_Canada_ReducedSize-OCR.pdf]), 6.

collective defence initiatives irrespective of the size of the member nation's military, so Canada's contribution, in whatever form it could take, would be accepted. Section three, then, serves to introduce Canada's Cold War-era strategic posture based on its position as a small military power, a status that heavily informed the decisions various governments made in regard to the Canadian submarine service through the Cold War, and *why* those decisions were made.

§I. Essential Sea Power Theory – Mahan, Corbett, and Huntington

Mahan viewed naval warfare as a trade-oriented phenomenon²³, and there was little to no room for indirect action in Mahanian naval theory. Navies, Mahan argued, were intrinsically defined as *offensive* military assets because of their inherent mobility and ability to sealift.²⁴ A Mahanian navy could achieve its aims in two ways: by destroying its opponent entirely, which resulted in great capital losses, or by completely cutting its opponent off from its destination, in other words, restricting trade by blockade.²⁵ For Mahan, oceans were great highways, capable of carrying endless tonnes of cargo and people almost anywhere in the world. Where maritime shipping existed, so too did the navy.²⁶ He noted that navies existed also to counterbalance the existence of other nations' navies – any of which was a potential belligerent.²⁷ When peaceful

²³ Vice Admiral Tim Barrett, AO, CSC, RAN, *Mahan and Turner Restored: Naval Power and the Democratic State in the 21st Century*, *Speech to the Sea, Air, Space Conference, Maryland, USA*, 14 April 2015, 2.

²⁴ *Ibid.*, 9.

²⁵ *Guerre de course*. Both conventionally powered and nuclear-powered submarines are capable of fulfilling either task, although the first option is more difficult for SSKs. *Ibid.*, 3; Joel J. Sokolsky, "Canada and the Cold War at Sea, 1945-68," in W.A.B. Douglas (ed.) *The RCN in Transition, 1910-1985*, (Vancouver: The University of British Columbia Press, 1988), 209-232: 209.

²⁶ Mahan, *Mahan on Naval Warfare*, 16, 355-356; See also John J. Clark, "Merchant Marine and the Navy: A Note on the Mahan Hypothesis," *Royal United Services Institution*, Vol. 112, No. 646 (2009): 163-164 for more detail.

²⁷ *Ibid.*, 356-357.

shipping existed, the need for an armed, offensive navy dwindled; he qualified this by stating that the maintenance of navies required far-sightedness and therefore a navy had to be kept at effective operational strength in case of a conflict, a quality and an awareness he considered lacking in many nations during peacetime.²⁸

Mahanian concepts of concentration and offensive action have developed over time, and have been utilised more carefully in the post-World War era than they once were: when these respective theories were formulated, they were so novel that they overwhelmed operational thought for decades, preventing dedicated development of subsurface strategies from diverging naturally from the well-practiced and respected understanding of surface warfare. Today, *offensive action* is defined loosely by the British Royal Navy as the motivation to win regardless of circumstances: in the past, it simply meant destroying a target with artillery of any sort.²⁹ Where *concentration* once meant that a flotilla of ships would come together only to provide devastating firepower on a particular target, this tactic became a secondary consideration in favour of forming offshore logistical centres to help maritime and land forces to operate continuously with greater ease. These fleets are defended by both active and passive sonar and radar, and since this form of logistical centre is frequented by active surface and subsurface fleets, massed concentration has developed into a question of logistics and commanding SLOCs out of maritime logistical hubs, not necessarily one of direct influence upon military targets. USN fleets designed around the deployment of aircraft carriers is an example of this reinterpretation of concentration: aircraft carriers themselves do not do battle, but deliver aircraft

²⁸ *Ibid.*, 18.

²⁹ James R. Holmes and Toshi Yoshihara, "China's Navy: A Turn to Corbett?" *Proceedings Magazine*, Vol. 136, No. 12/1,294 (December 2010). (<http://www.usni.org/magazines/proceedings/2010-12/chinas-navy-turn-corbett>. As the version the author accessed is in essence a blog entry, it does not have conventional page numbering).

to locales where *they* influence land and sea targets directly. Submarines can be deployed defensively in order to protect a logistical hub from a direct threat, or offensively with the intent to destroy possible threats before they can ever act against the fleet it is assigned to) and are therefore capable of operating in a concentrated manner (such as German “Wolf Packs” in the Second World War) or offensively, independently, or as squadrons.³⁰

The internal geographic features of a nation are important, for they can add to, or have a deleterious effect upon, the nation’s defensibility. Mahan used the example of a harbour and connecting waterways: the harbour offers a peerless protective port for maritime vessels, and thus becomes a great source of wealth and strength for a nation. Streams and rivers connecting the harbour connect the interior of a nation to its external frontier in the form of a harbour or gulf, which themselves connect vessels with SLOCs. However, if that hub is lost, then these same sources of wealth become military nightmares, for the aggressor can make their way up said waterways and secure themselves deep within a target nation’s territory. This can make invading forces very difficult to repel.³¹

Mahan argued that there are six conditions that affected nations possessing sea power: geographical position; internal geography/topography and climate of a nation; extent of territory; the size of a nation’s population; the character of the nation’s citizens; and the character of the government, and its accompanying institutions.³² As anyone who has played the board game “RISK[®]” will know, it is easiest to attack and defend from an area that is relatively isolated and has the fewest number of approaches.³³ For Mahan, this feat was exemplified by the geographic position of the British Isles: France and Spain had a great deal of difficulty attacking England

³⁰ Ian Speller, *Understanding Naval Warfare*, (London and New York: Routledge, 2014), 109.

³¹ Mahan, *Mahan on Naval Warfare*, 29-40.

³² *Ibid.*, 21.

³³ Australia, in the basic version.

directly because England was able to deploy its fleet directly between the isles and the attacking forces. Even when the British colonial empire was at its peak, its fleet could be extended to protect those distant territories because the wealth they brought to Britain allowed more vessels to be built, more men recruited, and therefore providing *flexible response* – such as developing and deploying extensions of the Royal Navy as colonial guardians under a separate command from the home fleet – as a strategic option. Mahan argued that France, whose historical boundaries once touched the English Channel, North Sea, the Atlantic Ocean, *and* the Mediterranean, could not raise as large a fleet abroad as the British could. The maritime defences of Britain's territorial holding could work almost autonomously from the Admiralty. This was because there were far more avenues by land and by sea to attack France than there were to attack Britain directly; and the British fleet could be redeployed to defend territorial holdings as needed, therefore eliminating the need to recall ships assigned to the colonies in time of war to defend the British Isles. France did not have this flexibility, in part because its navy was not as large. The risks France faced as a Continental power allowed Britain to concentrate easily on its territorial holdings, for France was in a state of constant military upheaval and could not concentrate on any one campaign or war for any great length of time.³⁴ Today, however, France's borders have been re-established in the wake of total war, and many of its former enemies, Germany for instance, now play vital roles in France's defence through NATO, and France reciprocates as it chooses.

The extent of the territory that a nation controls is a necessary consideration when conducting naval operations. A small navy may not be capable of protecting an extended coastline (such as Canada's, whose coastline exceeds 243, 042 kilometres) in time of war, but

³⁴ Mahan, *Mahan on Naval Warfare*, 23-24.

may be perfectly sufficient in peacetime.³⁵ Canada does not need to protect itself from illegal immigrants to the extent that European nations do, but it does require a navy to patrol its Arctic, Pacific, and Atlantic territories if only for purposes of reinforcing national sovereignty in those areas.³⁶ In Canada's case this role may be shared with the Coast Guard, if only to make up for a lack of numbers. For Mahan, the size of a nation's population base informed the size of a nation's total fleet to the extent that a certain proportion of that population could be put to service on board the nation's ships. Population density also played a role: there are only so many craftsmen available in a nation whose geography is as extensive as Canada's with as few inhabitants as it has.³⁷ In this same vein, Mahan discussed the character of the administrative/legislative branch of government, pointing out that the attitudes of a nation's government and heads of state and established institutions could contribute more towards the disposition of a naval fleet than the people the government supposedly represented.³⁸ The character of a nation, which is indeed a reformulation of the stereotypical "national character," informed the direction in which a nation's maritime industry flowed: toward colonisation, the merchant marine, or a strongly military approach to imperialistic expansion using the navy. Mahan did not have much more to say on the topic.

³⁵ *Ibid.*, 40-42. This does not apply in the Canadian Arctic archipelago. See also Michael Bird, "Making Waves: The Navy's Arctic Ambition Revealed," *The Globe and Mail*, 4 March, 2015 (<http://www.theglobeandmail.com/news/national/the-navys-Arctic-ambition/article23290380> [Accessed 7 March, 2015]).

³⁶ Julie H. Ferguson, *Through a Canadian Periscope: The Story of the Canadian Submarine Service, 2nd Edition*, (Toronto: Dundurn Press, 2014), 344; Perrin Beatty, *Challenge and Commitment: A Defence Policy for Canada*. (Ottawa: National Defence, 1987 [http://publications.gc.ca/collections/collection_2012/dn-nd/D2-73-1987-eng.pdf {Accessed 24 February, 2015}]), 49.

³⁷ Mahan, *Mahan on Naval Warfare*, 43-44. Canada has a population of roughly 33.4 million inhabitants as of 2017.

³⁸ *Ibid.*, 45-48

In his *Principles of Maritime Strategy*, Sir Julian Corbett remarked: “The object of naval warfare must always be directly or indirectly either to secure the command of the sea or to prevent the enemy from securing it.”³⁹ He cautioned readers to realise that the typical state of affairs in both time of peace and time of war is that SLOCs are uncommanded – under no one’s control⁴⁰ – and that it may be strategically useful to allow one’s opponent to control a vital SLOC at times.⁴¹ A nation may allow an enemy to gain control of a vital SLOC in order to allow its own navy to gather naval intelligence on enemy vessels, task forces, and fleets transiting the SLOC. Such information could include operational endurance, practices specific to a commander or task group, and communications and signals intelligence. Collecting these types of intelligence allows one to develop counter-strategies based on qualitative analysis.

Corbett cautioned that Mahanian *dicta* of navies’ roles were unrealistic, though he seemed to have no complaint with Mahan’s perception of the various influences on the operations of a navy. Corbett’s argument began by pointing out that once a SLOC had been captured, it would cost a belligerent party a great deal of energy and resources to wrest it away from the defender’s, or defenders’, control. Showing the flag on occasion was frequently sufficient to maintain control of a SLOC in peacetime; he referred to this as *permanent general control*.⁴² Corbett pointed out that in naval warfare, nobody always won more than they lost, and

³⁹ Julian S. Corbett, *Principles of Maritime Strategy*, (Mineola, NY: Dover Publications, Inc., 1911/2004), 87.

⁴⁰ *Mare liberum*.

⁴¹ *Ibid.*, 14, 87-88; Corbett cited in Nicolas Tracy, *A Two Edged Sword: The Navy as an Instrument of Canadian Foreign Policy*, (Montreal & Kingston: McGill – Queen’s University Press, 2012), 4, 6.

⁴² James R. Holmes and Toshi Yoshihara, “China’s Navy: A Turn to Corbett?” *Proceedings Magazine*, Vol. 136, No. 12/1,294 (December 2010). (<http://www.usni.org/magazines/proceedings/2010-12/chinas-navy-turn-corbett> [Accessed 30 October, 2015; As the version the author accessed is in essence a blog entry, it does not have conventional page numbering]).

territory – land or sea – frequently lay unclaimed following a naval battle. He thought that having a navy naturally positioned to support imperial efforts was flawed, for there was so much room for error – the oceans are simply too big to control completely, and at all times.⁴³ As a result, a fleet could not expect to control SLOCs directly at all times, but only indirectly; in this sense, patrolling a particular SLOC on a regular basis rather than placing units in permanent over-watch in an area would grant sufficient effective control over said area.⁴⁴ Showing the flag in this manner was a defensive posture rather than an offensive one. An offensive posture would be indicated by a patrolling party waiting for the right moment to attack an opponent who was operating on an aggressive mandate in order to cut the attacking vessels off from their task force. The assumption was that their opponent would overstretch their communications and supply lines either through carelessness or desperation, thereby creating an opening in their defences that could be exploited.⁴⁵ The defence of a SLOC in a direct manner would take the form of a constant military presence along a SLOC, like a picket- or trap-line.

However important SLOCs were for Corbett, he insisted that all military goals ultimately revolve around the success of armies on land, and maritime successes were of secondary importance, a means to an end: “Of all the current assumptions, not one is so confusing for the finer adjustments of strategy as that which affirms that the primary objective of our fleet is always the enemy’s fleet.”⁴⁶ Corbett states clearly that the assumption that the enemy’s fleet is always the prime target is not valid when one shows the flag: the presence of a friendly or opposing fleet is broadcast when a flag is raised, and it is plausible that both actors’ subsequent

⁴³ Corbett, 87-89.

⁴⁴ *Ibid.*, 14-15. This claim is effectively rendered null and void with the development and deployment of drones and surveillance satellites.

⁴⁵ Holmes and Yoshihara, 135/12/1294.

⁴⁶ Corbett, 237.

decisions are based upon the presence, or lack thereof, of an opposite government's territory. Therefore showing the flag is a defensive measure, rather than an offensive one. The assumption is accurate only when one seeks to secure a region, which is an immediate, and aggressive, goal. Maintenance of the control of an SLOC is a long-term proposition, and requires indirect control strategies.⁴⁷ Preventing armies from landing through the development of a naval blockade, which in trade warfare is referred to as *guerre de course*, negatively effects the blockaded forces' abilities to reinforce, supply, and continue efficacious operations of any sort.⁴⁸ Corbett uses the example of Admiral Sir Edward Hawke's blockade of Morbihan, France in 1759 as an example of the importance he placed on the control and the success of land forces: he points out that Admiral Lord Anson's orders to Hawke were to prevent French troops from embarking their transport vessels, and to prevent those transports from exiting the harbour of Brest. Lord Keith made a similar statement when preparing to combat Napoleon, and emphasised the importance of destroying any "ships, vessels, or boats having men, horses, or artillery on board...because the prevention of debarkation is the object of primary importance to which every other consideration must give way." In the Hawke-Anson example, Anson was concerned that should French vessels escape the port and evade the blockade, French soldiers could be deployed to support their brothers in arms elsewhere. Lord Keith's concerns were the same, but the directions of attention were reversed. A modern commentator, Colin Gray, has observed, "The sea, like the air and like space, has strategic meaning only in relation to where the human race lives, the land."⁴⁹

⁴⁷ *Ibid.*, 238.

⁴⁸ *Ibid.*, 244-245, 288-289.

⁴⁹ Colin S. Gray, "Influence From the Sea: Naval Power and World Order." *Address before the SACLANT Maritime Seminar, The Role of NATO Maritime Forces in the 1990s*, June 17-18, 1993), 2.

On this point, Corbett, Huntington, and Gray agree.⁵⁰ Simply stated, Corbett argued that navies' objectives were not, as Mahan asserted, the explicit destruction of the enemy at sea, but were instead to prevent and control the enemy's ability to influence affairs ashore; the role of the navy, in Corbett's view, was to permit friendly forces on land the greatest possible latitude in operational decision-making.

Both sealift and area denial are examples of what Corbett would call direct means of securing command of the sea.⁵¹ Before airlift became a common means of deploying soldiers rapidly to a distant conflict zone, sealift was the only way common means of transporting soldiers, equipment, and other supplies abroad. It is still common for heavy infrastructural components and armoured vehicles to be dispatched aboard a ship rather than an airplane, simply because that which floats can carry more than that which flies. Logistical issues are frequently resolved by mobility, a feature inherent in maritime transportation in limited wars and unlimited wars alike.⁵² The success of a military or humanitarian effort frequently hinges on the speed of reaction to a crisis. The longer crises last without mitigating intervention, the more costly and less efficacious intervention becomes. Thus, it is easiest to deploy soldiers abroad with light equipment quickly with today's airplanes and helicopters: by deploying troops rapidly by air, one may arrest the progression of a prolonged belligerency. Airlift is, however, far more expensive than sealifting troops. Sealift is therefore one thing a navy can do to influence the course of a

⁵⁰ *See below.*

⁵¹ Corbett, 87-89.

⁵² Rear Admiral J.V. Brock (Chairman), *The Report of the Ad Hoc Committee on Naval Objectives*, July 1961: 9-10, 21. This source will be referred to as *The Brock Report* from this point. Brock illustrates his point by describing the value of the Allied SLOCs across the North Atlantic during the Second World War, and ascribing Canada's ability to react swiftly to the Korean War as one of the reasons the UN as a whole was able to intervene in Korea in a timely manner. Brock defined both World Wars as unlimited wars, while the Korean War was a limited war.

prolonged conflict ashore: sealift can move massive infrastructural components needed to provide extended support to troops, to humanitarian efforts, or perhaps to evacuate *en masse*.

A second capacity of navies' direct control over an SLOC is area denial.⁵³ Area denial may constitute an actual blockade, of showing the flag; or it may take the form of a ship simply sitting at rest, its skipper allowing his vessel to be seen and thus form a visual deterrent. Blockades prevent belligerents from sealifting equipment and/or personnel to, or within, a conflict zone; showing the flag – letting one's vessel be seen during active patrolling duty – can stop a belligerent from entering an area, just as a ship at rest can, through the threat of recrimination. Blockades and showing the flag consist of two manners in which surface fleets can deny a belligerent access to a conflict zone.⁵⁴ Examples of indirect means of securing command of the sea can be seen in international, multilateral naval and maritime-passage agreements. The relationship between countries and the posture of state actors' maritime forces form the basis for travel in and around peaceful zones and conflict zones – the three-nautical-mile (nm) limit from a nation's coast out into adjacent water masses is one example.⁵⁵

Samuel Huntington coined the term *transoceanic navy* in 1954. He noted that “[t]he great oceans are no longer the no man's land between the competing powers. The locale of the struggle has shifted elsewhere, to the narrow lands and narrow seas which lie between those oceans on the one hand and the equally immense spaces of the Eurasian heartland on the other.”

⁵³ *Mare clausum*.

⁵⁴ Submarines can do this too: in the first place, a submarine can show its flag by patrolling on the surface and letting itself be seen, imparting the knowledge of its presence in a region. In the second place, the fear that a submarine may be in a given region can prove to be a deterrent in and of itself, without the need to actually deploy submarines at all. The British strategy in the Falklands War is a case in point.

⁵⁵ One nautical mile is 1.852 kilometres long.

Cold War strategies and technological development meant that “every power could strike at the interests of every other power...[and] at the heart of [continental] land mass[es].”⁵⁶

Are any of these differing views of seapower proposed by Mahan, Corbett, or Huntington applicable to the Canadian navy during the Cold War? Canada’s Cold War maritime posture lacked any real direction beyond a general trend toward ASW, due in part to a lack of resources, political, financial, material, or manpower. Huntington perceived the new role of the navy to be an offshore base, supporting littoral and near-shore warfare. The defence of this floating base was as important for the navy as the defence of a depot was for the army, or the “protection of its airfields and plane factories” was for the air force. Of the three theories, broadly speaking, the Huntingtonian model of naval power projection was the most applicable for Canada: stop the enemy before it can get anywhere threatening – thus the transoceanic navy. The RCN operates a Corbettian transoceanic navy, seeking to manage SLOCs and in order to keep larger sea-lanes to open, and maintain transatlantic reinforcement of NATO’s position on the ground in Europe. Conversely, Mahanian theories assert that the absolute destruction of an opposing navy is most desirable. The United States Navy (USN) presents a very strong Mahanian approach, in its foreign and accompanying maritime policies, as well as its decisions on maritime capital expenditures.

Both Mahan and Corbett developed and published their theories in the era before nuclear technologies revolutionised maritime propulsion, weapons, and naval theory. USN Admiral Chester Nimitz recognised this, and argued that one of the worst attitudes a navy can encounter from an administration or strategists is one of apathy: At the beginning of the Cold War, Nimitz asked the question whether seapower could ever intervene effectively in a war in which nuclear

⁵⁶ Huntington, 9.

weapons are exchanged by long range bombing.⁵⁷ If the realities of war and technology did not permit navies to impact the course of a nuclear war by using nuclear weapons or other means to destroy surface vessels before they could reach operational range for instance, the fear was that navies would be considered dispensable and redundant. If navies were in fact able to impact the course of a nuclear war, by patrolling SLOCs and conducting obvious deterrent operations, then the probability that navies would be retained would increase. Huntington also noted that, contrary to Mahanian strategic *dicta*, the bipolar maritime environment of the Cold War forced dominant navies to view focus upon their command in aid of land forces as a strategic goal in and of itself.⁵⁸ He identified that the “new” theory of naval strategy dictated that “[t]he objective should be to perform as far as practical the functions now performed on land at sea bases closer to the scene of operations.” Under the new theory, naval power existed not merely to defeat targets at sea, but also, and *primarily*, to permit land-forces to concentrate their power upon land, to project maritime influence in littoral regions, and that “[d]ispersion, flexibility, and mobility – not concentration – [were] the basic tactical doctrines of the new Navy.”⁵⁹ Therefore, a transoceanic navy operates in theatres as far from home as possible, intercepting and neutralising threats before they ever threaten said navy’s territory and homeland.⁶⁰ The Huntingtonian transoceanic navy applies to submarines insofar that they are individually manoeuvrable, are almost certain to be dispersed over a potential battlespace rather than operating around a specific, strategically important point – this can be left to surface fleets. Submarines can fulfill a plethora of roles, ranging from gathering signal intelligence and deep-water sabotage of enemy military

⁵⁷ Sokolsky, “Canada and the Cold War at Sea,” 209; *See also* Michael Rossignol, *Canadian Defence Policy (BP-173E)*, (Ottawa: Library of Parliament Research Branch, 1988).

⁵⁸ Huntington, 10. This has been discussed above as well.

⁵⁹ *Ibid.*, 11-12.

⁶⁰ *Ibid.*, 13.

assets to the interception of opposing powers' sub-surface forces. Submarine skippers have to have enough nerve to attempt combat operations and acting as a first- or second-strike maritime assets in the event of nuclear war: SSNs carrying nuclear-armed cruise-missiles and nuclear-powered submarines carrying ballistic missiles (SSBNs) within a nuclear-powered navy are particularly important in the latter example.

Karl Lautenschläger suggests that there are five principles in modern submarine warfare that depart from Mahanian and Corbettian theories. First, submarines possess no general immunity against anti-submarine (A/S) countermeasures because they become vulnerable to enemy attack once their weapons are fired, forcing submarines to work extremely hard to regain their position of stealth in order to launch another attack. Second, submarines create a general problem in traditional navies' practice of "exploiting and countering fundamentally new capabilities." As a weapons platform, the submarine must maintain its position at the forefront of modern naval technologies, whether the technology is adopted by benefiting from the work of allies, or by creating a navy capable of forging its own competitive subsurface technologies.⁶¹ This is an expensive process financially and politically, however it is approached. Third, there exist "competing demands" on submarines within a nation's fleet and a multilateral alliance-based fleet that prevent submarines from operating at peak efficiency: the nature of the submarine allows for a great spectrum of possible mission types, and its primary role as an A/S platform may be superseded by the need to provide intelligence for the surface fleet to which it is attached.⁶² Fourth, although it is often viewed as a "trump card," submarine warfare is not a swift and guaranteed means to victory in naval warfare. In fact, submarine warfare is largely a waiting game: if submarines have to operate in an offensive manner, great danger looms. Fifth, and

⁶¹ Lautenschläger: 95.

⁶² *Ibid.*, 95-96.

borrowing from the third point, “[n]aval strategists do not face an ‘either/or’ choice between surface forces and submarines, but rather the task of balancing these forces in a way that enhances the capacity of the whole navy to achieve overall mission goals.”⁶³ For instance, in the First World War, coastal defence, naval attrition, and the interdiction of convoys formed the basic roles for submarine forces; in the Second World War, submarines engaged fleets, and sought means of the guaranteed, assured destruction of a target. Submarines operate best in isolation, whereas surface ships benefit from a fleet or taskforce environment. One could argue that the German “Wolf Packs” disputes this claim, for they operated as units far from home territory: however, squadrons of German boats would locate a target, plan the approach, and each boat would be *incommunicado* as it approached. This is due in part to the limitations of submarines’ respective weapons systems and sensor suites, which can become confused if presented with too many contacts, as would occur in a fleet environment. Submarines fare poorly in battles of attrition, but if the submarine skipper’s goal is to disrupt commerce, attrition is the method used, and submarines can be very effective in destroying enemy naval assets in almost any form. Nor do submarines operate well in tactical scenarios where a single volley of torpedoes is followed by a hasty withdrawal that may or may not be possible, no matter how necessary it might be.⁶⁴

The RCN could and can bear in mind three broad generalisations regarding submarine operability: (a) the effectiveness of submarines depends upon stealth, surprise, and the ability to destroy its target in its first salvo; (b) “...tactical reconnaissance and target acquisition pose persistent problems for submarine forces used against naval units and merchant shipping.” A submarine presented with too many targets becomes confused, and is therefore best used in

⁶³ *Ibid.*, 97.

⁶⁴ *Ibid.*, 94.

surgical strikes with clear targets and priorities; and (c) submarines benefit best from the use of unconventional strategies “that differ from classical Anglo-American concepts of naval warfare”: this means that modern submarine strategy and tactics must deviate from the “classical” theories of Mahan and Corbett.⁶⁵ The new concepts Lautenschläger discusses were underscored by a comment made in *The RCN Today*:

The nature of ASW is undergoing change [*sic.*] owing mainly to submarines gaining the ability to fire strategic and tactical missiles. Whereas in the past it was good enough to defend shipping by close escort – in other words to wait for submarines to turn up – this technique is really no longer applicable. We must aim to detect submarines by search methods in the broad ocean. In other words, the accent now should be on surveillance. This is the direction in which we are aiming our ASW efforts.⁶⁶

In its Cold War iterations, and particularly until the 1980s, Canada’s submarine service focused on multilateral exercises, and floating, waiting, and listening.⁶⁷

§II. *Small Military Powers’ Small Navies, and Canada’s Small Navy*

Regardless of the military savvy both Mahan and Corbett demonstrated, they were both writing and developing strategies in the era of the “big gun ship,” of HMS *Dreadnought*, and Theodore Roosevelt’s push for the United States to adopt an all big-gun-ship navy. The theorists were not prescient, however, and could not imagine the significance submarines would have, not because of a lack of vision, but because of almost total ignorance of the weapons platform as it began to roil in its embryonic state. Almost anything is useless until it has been given time to develop. In the early 1900s, when Mahan and Corbett were most popular, large navies were the norm, for the great powers and the battleship was in great demand to project naval power across

⁶⁵ *Ibid.*, 97.

⁶⁶ DND DHIST 73/712, “The RCN Today,” December 1964/1965: pg. 1.

⁶⁷ See *Chapter Two*.

oceans, into littoral seas, and ashore. Large navies seem to have maintained the prominence they enjoyed in the early twentieth century.

But small navies persist. We must ask then, “How, and why, do small navies continue to exist?” They are formed to fill one of three rational permutations: (a) because a nation is simply too small (demographically) or politically unwilling to maintain a large navy; (b) because a nation cannot afford to maintain a navy for either or both political or economic reasons; and (c) a combination of (a) and (b), because the nation does not need a large navy to achieve security and protect its interests. Arguably, Canada had a Cold War demographic and gross domestic product (GDP) large enough to establish a medium or even a large navy, but because of strong economic reasons, and great domestic political pressure to keep its navy small, Canada chose to fund its navy as frugally as possible.⁶⁸ Because the US already had a large Navy dedicated to Western security interests, and because in the Cold War, as Nimitz foresaw, given the presence of nuclear weapons, the utility of navies was not self-evident. When the Huntingtonian question was asked, “What do you do that obligates us to pay for your up-keep?” the answer was *not*: “We (the Navy), are vital to your survival.” Dan Middlemiss concludes that although economic decisions are also political ones, the status of the Canadian economy and the amount Canadians and their political representatives are willing to spend, is what shapes the economy.⁶⁹ For Middlemiss, RCN procurement is economically driven. Benjamin Zyla identified that Canada is a “small [military] power”⁷⁰ Canada was a “middle power” economically and demographically during the

⁶⁸ Milner, 231; Zyla, 349.

⁶⁹ Dan W. Middlemiss, “Economic Considerations in the Development of the Canadian Navy Since 1945,” in W.A.B. Douglas (ed.), *The RCN in Transition 1910-1985*, (Vancouver: The University of British Columbia Press), 1988, 254-279: 255, 262, 278; Mahan, *Mahan on Naval Warfare*, 43-44.

⁷⁰ Zyla, 337-359.

Cold War, but was a small military power.⁷¹ It is plausible that a nation with a small military may also have a proportionately small navy designed to fill a particular role: small navies evolved to fit into larger allied maritime strategies, plans and postures, such as ASW. In this sense, the RCN of the Cold War, though relatively modest, nonetheless had particular strength in helping to assure NATO's capability in the event of war: to maintain a Corbettian-style control over crucial SLOCs. These forces, surface, aerial and subsurface, could also be used to provide for a general surveillance of the maritime approaches to North America. This is how Canada's navy took shape.

Basil Germond analyzed the approaches Geoffrey Till, Michael Morris, Peter Haydon, and Eric Grove took to the topic of small navies, and concluded that the classification of a navy in the spectrum of the small to the large is based upon the *order of battle*, the *geographic reach* of the navy, and the *missions* to which it is assigned: or, put another way, what is important to know is where a navy can sail, what it can do once it has arrived, and for how long it can operate. Classifying navies further requires an analysis of the *means* of a navy and its *objectives*. Morris' classification system would place the Canadian Cold War submarine squadron as a tier one – *token* – force, whereas the navy as a whole would be classified as a tier three navy, one that could perform defensive and combat duties within its own coastal waters. But Morris did not account for navies whose resources and missions are limited by political decision, not by a lack of matériel.⁷² Grove used Morris' method as a foundation for his own work, but created a nine-

⁷¹ *Ibid.*, 349-350; Minister of National Defence, *Defence in the 70s: White Paper on Defence*, (Ottawa: Information Canada, 1971), [http://www.walterdorn.net/pdf/DefenceWhitePaper-1971_Canada_ReducedSize-OCR.pdf], 6.

⁷² It bears mentioning that policy-makers may use a lack of resources as political capital in creating policy.

rank order, from greatest (1) to least (9).⁷³ In Grove's method, Canada's Cold War navy, including the submarine service, was a provisional rank five navy, capable of territorial defence (rank six), but was also able to deploy regionally (rank five). Comparatively, the United States Navy was a rank one navy, fully operational at the global level. Geoffrey Till's criteria involve the realization that the size and nature – the types of vessels it has – of a given fleet can only indicate its relative power, and cannot impart any valid absolutes about the quality of a navy, only relative interpretations thereof. For Till, valid estimations of the capabilities of a navy can only occur if its geographical reach, sailors' professional qualifications and skills, the readiness of the fleet, afloat support, and the versatility of the navy (not limited to missions of only one type) are used as *desiderata*.⁷⁴ Under these conditions, Canada's highly educated military would rank it highly; its ability to take part in transoceanic exercises⁷⁵ would also rate it highly. Its operational spectrum and number of ships would rate the RCN low on Till's scale, however. One infers from Zyla's work that the RCN qualifies as a small navy, but the inference seems to be overridden by the opinions and rating mechanisms Morris, Grove, and Till recommend. While still a numerically small navy, its impact and influence appears to rate the RCN as a mid-sized maritime force, largely because of Canada's continuing contributions to North American and global collective defence initiatives, overcomes perceived binary "inferiority" through integration in multilateral activities.⁷⁶ Canada's navy is not just a maritime force; it is, as Nicholas Tracy identifies, a tool of Canadian foreign policy. By any measure, however, even though it has been deployed regionally and globally, Canada's submarine service evolved as a small, even token force, within a small navy.

⁷³ *Ibid.*, 35.

⁷⁴ *Ibid.*, 37.

⁷⁵ See below.

⁷⁶ Germond, 49-50.

§III. *The Canadian Experience*

Cold War-era NATO policies were made with the understanding that submarine-launched ballistic missiles (SLBMs) armed with nuclear warheads were rapidly becoming a strategic weapon into which states with a global influence were investing considerable sums of money, and political capital. Significant conceptual effort was expended in devising methods for the use of SLBMs, and for defence against them – the reality is that once an SLBM is fired, there is no way to stop it, except by its user. The missile defence strategies and technologies that were developed were moot. The defence postures of Western powers, particularly those of NATO signatory states, were applying great attention to the threat SLBMs posed.⁷⁷ Canadians found solace in Mutual Assured Destruction (MAD), perceiving it to be “the best way to prevent a strategic nuclear exchange” between the USA and the Union of Soviet Socialist Republics (USSR); Joseph Jockel and Joel Sokolsky remark that Canada’s military posture was one of “*global peace and stability*,” and designed to support NATO’s strategic deterrence initiatives in a minimalist manner.⁷⁸ MAD, however, was not the nuclear strategy the United States ultimately chose to adopt, for it threatened to counteract their posture of extended deterrence.⁷⁹ By 1967, flexible response and the explicit threat of nuclear first use had encouraged the Canadian

⁷⁷ DND DHIST 73/712, “The RCN Today,” December 1964/1965: pg. 1.

⁷⁸ Joseph T. Jockel and Joel J. Sokolsky, “Canada’s Cold War Nuclear Experience,” in David Haglund (ed.), *Pondering NATO’s Nuclear Options: Gambits for a Post-Westphalian World*, (Kingston: Queen’s Quarterly and the Centre for International Relations, Queen’s University, 1999), 107-124: 110.

⁷⁹ *Ibid.*, 112-113. Extended deterrence consisted in the United States’ adoption of flexible response to Soviet aggression in the 1960s, essentially nuclear deterrence posture based on the maintenance of the “...credibility of threats to strike the Soviet Union first with nuclear weapons, if the Soviets assaulted Western Europe or other fundamental American interests with either nuclear *or* conventional weapon.” The U.S. would use conventional means of war, thereby turning the manufacture and use the nuclear option as, in Theodore Roosevelt’s terms, a big stick.

government to abandon MAD.⁸⁰ Opponents of the military-political relationship between the United States and Canada argued that Canada was obliged to support Strategic Air Command (SAC): Montréal, one of Canada's largest cities, was less than 60 miles from a SAC base near Plattsburgh, New York, and Vancouver, Canada's third-largest city, was close to both Seattle and the US navy's Trident submarine base in Bangor, Washington. These peace-groups argued that aside from the obvious geographical coincidences, there existed strategic issues: because major Canadian population centres were located so close to targets of interest within the United States, if the United States and the Soviet Union were inclined to behave like "two warring children," Canada, caught geographically in between the belligerents and finding itself politically allied with NATO and the United States, would suffer the consequences of a nuclear exchange, even to the degree of "incineration without representation." In other words, Canada would be caught in a catastrophic war between the two superpowers without having a chance to resolve it diplomatically, and would suffer the worst collateral damage from any attack against either state without being able to attempt to ameliorate its own prospective demise.⁸¹

Louis St. Laurent's government was not happy when in 1954 the United States Secretary of State John Foster Dulles spoke of "massive retaliation" against the Warsaw Pact should it break the uneasy *status quo*. Lester B. Pearson, who succeeded St. Laurent, announced subsequently that Canada "wanted further clarification of the US strategy [the New Look]," so that it could be assured that Canadian destiny would be decided by Canadians, not by the United States.⁸² Canada built its Navy, and thus its submarine fleet, in the context of a strategic environment dominated by nuclear weapons. This environment limited the amount of funds

⁸⁰ *Ibid.*, 115.

⁸¹ *Ibid.*, 110-111.

⁸² *Ibid.*

governments were prepared to invest in conventional forces. But, conventional forces, including navies and including submarines remained important to NATO and therefore Canada, were prepared to contribute to the allied subsurface posture. This was not ignorance but a result of deliberate political decisions based upon the analysis of existing realities.⁸³

Canadian policy makers have deliberately established limits on the RCN's capabilities under a "how much is just enough?" attitude.⁸⁴ Canadian policy makers have been willing to fund the RCN, but only to the lowest possible and militarily feasible extent, to a point just short of losing international legitimacy as a maritime power by maintaining a small navy with distinct limits placed on its ability to carry out a broad spectrum of missions.⁸⁵ Limited resources, whether limited in fact or by political decisions, required Canada to focus on one aspect of maritime warfare. ASW, involving both training and multilateral exercises, was chosen, and was a decision made in large part with regard to NATO's demands.⁸⁶ With this in mind, the RCN could rightfully seek a greater investment in the Navy by the Canadian government because of the fleet's role in supporting national foreign policy. Even a small allotment from the government would allow the navy to operate in a limited manner, and to fulfill its alliance duties: the Navy could even request, and expect to receive, political support for a submarine fleet in order to exercise with other NATO signatories in ASW.

Conventional seapower remained an important element in Western⁸⁷ defence postures, despite – or because of – the advent of strategic nuclear weapons. As a result Canada, which wanted as little to do with nuclear weapons as possible, could justify politically and financially a

⁸³ Sean Maloney, *Learning to Love the Bomb: Canada's Nuclear Weapons During the Cold War*, (Washington, D.C.: Potomac Books, Inc., 2007), 269.

⁸⁴ Leuprecht and Sokolsky, 4, 6.

⁸⁵ *Ibid.*, 8.

⁸⁶ This is discussed in greater detail below.

⁸⁷ i.e., NATO.

small conventional ASW fleet. NATO wanted its signatories to contribute to its collective defence initiatives, and so even Canada's small navy could contribute in one way or another without risk of being turned away – some of Canada's allies may have derided Canada's situation, but NATO as a whole accepted what Canada chose to share. NATO initiatives required Canada's maritime contribution to position itself in a transoceanic manner, far from Halifax, and a token force would contribute to North American continental defence. Thus was the maintenance of a navy with a submarine service, regardless of relative size, justified, thereby satisfying Huntington's mid-century challenge.⁸⁸

The RCN has had to cope with no tangible, obviously significant support since the 1950s. Because the size of the RCN was greatly reduced immediately after the Second World War, it had to find a specific niche in which it could fit, for it could no longer affect a general role. Canada was not under any direct maritime threat throughout the course of the Cold War, and the value of the RCN's submarine service was largely discounted as a result. The continued presence of submarines in the RCN through the period can be characterised as an afterthought, a necessity forced upon the Canadian government by submarine experts and supporters within the Department of National Defence (DND) at large. As well, continued petitioning by successive Chiefs of the Naval Staff (CNS) and related sub-organisations within DND of the need to retain professional knowledge of the weapons platform and its associated technologies kept the issue alive in Canadian political discourse.

In the post-war years, the RCN evolved into a small navy designed along Corbettian and Huntingtonian lines. Its primary mission was to keep SLOCs between Europe and Canada open, and the RCN command developed the rationale that because its mission involved operating with

⁸⁸ See Samuel P. Huntington, "National Policy and the Transoceanic Navy," *Proceedings* (May 1954).

others, its maintenance should be a priority for the Canadian military. The RCN justified its own existence thus: the RCN had a duty to protect Canada from both direct and indirect threats, but this duty was *not* its primary occupation. Rather, its mission was serving Canadian political interests *qua* its foreign policy by maintaining the navy's multilateral operational agreements within NATO. The navy had a mission, and while the Chiefs of the Naval Staff had their ideas about how to conduct their task, they required funding to begin the process. In order for the CNS to have some sense of the funds they required to develop the Canadian fleet, the Navy had to have a purpose and had to delineate general and specific missions for its varied components. The question posed within Canada was "How big should our navy be?" or, put another way, "How large must our navy be to be just big enough?" Canada opted for a small transoceanic navy with an ASW focus. Inherent in a modern transoceanic navy is the need for a subsurface capability. Since the RCN wanted a subsurface capability as well as an ASW surface fleet, the question arose again: "How large, and how sophisticated, must a fleet of submarines be to meet its minimum commitments?"

The following chapters describe the decisions successive Canadian governments made on submarine procurements, and why those decisions were made.

CHAPTER TWO: *The Oberons, 1960s-1980s*

“The contribution Canada can make to the deterrence of war is limited by the size of our human and material resources. Nevertheless, what we can contribute is far from negligible. We have an obligation to make that contribution.”

- Minister of National Defence Paul Hellyer⁸⁹

“... [I]n the absence of a strategic doctrine, decisions will be dominated by questions of materiel. This is especially true in a small navy in times of austere budgets....The task before Canada’s maritime strategists is to identify the right type of force, and to persuade our authorities to create it in time.”

- George E. Lindsey⁹⁰

“The results of decades of neglect can be overcome, but it will require a long-term solution: a steady, predictable and honest funding program based on coherent and consistent political leadership.”

- Minister of National Defence Perrin Beatty⁹¹

The three quotes above identify two inter-related themes that are reflected through the entire post-war period for Canada’s silent service: submarine fleets’ existences are reliant upon political support first, and upon funding second: the first breeds the second. Evidently, possessing submarines as a weapons platform is not a primary concern for Canadians or their political representatives, unless war is immanent.⁹² Canadian politicians have a long history of

⁸⁹ *White Paper on Defence (1964)*, (Ottawa: Queen’s Printer and Controller of Stationary, 1964 [http://www.publications.gc.ca/site/archives-archived.html?url=http://www.publications.gc.ca/collections/collection_2012/dn_nd/D3-6-1964.pdf]), 12.

⁹⁰ Haydon, “To Be or Not to Be Nuclear.” Even taken out of temporal context, we can see this truism in action in the Harper, and the succeeding Trudeau *filis* governments’ difficulties maintaining sufficient defence spending, with particular emphasis on the F-35 versus Super Hornet debacle.

⁹¹ *Challenge and Commitment*, 47.

⁹² Milner, 174.

dithering over issues of military procurement, and the acquisition of the First Canadian Submarine Squadron was no exception.⁹³

§I. *Uncertainty in the Ranks: Debating the Necessity of a Submarine Fleet, 1950-1968*

The Cold War was characterised by continued military competition and political tension between NATO and the Warsaw Pact. While nuclear weapons and nuclear propulsion greatly changed the character of maritime forces, the Cold War also saw the rise of previously unforeseen reliance upon conventional maritime forces (in this case, SSKs). In the late 1960s and beyond, Canada based its maritime planning upon five missions that the Soviet fleet would be likely to have the capacity to execute, and against which the RCN as a part of NATO had to be ready to defend. First, Soviet submarines would seek to take the strategic offence, which would include the use of SLBMs and/or cruise missiles against surface and land targets; second, the USSR would seek to interdict allied shipping along SLOCs; third, once the Soviets attained nuclear-propulsion, SSNs would remain in close proximity to SSBNs and nuclear-powered cruise missile submarines (SSCNs) to protect them from enemy A/S efforts. Fourth, the Soviet submarine fleet would likely adopt offensive tactics to follow up on its strategic offensive mission: this would mean that enemy boats would use “torpedoes or anti-ship missiles against warships and commercial vessels,” and that NATO needed to develop effective countermeasures. The difference between the second presumption and the fourth is not clear. However, one could consider that the second presumption would be characterised by stopping and investigating ships travelling along SLOCs close to the Soviet Union, and would therefore be a relatively benign interruption. The fourth presumption specifically references attacks on military vessels, thereby turning an inconvenience

⁹³ See Aaron Plamondon, *The Politics of Procurement: Military Acquisition in Canada and the Sea King Helicopter*, (Vancouver: UBC Press, 2010).

into an act of war. The fifth presumption was that the Soviets would use their submarines to place mines in Canadian coastal waters, but by the end of the 1980s Rear Admiral John Anderson, Chief of the Canadian Submarine Acquisition Project (CSAP), deemed this unlikely.⁹⁴

These strategic assumptions would make the cuts to the Canadian naval budget following the Second World War all the more difficult to handle, but the RCN found an interim solution. In an arrangement with Britain, Canada rented HMS/M *Token* (P328), a re-commissioned Second World War-era third-batch “T”-class submarine, in order to supply A/S training to the Canadian Navy from August to November 1946, with the RCN paying her operating expenses.⁹⁵ The lease agreement with Britain was a success, and the Royal Canadian Navy would use the rising threat of the Soviet submarine fleet as leverage with Parliament to continue the programme through the end of the 1940s. While SSNs, which would be introduced publicly in 1954, had far greater capabilities, the “average” SSK could nevertheless spend a great deal more time in a given area than purpose-built aircraft could. SSKs were compared to airplanes for reasons of cost: it was relatively inexpensive to deploy an airplane on a reconnaissance mission, but it was even less expensive to deploy SSKs. The value of the SSK as an intelligence-gathering platform over that of aircraft was apparent. They could “loiter” in an operational area quietly, whereas comparatively tasked aircraft and A/S surface vessels were rather loud, and were therefore easy

⁹⁴ Patrick Croften (Chairman). *The Canadian Submarine Acquisition Project: Minutes and Evidence of the Standing Committee on National Defence, Respecting Considerations of the White Paper on National Defence (The Canadian Submarine Acquisition Project, Pursuant to Standing Order 96(2))*, Issue No. 41, Second Session of the Thirty-Third Parliament, Tuesday, August 16, 1988 (Presented in the House of Commons), (Ottawa: Queen’s Printer for Canada, 1988), 23. Although this study was conducted well after the *Oberon*-class boats were purchased and placed into service, these presumptions of Soviet submarine strategy were nevertheless valid in the decades prior to the acquisition of the First Canadian Submarine Squadron. Anderson’s role in the CSAP is discussed in greater detail below.

⁹⁵ Ferguson, 260. HMS/M stands for “His/Her Majesty’s Submarine.”

to detect by submerged submarines of any ilk.⁹⁶ Aircraft designed for ASW could easily betray its presence by virtue of its task: to fly quickly and identify threats with active sonar. The Navy began to budget annual allotments to rent submarines to act in a “clockwork mouse” capacity.⁹⁷ In other words, Canadian boats would conduct manoeuvres under the surface of the water and A/S forces would attempt to locate, track and/or “destroy” them. Upon reassessment, the Navy determined that without active submarines of its own, it would not be able to develop counter SSN tactics; eventually, developing A/S tactics against nuclear-powered submarines as part of NATO became a component of Canada’s contribution to the alliance. Overall, “[t]he government confirmed the RCN’s ASW role and gave them a ceiling of 9, 047 men and 19 percent of the defence budget” in order to build an ASW specific navy.⁹⁸

This form of naval development characterised the RCN’s posture in the early 1950s, and it became apparent that, even as an ASW training force for NATO allies, the RCN required more than the single boat it had been using. RCN proposals indicated a need for three boats in order to attain “725 submarine training days per year on the East Coast and 240 on the West Coast.”⁹⁹ Furthermore, the navy was developing anti-submarine technologies and required an active submarine in order to run tests as needed. “Even so,” says Ferguson, “the RCN had to make do with the use of a boat for only six months a year until 1953,” when the British Royal Navy (RN) expanded its own ASW operations and Britain’s engagement in the Korean War necessitated a reorganisation of deployed military assets.¹⁰⁰ Once access to even that single boat was eliminated, fears arose within the RCN as to whether it could meet its ASW commitments to

⁹⁶ Anon., “Submarines at Sea: The Operational Role,” 110.

⁹⁷ Joseph Jockel, *Number 91: Canadian Nuclear-Powered Submarines*, (Washington, D.C.: The Wilson Center: International Security Studies Program, [DD]): 13.

⁹⁸ Ferguson, 260

⁹⁹ *Ibid.*

¹⁰⁰ *Ibid.*

NATO, in either peace or war. The RCN began plans to convince politicians of the need for a Canadian submarine service, “based on the premise of independence in ASW training.”¹⁰¹ Rear Admiral S. Mathwin Davis (RCN, Ret’d) noted in 1987 that it was obvious to the Naval Staff as early as 1958 that Canada needed nuclear-powered submarines, preferably of the American *Skipjack*-class, and a review of the situation by the Nuclear Submarine Survey Team (NSST) determined that SSNs could in fact be built using Canadian resources and infrastructure. The sticking point was cost.¹⁰²

The RCN had determined it needed a minimum of five submarines of its own, and ideally eleven boats during wartime; as the situation stood in the early 1950s, all rented or leased boats would have to be returned to their navy of origin in the event of a military emergency, crippling Canadian sub-surface operations. When news of these estimates and operational situations reached the minister of national defence, Brooke Claxton, he said simply, “...it would be spreading our resources very thinly’ to have a [dedicated, national] submarine service. He was content with rental boats.”¹⁰³

The Cabinet Defence Committee (CDC) was less than thrilled at the idea of a dedicated submarine service, and the Liberal government refused to budge on its stance regarding its submarine rental agreements. Eventually though, under ongoing pressure from the Navy, the government allowed the RN’s Sixth Submarine Squadron (SM6) to operate out of Canadian harbours in exchange for two hundred officers and men injected into the RN’s submarines.¹⁰⁴

Canada obtained the “A”-class submarines based in Halifax under a *Heads of Agreement*

¹⁰¹ *Ibid.*, 261.

¹⁰² Rear Admiral S. Mathwin Davis (CF, Ret’d), “It Has All Happened Before: The RCN, Nuclear Propulsion and Submarines – 1958-68,” *Canadian Defence Quarterly*, (Autumn 1987), 34-39: 34, 35; Delaney, “The One Class of Vessel,” 262.

¹⁰³ Ferguson, 261.

¹⁰⁴ *Ibid.*

contract for the period of four years. The annual rental fee was \$645, 000, rising with inflation, “plus the cost of two dockings.” The “A”-boats were manned by the Royal Navy, although the Canadian Flag Officer Atlantic, Submarines (FOSM) tried to post the 200 Canadians transferred to the RN under this plan to the Sixth Squadron.¹⁰⁵ The arrangement would last only a few years, and by the mid-1950s Canada had to start looking for another source of submarines, even though the government was slashing the peacetime budget of the armed forces, which was already nearing its peacetime ceiling of 20, 000 personnel. These situations were compromising Canada’s ability to meet its naval commitment to NATO, which in turn lowered Canadian politicians’ influence and credibility abroad.¹⁰⁶

The advent of SSNs changed the picture for NATO’s affiliated silent services: they entered the ocean in 1954 with the launch of USS *Nautilus*. The Royal Navy told the RCN that it could no longer guarantee the availability of SM6, or, more specifically, the two boats of which it consisted. In preparation for the immanent loss of SM6, Major-General George Pearkes, John Diefenbaker’s first minister of national defence, was forced to re-establish the Canadian submarine service from scratch.¹⁰⁷ In order to do so, Canada purchased an aged USN boat, a slow submarine with no snorkel, for \$887, 000, to be paid over a five-year period. The price included training, torpedoes, spare parts, and modifications. Obtained for the RCN in 1959, the boat was deployed on the West Coast. The submarine’s saving graces were that it would not be

¹⁰⁵ Haydon-Adomeit E-Mail Correspondence, 27 April 2016. “The Oberon acquisition was the culmination of a decade (roughly) of work by the RCN to acquire Canadian submarines that saw an interim agreement with the RN to station two of their submarines in Halifax in return for about 200 RCN people of all ranks to serve in RN submarines prior to bringing the Oberons to Halifax in 1966. I [Haydon] was one of those who went to the RN for five years. The path to the Oberons was rocky and politically unpopular much of the time. The RCN didn’t help their own cause by a couple of untimely flirtations with SSNs.”

¹⁰⁶ Ferguson, 260. “Dockings” refers to maintenance cycles.

¹⁰⁷ Peter Haydon, *The 1962 Cuban Missile Crisis: Canadian Involvement Reconsidered*, (Toronto: The Canadian Institute of Strategic Studies, 1993), 39.

recalled in the event of war, and the trained submariners that had benefited from the *Heads of Agreement* contract with the Royal Navy would gain experience with American technology as well, “as a prelude to acquiring [Canada’s own submarines], based on U.S. designs.” Even as early as the late 1950s the RCN saw a close relationship with the USN as beneficial for both political and technical reasons. This opinion would gain strength in later years, but would be overlooked, if not ignored outright, by policy makers who were interested in the immediate cost of purchasing or leasing submarines, and who were not interested in long-term maritime needs. Canada budgeted \$2.3 million between 1962 and 1963 for the lease of another USN boat, but the CNS waited to proceed with the acquisition “until he had a firm decision on building boats in Canada.” The *Heads of Agreement* contract for SM6 was renewed in 1962. The RN required that Canada pay for the upgrades and modifications to the “A”-boats in the Sixth Squadron, and the “cost of other alterations was split equally” between the two services. These engineering modifications were made in Britain, saving the RCN in the order of \$1 million. The final price was set at \$3 million per year for “two and a half training submarines, representing an increase of about \$1.4 million each year.” This was an agreement Canada entered into knowing that Britain could withdraw its boats at any time, for any reason, and Canada would still be left paying for refits.¹⁰⁸

Rear Admiral Davis, in his role as a Naval Constructor, was in charge of the NSST and later became Director General – Ships (DG-S) within the RCN in the late 1950s and early 1960s. He reported that Commodore (E) Brian Spencer, Engineer-in-Chief for the RCN, sought to develop nuclear propulsion together with the Atomic Energy of Canada, Ltd. (AECL), undoubtedly spurred on by *Nautilus*’ success. By 1958, Spencer and the team of engineers he

¹⁰⁸ *Ibid.*, 268-269. This delay would cost the RCN the chance to acquire a perfectly good boat in the form of the USS *Tigrone*.

had sent to Britain in 1957 to work together with the British Atomic Energy Research Establishment (BAERE) had ruled out the use of nuclear power for Canadian surface vessels, but had convinced the Canadian Naval Staff of the value of both submarines and of the possible use of nuclear power plants within them.¹⁰⁹ In this way Spencer, who by September 1958 was promoted to Rear Admiral and appointed Chief of Naval Technical Services (CNTS), established three studies aimed at the continuance of nuclear-propulsion research:

- A feasibility study “to see if ... nuclear plants could be built in Canada”;
- That a “Naval Constructor-in-Chief [NCC] conduct a study to determine whether the hulls [for nuclear-powered submarines] could built in Canada”;
- And that the “Assistant Chief of Naval Staff (Plans) [ACNS(P)] study the logistic implications.”¹¹⁰

Davis was the only Canadian Constructor Captain available, and so he was put in charge of the NSST as Deputy Director under Spencer. His team’s task was to assess the ability of the Canadian shipbuilding industry to manage a nuclear submarine building programme: three firms were identified as potential prime machinery contractors, that some Canadian shipyards could construct the needed hulls, and that each boat would cost (in 1959) some \$65 million, “with various support costs amounting to \$36 million.”¹¹¹ While the Naval Board was “non-committal” when it received NSST’s report, it did recommend to the Chief of Staff a “quick approval in principle.”¹¹²

The nuclear submarine acquisition plan of the late 1950s and early 1960s headed by Chief of Naval Staff Vice-Admiral Harold “Harry” G. DeWolf ultimately sank in the face of Vice-Admiral H.S. Raynor’s austerity plans for the RCN, but even Rayner had some interest in nuclear-powered submarines. Rayner did advocate that Canada should acquire a large, defensive

¹⁰⁹ Davis, 34.

¹¹⁰ *Ibid.*, 34-35.

¹¹¹ *Ibid.*, 35.

¹¹² *Ibid.*

fleet of twelve SSNs at one point. He also suggested that the government might find SSKs more affordable, and “dropped the number of boats required to six or eight.”¹¹³ The CDC did approve a defensive SSN fleet in principle in January 1960, but further discussions on the topic were shelved until March of that year, by which time Cabinet would have reasonably assumed the Navy would have chosen to procure a specific class of SSN.

§II. *Deciding on a Class of Boat, 1960-1968*

As could be expected, the Chairman of the Chiefs of Staff Committee wanted more information about SSKs, and the Conventional Submarine Survey Committee (CSSC) was formed. Its recommendation was based on the need for cost effectiveness and suitability to a task (presumably ASW): if the RCN and the government were more concerned about cost, the CSSC recommended the 1946-vintage RN *Oberon*-class submarine; if suitability for its specific role (ASW) was to be the lead contention, the CSSC recommended with great emphasis the USN’s newer *Barbel*-class SSK, a boat nearly twice the size of the *Oberons*, designed in 1955 and which out-performed the *Oberons* in all ways, but was nearly as expensive per-unit as an SSN: CSSC specified that the *Barbels* should not be purchased if the RCN was to buy three boats or fewer, preferring the *Oberon*-class in this case.¹¹⁴ The *Barbels*, regardless, would come at an operational cost as well as a financial one: each boat would be built offshore for \$170 million, and in order to afford the boats the RCN would have to scrap its plans for six new escort vessels. The CDC placed two conditions on *Barbel* procurement: NATO’s Supreme Allied Commander, Atlantic (SACLANT) would have to approve Canada’s new submarines as NATO-tagged

¹¹³ Ferguson, 272-273.

¹¹⁴ *Ibid.*, 273; Lt. (N) Jason M. Delaney, “Submarine Procurement and the *Victoria*-class Acquisition from an Historical Perspective: Having Submarines is the Point!” *Canadian Naval Review*, Vol. 4 No. 2 (Summer 2008), 22-27: 25.

vessels (taking the place of the planned surface vessels) and requested that further studies on other extant SSK designs that might be built instead of the *Barbel*-class be conducted.

SACLANT was in charge of the areas of the Atlantic Ocean NATO countries claimed.

SACLANT's opinion would reflect the opinion of the United States Navy as well: on North America's east coast, NATO and the USN were synonymous. If the USN thought the idea of an active and expansive Canadian submarine service had merit, so too did SACLANT. Canada had opted to follow the United States' lead, and if Canadian politicians could be convinced that investing in a submarine fleet was in Canada's best interest from SACLANT's perspective, they also knew the USN would have a vested interest in the initiative. In that case politicians would be more willing to invest in the weapons platform and would be able to justify the expense. If the Canadian government invested in an asset SACLANT or the USN did not approve of, Canada's political capital would be expended for nought. A similar conclusion is reached by Marc Milner, who remarks, "[s]ince the [*Barbels*] would have to be built abroad, there was no domestic political capital to be gained in their purchase [from the United States]":

When Douglas Harkness ... suggested that the RCN purchase British O Class submarines at a mere \$9 million a piece, it could [also] build at least four additional frigates. The government thought otherwise, and adopted a program of three O-boats and eight GPF...Once it was determined that they could not be built in Canada, the hardest part of the process was sorting out what industrial offsets Britain would provide for ordering the submarines from a UK yard.¹¹⁵

SACLANT's approval, ostensibly, was important to the CDC because the acceptance of a "new" maritime resource for the Canadians by SACLANT would gain the CDC, and the supporters of the RCN's submarine service, political capital that could then be used to influence Cabinet.

Richard Oliver Mayne suggests that such desires and demands originated from *within* the

¹¹⁵ Milner, 231. The issue of industrial offsets will be discussed in a similar circumstance in *Chapter Three*. GPF stands for "General Purpose Frigate."

Canadian navy itself and were advocated for at SACLANT headquarters rather than being calculated requests from SACLANT himself.¹¹⁶ The result of SACLANT's ruling regarding the submarine issue was anticipated to have greater weight in influencing Cabinet than the opinions and arguments of Canadian experts. It appears that high-ranked naval officials interpreted SACLANT and NATO force requirements in such a way that they could perform an end-run around the civilian government in an attempt to force the government to dedicate an increased budget to the navy for capital expenditures: it did not work, for the effects of Canadian civilian influence upon naval procurement grind slowly, and often carefully. This end-run was blocked by civilian due process. A senior Canadian military officer would get an allied commander, usually a USN officer, to make the request for item "x", such as nuclear submarines. Since the request came from an ally, the request would appear to have a great deal of weight, because the allied commander would make the point that "x" was necessary in order to maintain or improve Canada's standing within the alliance, and particularly with that specific ally. This process could be rendered null and void if Canadian politicians were to contact their colleagues in Washington, D.C., and in Brussels (the home of NATO's head office) and could confirm the veracity of the request in question. *Chart 1.1* illustrates in brief specificity how this decision making process progressed. The influence of special interest groups (the steel lobby, construction consortia consisting of Canadian and foreign firms¹¹⁷ or Canadian shipyards, for instance) can be slotted into both the "Public Opinion" and "Political Representatives" categories: therefore the chart *does* confirm that at times influences external to both the Canadian federal government and the Navy can supplant the desires and requirements of either, or both, offices. It also confirms that a

¹¹⁶ This is discussed in great detail in Richard Oliver Mayne's PhD dissertation at Queen's University (Kingston, ON) from 2008: *The Annapolis Riddle: Advocacy, Ship Design and the Canadian Navy's Force Structure Crisis, 1957-1965*: 50-58, 60, 68-69.

¹¹⁷ See Chapter Three.

federal government, or components thereof, may attempt to influence an alliance (specifically NATO, and the SACLANT command in this instance). The process for a civilian entity to influence an alliance is more direct than that which is available to an individual military, but both are possible because of the extant feedback loop from foreign/military policy creation to the initial conceptual/ideation stage.

(Continued page 66)

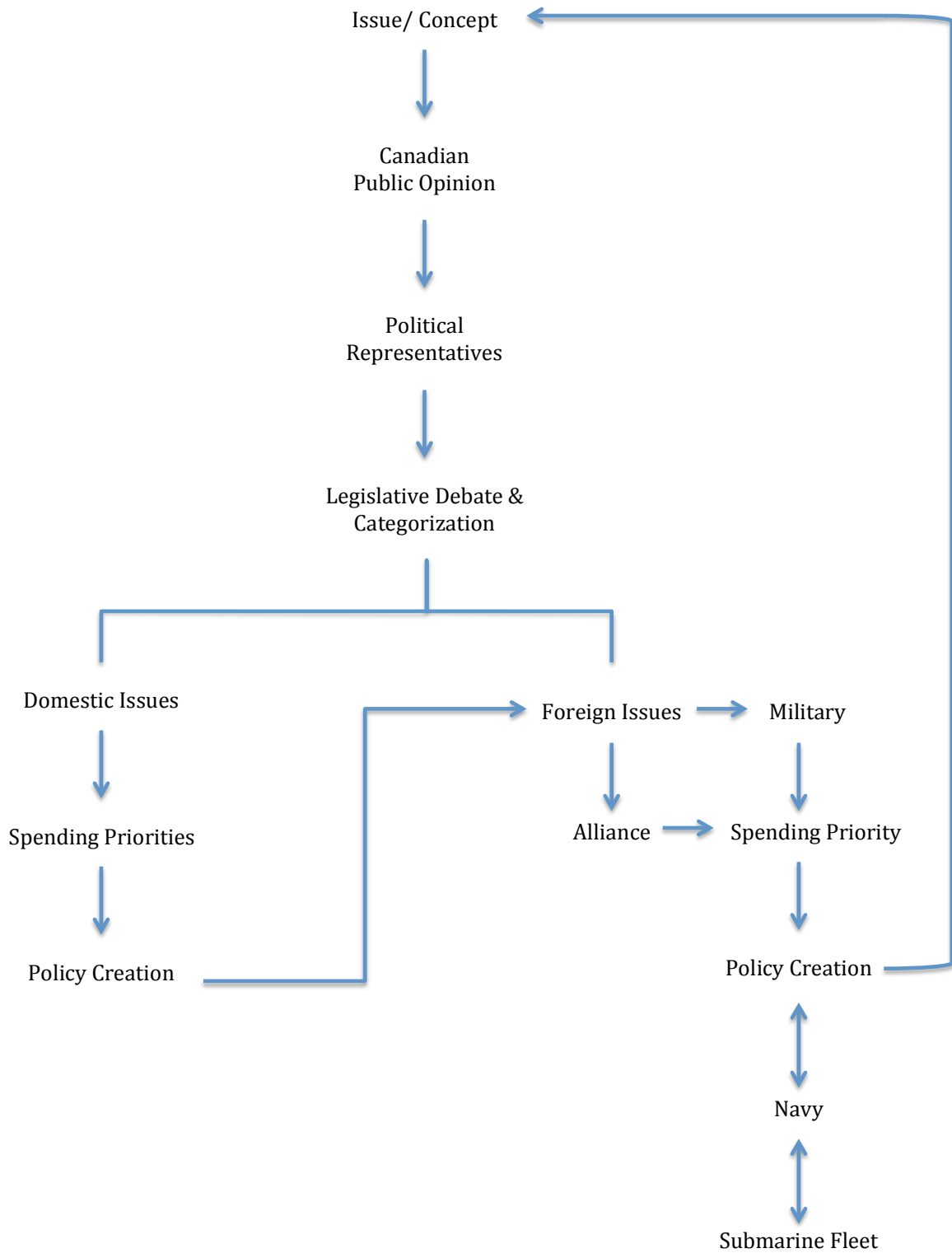


Chart 1.1 Civilian and Military Decision Making Process Simplified, Ref. Submarine Fleet.

The *Oberon*-class had been removed from consideration in August 1960 because it failed to meet Canadian operational standards. But they each cost less than half of a single *Barbel*, and could be purchased without having to discard the RCN's planned escorts. This option was very appealing to cost-conscious politicians, and the *Oberon* design returned to the RCN's assessment list. CNS Vice-Admiral Rayner offered two acquisition schemes to the Defence Minister in 1962. The first proposal was to construct six *Barbels* in Canada, which would give NATO very powerful SSKs that could be used in deterrence exercises, and more significantly could be deployed in containment duties.¹¹⁸ The *Barbels* could also be deployed on patrol for far longer

¹¹⁸ Andrew Richter, *Avoiding Armageddon: Canadian Military Strategy and Nuclear Weapons, 1950-63*, (Vancouver and Toronto: UBC Press, 2002), 160-162. The most famous example of deterrence is the arms race between the United States and the Soviet Union for an overwhelming nuclear capability: from this arms race came a form of international stability in the form of the threat of Mutual Assured Destruction (MAD), a stability that as recently as 2001 has proven foundational for the uneasy peace between Russia and the United States.

Containment is somewhat simpler: one party (in this case NATO) decides that a particular region belongs to it and its allies, and determines that their potential enemy (USSR) cannot be allowed to inject military assets into NATO's region of responsibility. Accordingly, NATO examined the possible routes Soviet vessels could use to transit into NATO territory, and posted patrols in the most vulnerable areas. During the Cold War the RCN's A/S surface fleet, combined with the *Argo* aircraft, frequently patrolled the GIUK gap, but as *Chapter Three* will discuss, the RCN experienced much resistance from those who supposedly supported its efforts, and was afflicted with many unfortunate situations. By patrolling regions with surface, and surface naval forces, as well as maritime aircraft, NATO created a clear political policy-line that the USSR was aware it should not cross unless it wished political and military tensions to rise dramatically, *if* their craft were detected. NATO's containment strategies therefore drove the arms race to new heights, especially with regard to nuclear deterrence, but also with the development and refinement of subsurface weapons platforms so they could bypass extant and future A/S efforts. Containment strategies therefore circle back and support deterrence efforts. ASW vessels can conduct both containment and deterrence: "showing the flag" let the USSR know that NATO's forces were present in the North Atlantic, the Norwegian Sea, and other vital SLOCs. These vessels delineated the border between the two political actors' territories so far as NATO was concerned, to which Soviet vessels could transit before becoming viewed as a potential military threat.

ASW vessels can also serve as deterrents: for example, fleet escorts during World War Two were so useful in protecting merchant shipping along the North Atlantic because German submarines became extremely vulnerable once they came within range of Allied sensors, and the boats made themselves huge targets once they had fired their torpedoes at a target. The presence

than the *Oberons* could be. The second option was that six *Oberons* could be built offshore and Canada could still acquire four ASW frigates. The first option was a good arrangement for NATO, and the second option was good for both NATO and Canada. The latter option would allow Canada to establish an economical submarine fleet for general use, *and* obtain four frigates that could be used for NATO-specific purposes.¹¹⁹ The first instance, the acquisition of *Barbel*-class boats in order to fulfill specific NATO plans and needs, would give Canada and the RCN a great deal of political capital with NATO, for the act of expending such a large amount of monetary capital would prove that Canada was taking its NATO responsibilities seriously. Karl Lautenschläger remarked that: “Naval strategists do not face an ‘either/or’ choice between surface forces and submarines, but rather the task of balancing these forces in a way that enhances the capacity of the whole navy to achieve overall mission goals.”¹²⁰ Following this logic, Canada’s allies could infer that Canada was committing to collective security from the execution of a large naval procurement programme: the programme would thereby advance Canada’s agenda to gain as much political capital for as little expenditure (of anything) as possible. The four frigates would provide predictable A/S performance for an understood cost; submarines, as will be seen, were deemed unpredictable, and Canada did not necessarily have the capabilities to train its personnel to a level of high competence in a submarine fleet. So, in this respect, Canada sought to fulfill NATO’s demand for participation with a competently trained surface squadron, and would experiment with the *Oberon*-class boats on its own, away from the

of ASW vessels in these convoys often caused U-boat captains to stall an attack because the risk of detection and destruction was too great. In the Cold War era, SSBNs carried the most advanced missiles with nuclear warheads their respective states could construct, and were tasked with staying at a particular location until their orders changed: this is discussed in greater detail in *Chapter Three*.

¹¹⁹ Milner, 228-229; Davis, 38.

¹²⁰ Lautenschläger, 97.

operational criticism of its allies. By investing in a submarine capacity, Canada's allies would be more greatly impressed that Canada was interested in staying on top of maritime technological and operational developments. Both approaches would gain Canada a great deal of political capital on the inferred basis of proactive capital expenditures on Canada's part.¹²¹ It was not until the 1970s that Canada began to plan a post-war navy with a particular goal in mind: NATO required a surface ASW fleet, and Canada could provide one.¹²² Vessels not committed to the NATO ASW effort would then be deployed in support of smaller European states, for if another war were to break out, the action would be in Europe, and Canada's transoceanic navy would be present and able to provide immediate help.

Rayner himself preferred the first option, believing that the United States' proximity to Canada would ease the acquisition process and would thus increase the value of the boats to the RCN; the *Oberons* would require replacement parts and facilities unique to the RN, which would be extremely difficult to access during time of war. Rayner was convinced that the USN *Barbels* towered over the *Oberons* in capability, and his arguments to this effect were such that Diefenbaker's minister of national defence, Douglas Harkness, "began to lean toward the *Barbels*. His resolve was strengthened when SACLANT approved the replacement of RCN surface ships in NATO with submarines...." Questions exist as to who, precisely, requested that Canada provide *nine* RCN submarines flagged for NATO's use by 1966, although Marc Milner suggests these numbers (three *Barbel*-class boats, six SSNs, and eight General Purpose frigates) came from Rear Admiral Jeffrey V. Brock's 1961 *The Report of the Ad Hoc Committee on Naval*

¹²¹ *Ibid.*, 95.

¹²² *Ibid.*, 97.

Objectives.¹²³ SACLANT was reportedly enthusiastic about the potential Canadian *Barbel* fleet because they were large, modern, and a far more lethal weapons platform than the *Oberon*-class boats; the *Barbels* also outclassed any of Canada's surface A/S vessels. If SACLANT supported the *Barbel* acquisition, it is likely that the USN also supported the idea. By supporting the *Barbel* acquisition over that of the *Oberon*-class, SACLANT was informing Canada implicitly that it would need to provide either or both surface vessels, or modern SSKs. The *Barbels* were just as useful as A/S platforms as they were deterrents. The *Oberons* were just obsolete enough that they would not be particularly valuable for NATO (though they could be for Canada, and the frigates could still be tagged effectively for NATO use).¹²⁴

For a number of years, the search for alternative submarine designs had proceeded through the RCN quietly and was barely noticed by outsiders: for instance, a feasibility study into nuclear propulsion was proposed by Commander (E) Geoff Phillips following a 1949 visit to the nuclear reactor at Chalk River, Ontario.¹²⁵ In 1957 the RCN's Director of Undersea Warfare (DUSW), Captain (N) Patrick Russell, took subsurface ASW operations to the next rational step: the cooperation of aircraft and submarines. His efforts took shape as the *A/S Weapons Systems Effectiveness Study*. It merged this cooperative attitude with the concept that nuclear fission reactors could be used on submarines as a power plant, and argued that these hypothetical boats

¹²³ Milner, 225-236; Davis, 38; Delaney, "Submarine Procurement," 26. It is also possible that SACLANT merely wanted Canada to live up to its responsibilities to NATO, and that the shift to subsurface ASW was an initiative he could support easily. Delaney suggests that it was a collection of Canadian "navy planners" that recommended the nine *Barbels*, not SACLANT as Davis reports. This recommendation was made in a report dated 30 June 1960 by CSSC, which was headed by Commander (E) Robert Stephens, "the first nuclear-trained Technical Officer and had served as a member of the [NSST]...." A more detailed discussion of Brock's assignment follows.

¹²⁴ *Ibid.*, 24-25.

¹²⁵ Michael Whitby, "Vice-Admiral Harry G. DeWolf: Pragmatic Navalist," in Michael Whitby, Richard H. Gimblett, Peter Haydon (eds.), *The Admirals: Canada's Senior Leadership in the Twentieth Century*, (Toronto: Dundurn Press, 2006), 213-246: 231.

should and could be built in Canada.¹²⁶ Out-going CNS Vice Admiral Rollo Mainguy was of similar mind.¹²⁷

In April 1961, CNS Vice Admiral H.S. Rayner commissioned Rear Admiral Jeffrey V. Brock to head *The Report of the Ad Hoc Committee on Naval Objectives*. Its aim was to:

... define the purpose of the Navy and make recommendations concerning the role, tasks and composition of the Fleet required to meet the Navy's responsibilities in the future in the most effective and economical manner. This will entail an examination of the probable nature of naval forces during the next twenty-five years.¹²⁸

Rayner's primary concerns were that the rapid pace at which the technologies of war were developing would put undue strain upon the RCN, both developmentally, and in the RCN's ability to defend against the new technologies. Rayner viewed the RCN as a progressive organisation whose institutional and operational stability had survived the Second World War, and remained viable in the Cold War period.¹²⁹ Brock's stance was that the advent of nuclear weapons cheapened the lives of all Mankind, because it was now possible to destroy one's enemy entirely, whereas that effort was unfeasible in the past.¹³⁰ Brock warned that in the post-War era, conventional fleets not armed with nuclear weapons would become increasingly important as the Cold War progressed: "[W]e must be careful to

¹²⁶ Delaney, "Submarine Procurement," 261-262; Lt. (N) Jason Delaney, "The One Class of Vessel that is Impossible to Build in ~~Australia~~ Canada," *The Northern Mariner/Le marin du nord*, Vol. 24, Nos. 3 & 4 (Jul. & Oct. 2014), 260-272: 261. Captain Russell's innovative "arguments, conclusions and recommendations were convincing enough to serve as the basis for the creation of a submarine service approved by the Naval Board later [in 1957]." Currently, nuclear fission – the destruction of an atom with a laser, or by a kinetic reaction with another fissile particle (enriched uranium being the usual material) – is the only viable nuclear power source; nuclear fusion technology – the creation of a new particle by forcing atomic components together – is still in its infancy.

¹²⁷ *Ibid.*

¹²⁸ Rear Admiral J.V. Brock (Chair), *The Report of the Ad Hoc Committee on Naval Objectives*, (Ottawa, 1961), vii (*The Brock Report*, henceforth).

¹²⁹ *Ibid.*, ii-iii.

¹³⁰ *Ibid.*, ii.

not to be misled into believing that nothing less than a nuclear warhead makes [constructing a conventionally-armed naval fleet] worthwhile.”¹³¹ Brock advocated for a flexible fleet that could be used in a variety of ways, rather than a strictly ASW fleet or otherwise: “[Y]ou will find that the committee recommendations also constitute a progressive plan for fulfilling other urgent needs and enabling the Navy to perform other useful functions of a more versatile nature,” he wrote.¹³² Since the end of World War Two, the RCN had longed for a large, general-purpose fleet, something the political leadership did not consider necessary. Resultantly, the Navy had focused upon ASW, a role NATO sought to fill, and was thus the only role Canadian politicians were prepared to pay for. Rayner underscored the urgent need for the RCN to transition into an ASW fleet, but Brock was of the opinion that this would hobble rather than empower the RCN in its goals to meet the needs of the nation and its alliances. As far as submarines were concerned, he was a strong proponent. He noted that “approximately 5 percent of the landed surface, in coastal belts about 250 miles wide on the Atlantic, Pacific and Indian Oceans and warm water seas, accounts for 96 percent of the world’s principal cities and well over half the world’s population.” The inference here is that the loss of any major portion of this area could threaten the Canadian economy directly, or indirectly, and a submarine capability could act as a mitigating factor in conflicts of Arctic sovereignty.¹³³ He remarked that a shipbuilding programme would help “Canada’s defence efforts in the future,” and that:

...[I]n view of the economic growth to which Canada can look forward, there is no reason to believe that the somewhat higher dollar costs of our security insurance premium need represent a rising percentage of our gross national

¹³¹ *Ibid.*, ii, 22. Notice the similarity of tone in Brock’s admonition and the quote from Corbett at the beginning of this thesis.

¹³² *Ibid.*, iii.

¹³³ *Ibid.*, 21.

product. Various cost studies carried out by [the Brock Report committee] fully support this judgement, and lead to the conclusion that adequate defence forces would be a sound investment which will contribute to strengthening Canada's international position in the latter part of the 20th Century.¹³⁴

The Soviet Union was likely to use submarines to disrupt merchant shipping along well-used SLOCs upon which Western surface ships travelled. Western shipping relies heavily upon surface vessels, and unless modern naval forces accompanied merchant fleets, it would be all but impossible to deter, or hunt down, enemy submarines.¹³⁵ Despite assessing the Soviet submarine fleet as being one of the greatest defence risks the Western defence alliances faced, Brock noted that the four hundred odd submarines with oceangoing capability the USSR possessed did not significantly alter the security environment. Many of their submarines possessed both nuclear propulsion and submarine launched nuclear missile technologies, but by 1960, so did the United States' submarines, and the nuclear capacities of Britain and France's subsurface fleets were growing in turn.¹³⁶ The capability of Soviet boats to lay mines was of minor concern, but this, combined with their abilities to launch strategic attacks against the West, further illustrated the submarine platform's versatility, and thus its utility to Canada.

Submarines' versatility made them "useful for many tasks in cold war situations," particularly in situations when extreme stealth was called for.¹³⁷ In particular, the dual role Soviet fishing-fleets played during the Cold War complemented the roles of interdiction, deterrence, and covert activity. These fleets were well equipped with communication devices and, presumably, radar and possibly even sonar equipment. This method allowed seemingly benign fishing fleets to relay vital operational information to Soviet submarines. Brock voiced

¹³⁴ *Ibid.*, 54.

¹³⁵ *Ibid.*, 35.

¹³⁶ *Ibid.*, 39.

¹³⁷ *Ibid.*, 40.

great concern on this point, commenting, “[o]n an average day, the number of Soviet fishermen employed off Canada’s east coast is greater than the number of personnel in the RCN’s entire Atlantic command.”¹³⁸

Brock tempered this awareness with a layer of practicality. In the first place, he said, the time needed to develop nuclear weapons from one stage of refinement to another was almost prohibitive, pointing out that it had taken nine years from the discovery of the sheer power of nuclear fission to its employment as a weapon (1936 to 1945). In the second place, telecommunications formed another direction in which military technologies could evolve. He insisted that the Allies not fall behind in either field in order to maintain defensibility on the high seas.¹³⁹ Canada needed to develop its military to, first, improve its effectiveness; second, to strengthen Canada’s conventional forces, and; third, to train Canada’s soldiers to maintain, utilise, and fight against nuclear weapons.¹⁴⁰ The Canadian military, he argued, would also provide *support* for conventional forces: to escort and transport army units; to support, and protect the SLOCs necessary to the endeavour; and to “provide mobile base or local support facilities.”¹⁴¹ *The Brock Report* predicted that technological progress, along with the development of grand and operational strategies, favoured the submarine:

...[M]ajor technological trends in general favour the submarine and will quite certainly increase its offensive capability against targets at sea and ashore. Those possessing great endurance and the ability to remain submerged for lengthy periods will remain relatively immune from air reconnaissance or attack. Because of the vastness of the oceans and the formidable technical problems in long range underwater detection, they are likely to continue to have greater freedom of unfettered movement than any other maritime forces....The submarine expressly

¹³⁸ *Ibid.*, 40.

¹³⁹ *Ibid.*, 41, 49.

¹⁴⁰ *Ibid.*, 50-51.

¹⁴¹ *Ibid.*, 57.

designed for the anti-submarine role...is considered now to be a formidable opponent to other submarines and to have significant potential for further development....It must be assumed that the competition for superiority in submarines will tend to be very close [between the Allied nations and the USSR], and to fall only a little behind could be expected to have a drastic effect on ASW usefulness.¹⁴²

What follows is one of the strongest remarks made in *The Brock Report*:

Despite their many advantages, the high cost of present types of submarines, especially nuclear-powered, results in a relatively high ratio of cost to A/S effectiveness. This is offset to a considerable extent by their capacity to carry out additional tasks, for example, A/S training of other forces. Nevertheless, attention is drawn to the advantages that may be gained from the development of smaller and much less expensive submarines for the A/S role.¹⁴³

These comments have a great deal of significance for the RCN's small fleet. They form a specific strategy for the RCN: a dedicated ASW component within the fleet, comprising of a large number of small, relatively inexpensive vessels, both surface and subsurface vessels. It was to work in concert with army and air force assets, and within the RCN itself all components – surface and sub-surface – needed to work together cohesively in order to succeed in their collective objectives. Such a fleet could conceivably work together with itself and with other navies to train for ASW tasks, something Brock considered to be of great benefit to collective security arrangements.¹⁴⁴

Brock developed a strategic concept called “Small Cheap and Many” in order to mitigate for Canada the increasing popularity of putting “too many eggs in too few, highly vulnerable baskets,” namely aircraft carriers and fleet-based ballistic missile submarines, amongst its allies.¹⁴⁵ For Canada, this would manifest in a fleet consisting of frigates and destroyers (DDEs), and a squadron of SSKs, all of which would be equipped with the best of modern technologies,

¹⁴² *Ibid.*, 63.

¹⁴³ *Ibid.*, 62-64.

¹⁴⁴ *Ibid.*, 62-64, 66.

¹⁴⁵ *Ibid.*, 67, 70.

and would be testing new technologies as research and development plans required. He suggested that smaller, more specialised boats might be constructed specifically for the ASW role.¹⁴⁶ Milner points out, however, that Brock's strategic concept was not the paper's focus: rather, it was a means for Brock to petition for the creation of what he dubbed *heliporters*, which were intended to replace the *Prestonian*-class frigates. "However, since they were to operate up to fourteen heavy helicopters, the heliporters were really thinly disguised small aircraft carriers."¹⁴⁷ These vessels would be specifically intended for an ASW role, but would also be utilised to fulfill Canada's role in collective security, such as training and defence operations:

- a) defending Canada's interests against attack from the sea;
- b) meeting our commitments to collective security arrangements;
- c) contributing to other external undertakings;
- d) supporting the Canadian Army in actions arising out of (b) and (c); and,
- e) establishing and maintaining Canadian sovereignty in the Arctic.¹⁴⁸

In each of these situations, the RCN would be responsible for the following operational goals:

- a) to defend sea lines of communication through control, escort and convoy of shipping;
- b) to detect, locate and destroy enemy submarines;
- c) to contribute to early warning of missile attack by submarines;
- d) to patrol the coastal areas and approaches to Canadian waters;
- e) to keep our ports, anchorages and approaches free of mines;
- f) to provide logistic support afloat for the fleet;
- g) to transport, land and support Canadian Army contingents as required;
- h) to provide mobile command and base facilities for external undertakings;
- i) to carry out and support Arctic surface and under-ice operations.¹⁴⁹

¹⁴⁶ *Ibid.*, 64, 67; Milner, 230. *The Brock Report* is not viewed well in some quarters: Peter Haydon, for instance, remarked: "...[I]n a greater scheme of things the Brock Report was an aberration [*sic.*]. He asked to do the study to give himself something to do between postings -- he would become Vice-Chief of the Naval Staff that summer and was unemployable [*sic.*] for the preceding Spring/early-Summer. The 1959 Study was the point of departure for subsequent fleet plans, not the Brock Report which, anyway, was never published and most copies destroyed..." Haydon-Adomeit E-mail Correspondence, 22 July 2016.

¹⁴⁷ Milner, 230.

¹⁴⁸ *The Brock Report*, 64, 70-71.

¹⁴⁹ *Ibid.*, 73.

Milner comments that, “[u]nfortunately not everyone in the navy wanted to go where Brock was steering.”¹⁵⁰ In other words, Brock could not sell the idea of heliporters to the navy, and his strategic concept “...proved impossible to implement...” because sceptics were quick to point out the flaws in Brock’s “...first opportunity to put [his own hands] on the helm...” “in many years.”¹⁵¹

Brock placed a great deal of emphasis on the antisubmarine capability of each ship, ranging from DDEs to the HMCS *Bonaventure*, Canada’s sole aircraft carrier.¹⁵² Notably, Brock remarked that a close eye needed to be kept on the maintenance of vessels to ensure that maintenance costs would not reach “unacceptable limits.”¹⁵³ He was quick to mention that his committee was recommending that new ships be built to replace aging – and expensive – vessels and weapons platforms.¹⁵⁴ For instance, the committee recommended that active sonars could no longer be deployed as independent systems, advocating instead for multi-use platforms, such as multi-use ships that could excel at ASW, combining “versatility and simplicity.”¹⁵⁵ This need was not limited to weapons platforms, but to weapons as well, including missiles, and torpedoes.¹⁵⁶ Brock anticipated that the 1960-1980 period would see tremendous development in hull and guidance technologies, and in the simple reliability of ranged weapons such as the ubiquitous torpedo, arguing that trends for both the Soviets and the NATO nations indicated that

¹⁵⁰ Milner, 230.

¹⁵¹ *Ibid.*

¹⁵² *The Brock Report*, 75-81; Milner, 229. Brock considered *Bonaventure* an all-purpose vessel, and underscored the ship’s troop-lift capacity as much as its role as a naval aircraft-launching platform.

¹⁵³ *The Brock Report*, 78, 81.

¹⁵⁴ *Ibid.*, 81.

¹⁵⁵ *Ibid.*; Milner, 230.

¹⁵⁶ *Ibid.*, 231.

such technological improvements “favour the submarine and will quite certainly increase its offensive capability against targets at sea and ashore.”¹⁵⁷

Despite the work Brock and his team put into their report, Brock’s political position was not one that was at all secure, and soon after he was relocated to Halifax as Flag Officer, Atlantic Coast (FOAC), the new Liberal minister of national defence, Paul Hellyer, sacked him, and Admiral William Landymore took his place.¹⁵⁸ Brock was vocal in his disapproval of the unification plans Hellyer was developing, and this was reason enough for Hellyer to dispose of the troublesome admiral.

Eventually, Diefenbaker’s government decided against acquiring the *Barbels*.¹⁵⁹ The RCN’s January 1961 report to the CDC neglected to mention SACLANT’s request for nine operational submarines by 1966, and it took until 7 March 1961 for the CNS’ report containing the request to reach Cabinet at all. Diefenbaker announced in April 1961 that no decision had yet been made. Diefenbaker’s government refused to state outright that it would not acquire the *Barbel*-class, but the prime minister’s vacillation on the issue of submarine acquisition allowed the issue to pass by without much notice. In the meantime, Canadian shipyards lobbied hard to procure the *Barbels* for Canada, and the press reported the acquisition thereof as foregone. Shipyards were excited at the prospect that *Barbels* could be produced in Canada, because, as

¹⁵⁷ *The Brock Report*, 62-63, 66.

¹⁵⁸ Robert H. Caldwell, “Rear-Admiral William M. Landymore: The Silent Service Speaks Out,” in Michael Whitby, Richard H. Gimblett, Peter Haydon (eds.), *The Admirals: Canada’s Senior Leadership in the Twentieth Century*, (Toronto: Dundurn Press, 2006), 275-305: 279.

¹⁵⁹ Milner, 235; This was due in part to Diefenbaker’s ignorance of national military defence; he dithered over important decisions to the detriment of his reputation and that of his Party, and damaged the Canadian military’s ability to do its job. Diefenbaker was openly honest, and honest to a fault, literally. And worst for Canada/US diplomatic relations, Diefenbaker hated the United States and President John F. Kennedy ardently, and did not bother to hide it. For instance, he was unwilling to follow Kennedy’s lead blindly during the Cuban Missile Crisis. As well, he would be burned by the way he handled the NORAD negotiations, and the scandal surrounding nuclear weapons in Canada.

Kim Richard Nossal points out, “indigenous development and production serve the nation’s defence...but it also strengthens the defence industrial base, and the technology developed (or transferred) also creates spin-offs that redound to the economic benefit of the country. Moreover, a weapons system that is successfully developed indigenously can be marketed and sold to the armed forces of other countries.”¹⁶⁰ Had Canada purchased the licence to build the *Barbel*-class on-shore, it did not mean that the United States would necessarily allow Canada to “farm out” the design to other states interested in purchasing the boat for Canada’s own profit. However, the *Barbels* were withdrawn from consideration by the United States, most likely because Diefenbaker did not want to make a decision.¹⁶¹

Accordingly, the government’s mindset moved away from providing a fleet of offensive ASW submarines for NATO, to its contingency plan to float training-only submarines. The longer Canada delayed its decision, the longer the three existing *Barbels* languished, and they gradually became unfit to sail. Regardless, the boats had been withdrawn from consideration: if the USN had wanted Canada to have an effective subsurface fleet, it most likely would not have crippled Canada’s efforts to negotiate for their purchase regardless of Canada’s attitudes. This also tells us that the USN was more interested in Canada acquiring a larger ASW surface fleet. The resulting inference is that since the USN wanted Canada to invest more into its surface fleet, and that the request from SACLANT to purchase the *Barbels* was likely a machination developed by well-meaning Canadian naval officers in an attempt to circumvent Canadian civilian bureaucracy in the Navy’s favour.¹⁶² Canada lost the opportunity to acquire HMS/M

¹⁶⁰ Nossal, 99.

¹⁶¹ Ferguson, 275; Delaney, “Submarine Procurement,” 25; Delaney, “The One Class of Vessel,” 265.

¹⁶² See Chart 1.1.

Ocelot and *Opportune* from Britain because of the government's dithering.¹⁶³ As well, the strategic maritime situation changed, resulting in a shift of priorities in RCN thought regarding submarine acquisition. Both the USN and the RN were withdrawing its SSKs from the market: the USN had stopped building SSKs entirely, and while the British did renew the *Heads of Agreement* and kept SM6 in Canada, the revised contract stipulated that Canada find other means to retain submarines for its fleet.¹⁶⁴ The RN was withdrawing its boats from consideration for rental or lease because its increasingly nuclear-powered fleet needed SSKs with which to train domestically. The RCN attempted to clarify its subsurface self-image by establishing the Submarine Committee in 1962, three weeks after Harkness' proclamation. The Committee was to "study the navy's operational requirements for submarines." The Submarine Committee was headed by Commodore R.P. Welland, the Assistant Chief of the Naval Staff (ACNS), and his team examined the findings of the CSSC, re-examined the *Heads of Agreement* as it pertained to the RN Sixth Submarine Squadron, and reassessed the costs with which the RCN had been faced in the past and adjusted them for the present.¹⁶⁵

There were three separate and conflicting agendas at work during the submarine acquisition process in the early 1960s. First, and the most obvious, was Diefenbaker's serious lack of understanding of national defence. Peter Haydon remarked "[it was] Diefenbaker's idiosyncrasies and failure to understand the bilateral defence agreement as a whole which led...[to] the threats to national security."¹⁶⁶ Diefenbaker did not understand the nature of the

¹⁶³ Ferguson, 293.

¹⁶⁴ *Ibid.*, 275.

¹⁶⁵ *Ibid.*, 276, 275.

¹⁶⁶ Haydon, *The 1962 Cuban Missile Crisis*, 20, 21, 38, 40, 41, 62, 66, 225, 226, 230, 232, 233, 235, 260. "By October 1962, the relationship between Diefenbaker and Kennedy had deteriorated to the point of no return. Through a series of incidents, each man had come to distrust the other's motives and integrity." Further, Haydon includes in his second Annex several

defence agreement between Canada and the United States, and it is possible that he did not understand the difference in missions between those for NATO and those for the bilateral defence agreement being negotiated. In this latter case, Diefenbaker would have been conflating ASW operations between the two arrangements: NORAD was not an alliance. It was a functional arrangement for continental aerospace defence, and it did not have at that time a maritime component. Continental maritime defence was handled between the two Navies were outside the NORAD framework. Second, the British seem to have manipulated the relationship between Canada and the United States to their advantage as the *Barbel* option began to fall apart.

The removal of the *Barbels* from consideration entirely by the USN, and the Admiralty's insistence that Canada find other ways of maintaining a sub-surface capability, meant that Canada had only one option remaining to it: to purchase the *Oberons* the RN was offering, with all the strings the Admiralty had attached to the purchase.¹⁶⁷ It took until March 1962 for the CDC to make a decision on the submarine issue: it recommended that three *Oberons* be acquired. Britain had one *Oberon* ready for delivery, and had two additional boats that would be ready for delivery soon after.¹⁶⁸ The RN had three *Oberon* hulls that were of limited use to it and made arrangements for Canada – now bereft of USN opportunities – to take them. The British agreed

messages and his analysis thereof. In *Document 19 (From CAMCOMARLANT Signals, P010121Z Nov, provided on page 260)*, it is easy to infer that Rear Admiral Dyer sought support from Admiral Taylor (Commander, Anti-Submarine Warfare, Atlantic: COMASWFORLANT; Canadian Commander Maritime Forces Atlantic: CAMCOMARLANT) as well as in order to clear away political detritus in Ottawa. They sought to present their mutual support (in terms of professional knowledge and opinion) to justify their decisions regarding the Cuban Missile Crisis and their deployment of RCN and Royal Canadian Air Force (RCAF) assets to Prime Minister Diefenbaker and Minister of National Defence Harkness. This example, and several others Haydon offers (e.g., Docs. 20, 21, 22, and 23) illustrate that Dyer acted effectively; and that this effectiveness was certainly in spite of this lack of guidance from the Diefenbaker government, but also *with* the knowledge and authority of his immediate superiors: at no point did he overstep his bounds, says Haydon. Haydon-Adomeit E-Mail Correspondence, July 7, 2017.

¹⁶⁷ Delaney, "Submarine Procurement," 25.

¹⁶⁸ Ferguson, 275.

to industrial offsets in order to sell the boats: essentially, Canada arranged for a purchase in the amount of some \$33 million and required Britain to send enough contracts to Canadian industry that the net gain/loss of the arrangement would be nearly zero: This was largely because the Royal Dockyards were legally bound to make neither profit nor deficit from any construction programme.¹⁶⁹ When Harkness announced the *Oberon* purchase to the House of Commons in April 1962, the offset contracts were not yet signed, and he was forced to frame the acquisition of the boats as part of a \$300 million naval expansion. Ferguson notes, “[Harkness] justified the decision to build them offshore by showing that three submarines could be had for the price of one home-built boat.”¹⁷⁰

The third agenda that appears is a function of conservative cost initiatives and possibly of a lack of national understanding of the role submarines had in the RCN in particular. Ferguson calls this phenomenon a “surface mentality.”¹⁷¹ This mentality is expressed as the belief that surface vessels are inherently superior to subsurface vessels. It is also driven in part by the relative affordability of surface vessels and their known capabilities compared to the relative mystery of subsurface technologies and operational roles.¹⁷² Milner remarks:

[T]he decision...to adopt the minimal number of less-capable British submarines flew in the face of the navy’s own stated priority: establishing a fleet of hunter-killer submarines. The original decision to proceed with a submarine fleet was predicated...on their effectiveness as anti-submarine vessels. The O-boats could do the job, but the Barbels were much better hunters. Moreover, a fleet of three submarines meant that only one RCN vessel would be available for operational deployment at a time – hardly enough to increase the navy’s anti-submarine capability. In short, the navy had wanted hunter killers, and got clock-work mice for anti-submarine training instead.¹⁷³

¹⁶⁹ Davis, 40; Milner, 231-232.

¹⁷⁰ *Ibid.*,

¹⁷¹ *Ibid.*; Ferguson, 274-275; Delaney, “Submarine Procurement,” 23.

¹⁷² Ferguson, 275.

¹⁷³ Milner, 232-233.

The 1962 Submarine Committee determined that the only way the government would entertain further discussion of submarines was if the Submarine Committee could first prove that there existed tasks that could only be completed by submarines. Second, the Committee needed to justify the purchase of submarines at all. The Submarine Committee succeeded in both of these tasks.¹⁷⁴ It first determined that a bias existed within the Canadian bureaucratic structure against submarines because of the “evil” use of the platform by Germany in the two World Wars. Second, it determined that the point of having submarines was to expand the ability of the RCN to conduct ASW operations.¹⁷⁵ This latter statement has a corollary: if the Navy or the government could not or would not purchase a fleet of submarines of sufficient size to be considered a practical A/S asset, then it would be necessary to purchase a smaller number of submarines in order to train against submarines and thereby develop ASW techniques, thus becoming a useful A/S asset and would thereby avoid the potentially reprehensible use of submarines in active warfare: the RCN would benefit from either decision.¹⁷⁶ The Committee’s report recommended the procurement of nine nuclear submarines at first, to be increased to twelve. It recommended the USN *Thresher*-class SSN, because it possessed the “long endurance, sustained high speed, full ASW detection, tracking, and classification equipment, and a weapons system that would be effective against all comers,” that none of the other extant submarine classes possessed.¹⁷⁷ The Committee recommended that all the boats be constructed in Canada and estimated the cost of the project to be \$400 million stretched over ten years.¹⁷⁸ This plan would require the establishment of an entire industry to construct and maintain the new boats.

¹⁷⁴ Ferguson, 275.

¹⁷⁵ Delaney, “The One Class of Vessel,” 264.

¹⁷⁶ *Ibid.*

¹⁷⁷ Davis, 40; Delaney, “Submarine Procurement,” 23.

¹⁷⁸ Ferguson, 275-276; Davis, 40. Where Ferguson notes a plan for 9-12 SSNs for \$400 million, Davis identifies a \$200 million figure for *two Thresher*-class boats.

“For the interim, the committee proposed acquiring three Oberons and three A-class submarines and continuing SM6.”¹⁷⁹

Its conclusions never went beyond the Naval Board.

The Policy Committee decided the report recommending the SSNs was flawed, and it was “buried on a dusty shelf and the hopes for Canadian nuclear-powered submarines were over for another twenty-five years.”¹⁸⁰ Diefenbaker’s Cabinet decided to postpone acquiring the *Oberons* in September 1962 as a retaliatory measure against Britain because it “had been slow to participate in the offset purchases demanded by the contract.”¹⁸¹ Canada would receive its “O”-boats, but until then it borrowed an SSK from the United States, thereby maintaining an antisubmarine training SSK for the RCN without jeopardising its SSN bid.¹⁸² The United States Congress, because only it could approve the technology transfer to a foreign power, agreed to loan the boat to Canada in May 1960: the boat itself had been selected at the end of 1959 from the United States Navy’s reserve fleet by her future Commanding Officer, Lt.Cdr Ed Gigg, RCN, and three non-submariners. The boat had been designed to serve in the Pacific Ocean during the Second World War. Her post-World War Two conversion to a radar picket boat was supplemented by the Greater Underwater Propulsive Power (GUPPY) process, which gave her more powerful batteries to operate underwater, for greater speed or greater duration – or a happy middle ground between the two. Deployed in Esquimalt, the leased boat, dubbed *Grilse* by the

¹⁷⁹ Ferguson, 276.

¹⁸⁰ *Ibid.*

¹⁸¹ *Ibid.* The senior Canadian submariner, Ed Gigg, advocated strongly that all of Canada’s submarines should be purchased or borrowed from the same source, namely the United States; Davis, 40: Where Ferguson claims that Canada “disciplined” the British after a fashion, Davis states bluntly that Canada “began pressing the U.K. for deliveries, essentially demanding that the *Oberon* program be completed by 1967,” after “a good deal of shilly-shallying...”

¹⁸² Canadian Documents: Claxton Papers, SGR II 223, J.D.F. Kealy, *The Development of the Canadian Navy, 1945-1967*, DHIST, CFHQ (July 1968), pp. 16. See Chapter Three of this paper.

Navy, was assigned the role as a moving target for personnel in A/S courses, and was tasked to the Pacific Naval Laboratory to aid in their research and development of ASW technologies.

Before anything was done, the Tories self-destructed in the federal election of April 1963. Lester Pearson's Liberals formed a minority government and the new Prime Minister appointed Paul Hellyer as the minister of national defence. The process froze again.¹⁸³

In October 1963, Hellyer announced that he was not discussing submarine procurement with the British. This meant that the additional *Oberons* the RCN had been counting on were not going to be forthcoming right away, if at all. In the same breath, Hellyer ordered a "review of Canadian ASW and their recommendations for the most suitable ASW platforms."¹⁸⁴ Irrespective of Hellyer's later decisions, his initial approach toward the navy was sound: he intended to assess the needs of each branch of the military, and find a way to fit submarine procurement initiatives into a deficit budget. The navy continued to investigate SSNs as a side project, while "making do" with the SSKs they had, and planned to acquire USN SSKs in the interim. The Diefenbaker government dithered about the *Oberon* acquisition for so long that it was not until 1963, when a minority Liberal government under Lester B. Pearson was elected, that the boats were included in the ship replacement programme.¹⁸⁵ Cabinet approved the acquisition of three *Oberon*-class submarines from the RN on 5 November 1963: the Navy wished to continue with USN boats because of their high level of modernisation and the ease of future interoperability between the

¹⁸³ *Ibid.*, 277; Haydon, 50.

¹⁸⁴ Maas, 1, 47-48. As Frank Maas points out, Trudeau *père* did something similar in 1968 with his defence policy review, his rejection of the *status quo*, and skepticism of the military's value. From Maas' description, however, Trudeau did not seem to have a specific vision for the Canadian Armed Forces, and was forever in a tug-of-war with the Minister of National Defence Leo Cadieux over funds allocation. Hellyer, however, did have an ulterior motive, and made his mark on the Canadian navy as surely as Pierre Trudeau would several years later. Tracey, *A Two-Edged Sword*, xiv: "It will also become apparent that study of the strategic role of the Canadian navy unavoidably provides support for the Paul Hellyer doctrine that defence policy is a national policy that cannot treat the role of individual services in complete isolation."

¹⁸⁵ Delaney, "The One Class of Vessel," 265.

two navies, but the government returned atavistically to the RN to fix the operational gap in RCN capabilities.¹⁸⁶ This was in essence a decision that took two steps forward (new boats, lower overall cost), and one step back (loss of effective operational subsurface capability) that would roll on through the squadron's thirty-year operational period. Hellyer insisted the "O"-boats were merely an interim solution until Canada could build SSNs onshore; he downplayed the boats' A/S capability, removing from them any reason to undergo modernisation¹⁸⁷: but certain quarters at naval headquarters were perturbed that the Trudeau government bought the "O"-boats instead of launching a new nuclear submarine procurement effort. This decision was probably made in the RCN's best interest, as it allowed the RCN to maintain a subsurface capability at all.¹⁸⁸ Regardless, Hellyer's decisions between 1963 and 1967 made it clear that the RCN's traditional *mode d'emploi* would be at risk: Hellyer simply did not "hold the naval force assignments to SACLANT sacrosanct."¹⁸⁹ Pierre Trudeau would later complain that NATO obligations seemed to drive Canadian defence decisions rather than commitments to NATO being the result of Canadian defence priorities. The RCN had sought to use NATO to pressure Ottawa into certain decisions on submarines. But civilian due process hamstrung the Navy's efforts to bypass the usual procurement processes in order to obtain the submarines it wanted.

The *Oberons* were chosen by default – the *Barbel*-class was no longer an option. The "A"-class boats were entirely obsolete. SSNs were not an option because of their cost, and all that

¹⁸⁶ Delaney, "Submarine Procurement," 25, 27.

¹⁸⁷ Ferguson, 284-285; Middlemiss, 266. The Trudeau government ordered an increase in general surveillance patrols and a decrease in counter-SSBN activities after it came to power in 1968. Ferguson's *Through a Canadian Periscope* summarizes this period in Canadian naval history well, and is too broad a topic to be discussed here.

¹⁸⁸ Delaney, "Submarine Procurement," 25, 27.

¹⁸⁹ Peter Haydon, "Vice-Admiral Herbert S. Rayner: The Last Chief of the Canadian Naval Staff," in Michael Whitby, Richard H. Gimblett, Peter Haydon (eds.), *The Admirals: Canada's Senior Leaderships in the Twentieth Century*, (Toronto: Dundurn Press, 2006), 247-274: 267.

was left which remotely met Canadian needs was the British *Oberon*-class. Politics had set the declining course of Canadian submarine procurement through deferment.

§III. *The Oberons*

Once the *Oberon*-class was chosen and the three boats purchased, they were to arrive in Canada in late 1965, in 1967, and in 1968. The boats, however, had not yet been completed when they were purchased, and so could not yet be used by the RCN. The Admiralty's *Oberon*-class boats displaced 2,410-tons, and were 295 ¼ feet long. They were propelled by Admiralty Standard Range diesel engines, and an electric drive. They carried eight 21-inch homing torpedoes, and had a crew complement of 68 personnel.¹⁹⁰ All three boats' designs needed Canadianization, and *Ojibwa* needed to be overhauled to a small extent: the "snort" de-icer was enlarged, different weapons and a larger air-conditioning unit were installed, as well as improved active sonar and communications equipment.¹⁹¹ The quiet *Oberons* allowed Canadians to carry out operational roles later in the boats' operational lives, amounting to "on-the-spot surveillance of other submarines."¹⁹² This precedent set the tone for the navy's later acquisition of four *Upholder*-class submarines in the 1990s: they too were remarkably quiet, certainly a benefit for the "silent service."

The total cost of the three boats, without torpedoes, was \$40 million, \$7 million more than Canada had wanted to spend. The first progress payment of \$12 million was delivered in 1964, and HMS/M *Onyx* was re-christened HMCS *Ojibwa* (SS72): her sister boats were to be

¹⁹⁰ Canadian Documents: Claxton Papers, SGR II 223, J.D.F. Kealy, *The Development of the Canadian Navy, 1945-1967*, DHIST, CFHQ (July 1968), 15.

¹⁹¹ *Ibid.*, 16.

¹⁹² Croften, 33.

named *Onondaga* (SS73) and *Okanagan* (SS74).¹⁹³ Canada felt it had to expand on the details found in the Department of National Defence's letter of intent to the British MOD, so DND's procurement department began making the changes to the document. In the meantime, a team of Canadian naval construction experts, electrical engineers and supply experts were sent – under the command of a senior officer – to Britain in order to oversee the construction projects. Captain William B. Christie, RCN, was the Canadian Naval Technical Representative DND sent overseas: he and his team started work on 12 March 1964. Well versed in warship construction, Christie and his team were responsible for overseeing the Canadianization of the new boats.¹⁹⁴ Christie was responsible for many of the very pricy – and contested – changes to the boats, including the installation and use of the U.S. Mark 37 torpedo system. This design change, among many others, cost an additional \$18.4 million over and above the \$40 million quote. Nevertheless, Christie convinced the Naval Board of the necessity of the changes, and the Naval Board convinced the government to pay for them.¹⁹⁵ HMCS *Ojibwa* launched before the team made it to Britain, but was little more than a few prefabricated pressure hull segments welded together, with particularly large pieces of equipment “end loaded” before the pressure hull was fully constructed.¹⁹⁶ Small problems remained on *Ojibwa*: “...[T]he RCN wanted torpedoes of a different diameter than those used by the RN; the British light bulb sockets would not take North American light bulbs; the British electrical equipment and machinery did not meet the RCN's standards; and spares had to be brought across the Atlantic at considerable expense.”¹⁹⁷ It took eighteen months for *Ojibwa* to be fitted out. The RCN moved the galley forward of the control

¹⁹³ Canadian Documents: Claxton Papers, SGR II 223, J.D.F. Kealy, *The Development of the Canadian Navy, 1945-1967*, DHIST, CFHQ (July 1968), 15.

¹⁹⁴ Middlemiss, 288-289; Davis, 40.

¹⁹⁵ *Ibid.* The *Oberon* procurement plan was completed in mid-1968.

¹⁹⁶ *Ojibwa* launched 24 February 1964.

¹⁹⁷ Ferguson, 289-289, 293.

room in *Onondaga* and *Okanagan* in order to gain space for sonar equipment. As a result, the very uncomfortable practice of “hot bunking” became an unfortunate way of life.¹⁹⁸ Christie was effective and efficient. *Onondaga*’s keel was laid in June 1964, and *Okanagan* was laid down on 6 June 1965. The building process was three months behind schedule, but it came in under budget, which was a feat in itself.

“Canada Week” at the Chatham Dockyards took place in the third week of September 1965, when *Ojibwa* was commissioned on the 23rd, and *Onondaga* launched on the 25th. HMCS *Okanagan* launched 17 September 1966, and *Onondaga* commissioned on 22 June 1967, commanded by Lt.Cdr Nigel Frawley. The RN’s SM6 left Halifax before the last “O”-boat arrived in Canadian waters.¹⁹⁹ Commander Ed Gigg took command of the First Canadian Submarine Squadron on 22 April 1966, three months after *Ojibwa* arrived in Halifax.²⁰⁰

The navy attempted to obtain a fourth boat in order to conduct operations on the West Coast; Britain refused to build another “O”-boat for Canada, but offered “a much older Porpoise-class submarine, which the navy declined.” An attempt was made by Commanders Jim Wood and Cliff Crow in the 1970s to acquire a used USN boat for the West Coast station, but the extent of their success was measured only by First Canadian Submarine Squadron and RCN officials determining to preserve earmarked funds for a later, larger procurement initiative. These funds were quickly spent on general use instead.²⁰¹ Wood and Crow’s efforts had another, more influential consequence, however. Their efforts brought enough attention to the submarine

¹⁹⁸ “Hot bunking” is the practice of one sailor leaving the bunk, only for the next sailor to hop in, without the bunk having had the chance to cool to a comfortable temperature. This practice was prevalent in the early decades of submarining, when space was at a premium – in fact, during the very early years, it was common practice for submariners to sleep on their torpedoes. Christie’s changes to the boats’ design were separate from SOUP or the mid-life refit that accompanied it.

¹⁹⁹ *Ibid.*, 293.

²⁰⁰ *Ibid.*; Delaney, “Submarine Procurement,” 25.

²⁰¹ Ferguson, 330-331.

service that it did not get ignored or lost entirely through the 1970s, ensuring that the fleet would remain in political and military discussion through the rest of the decade, and well into the next.

The Canadian “O”-boats were not limited in range or utility to CANLANT waters.²⁰² They were often assigned to duty in the Northern Atlantic, and to the United Kingdom - EASTLANT.²⁰³ Wherever “O”-boats were deployed, their operational control was relinquished to the country controlling the specific region’s waters: this was done not out of any nascent feeling of inferiority, but rather out of practicality. As one source notes, “an unannounced submarine in [waters adjacent to those controlled by Canada] would be classified as ‘hostile’ until proven otherwise.”²⁰⁴ Britain supported Canadian efforts to prevent the silent service from sliding into obscurity by offering a “new-to-Canada” *Oberon* in 1978, but the Chief of the Defence Staff, General R.M. Withers, refused the offer: this was a curious move, because the Treasury Board had already approved funds for the acquisition. France offered an operational SSN for \$50 million, but the RCN decided that the infrastructure needed to support such a boat was too great and too costly, and refused the offer. This was again a point of argument in the late 1980s and the 1990s during the various *Oberon*-class successor programmes: SSNs were too expensive for Canada.

§IV. *Aging Oberons and SOUP (Submarine Operational Upgrade Program)*

The First Canadian Submarine Squadron operated out of Halifax, Nova Scotia. It periodically operated in U.K. and other Eastern Atlantic waters and operational zones.²⁰⁵ Canada’s three

²⁰² Canadian waters, Atlantic zone.

²⁰³ Whitby, “Boomers, Dragers, and Black Boxes,” 369.

²⁰⁴ Anon., “Submarines at Sea: The Operational Role,” in *Canada’s Navy: A Wings Magazine Commemorative Issue*, (Calgary: Corvus Publishing Group Ltd., 1985), 108-110: 108.

²⁰⁵ *Ibid.*

Oberons were entering their golden years²⁰⁶: hulls and cladding were slowly degrading, and their incidental equipment – out-dated communication and sonar technologies, obsolete torpedoes, and a lack of spare parts, to name a few – were driving the boats further into obsolescence, and they required major refits if they were to remain operational.²⁰⁷ By 1975, their control systems were out-dated. By the 1980s, their analogue equipment was fully obsolete, their sensors were failing, and their Mark 37C torpedoes were becoming unreliable and unsafe. Curiously, this very obsolescence propelled the three Canadian boats into increasingly operational roles as the navy began to push to retain a subsurface fleet. The *Oberons*' low acoustic signature appealed so greatly to RCN officials and submariners that the boats remained in service with the RCN long after other navies might have scrapped them. The RCN implemented SOUP to keep the boats operational.²⁰⁸ *Ojibwa* was undergoing her mid-life refit, and Submarine Operational Update Program (SOUP) was added into the mix easily enough. The *Oberons* had been made to exacting specifications, and even as they entered their final decade of planned service during the 1990s, their pressure hulls remained within operational parameters.²⁰⁹

Preparations for SOUP began in 1978, and Cabinet approved the programme in February 1979. The intent was to refit and modernise the “O”-boats in order to return to them a competitive A/S capability. Because SOUP itself would not extend the lifespan of any given boat, it was added to each boat's mid-life refit, as it had been for *Ojibwa*. In addition to SOUP,

²⁰⁶ “Golden” only in the sense that is applied to aging. The boats were entering their late mid-life crisis years.

²⁰⁷ Whitby, “Boomers, Draggers and Black Boxes,” and Whitby, “Doin’ the Biz.” Whitby’s pieces contribute great technical and operational detail beyond the scope of this paper to examine and relate.

²⁰⁸ Jockel, *Canadian Nuclear-Powered Submarines*, 13.

²⁰⁹ Delaney, “Submarine Procurement,” 25. This calls for an interesting comparison. The *Barbels* had a pressure hull made of HY-80 steel, a high-yield alloy, which allowed them to descend to more than 1,000 feet; the “O”-boats were ten knots slower than the *Barbels* submerged, had a turning radius twice that of the *Barbels*, and could only descend to 600 feet.

the RCN prepared the Logistic Support Agreement (LSA): the LSA was intended to provide the updated boats with a supply of spare parts. The initiative to replace the unsatisfactory Mark 37C torpedoes with Mark 48 torpedoes, which were also of U.S. design, was not named. The LSA cost approximately \$125 million; each mk. 48 cost \$1.2 million. Cabinet approved the torpedo updates in February 1985 after a long fight, based “on the understanding that they were really for the new submarines, whose acquisition program was under way.”²¹⁰ The new torpedoes with which the *Oberons* were equipped were massive, each incorporating enough power in their nineteen foot long, 3, 480 pound frames to break the back of a surface ship, possessing four times the explosive power of the old mk. 37Cs. Each *Oberon* carried fourteen mk. 48s, six of which were kept in the tubes. The new torpedoes had a fifty-kilometre range and could race toward their target at fifty-five knots (101.86 km/h), and as deep as 915 metres.²¹¹

SOUP was an extensive process. The old vacuum tube operated fire control system was replaced entirely with the digital Singer Librascope Mark 1, originally designed for the USN’s *Los Angeles*-class SSN, in each boat. Three were purchased for the operational boats, and a fourth was assigned to the attack trainer ashore. A real-time computer tracked targets and tracked the paths of fired torpedoes, and kept the command team apprised of tactical information. The passive sonar was replaced by a Sperry micropuffs passive ranging sonar, “which [could] determine a target’s range, bearing, course and speed....This system [could] track up to four targets simultaneously, giving continuous updates on each target’s status, which [were] fed directly into the new fire-control system for an attack solution.”²¹² The long-range passive sonar was not replaced, but information from both it and the periscope could now be fed into the fire-

²¹⁰ Ferguson, 333. The new boats eventually took shape as the *Victoria*-class.

²¹¹ Milner, 273.

²¹² Tracy, *A Two-Edged Sword*, 171; Ferguson, 332.

control system. The short-range passive sonar was simply removed. New gyros, satellite navigation system (SATNAV), a Doppler log, new radio and “internal communications systems, new underwater telephones, and high-endurance batteries” were also installed. “SOUP also provided the search periscope with an image intensifier, which [allowed] for remarkable night vision and the attack periscope with low-light television recording capability.” SOUP cost a total of \$40 million, and came in on budget, even accounting for inflation.²¹³

Canada’s post-SOUP *Oberons*, when in “passive” mode, could detect vessels from a far greater distance than other submarines – such as Soviet boats – could, and, being a rather quiet platform to begin with, posed a great threat to enemy maritime assets, particularly in the *Oberons’* post-SOUP period. An example of a post-SOUP success took place under the command of future Commodore (RCN, Retired) Laurence Hickey. “During my second submarine command,” he wrote, “the boat that I was in charge of came out of refit and then went through what’s known as Work-Ups (WUPS). . . .”

The WUPS consisted of 3 phases: Harbour Phase (certifying the boat’s crew safe to proceed to sea to conduct sea trials), a Safety phase during which the boat and crew were put through mock floods, fires, and various failures, and lastly, the Operational phase, when the boat would be put through a variety of structured operations to train and test the crew and bring them up to operational readiness. One of the structured parts of the Operational phase was an SSX against USS *Pargo*, an American Sturgeon class nuclear submarine. ([https://en.wikipedia.org/wiki/USS_Pargo_\(SSN-650\)](https://en.wikipedia.org/wiki/USS_Pargo_(SSN-650))) An SSX is a submarine-vs-submarine exercise. In this case we were to conduct a dived rendez-vous with *Pargo*, and then each head [*sic*] to a different part of the patrol area. OKA [*sic*. HMCS *Okanagan*] was required to pass through selected geographic locations at certain times, and this would generate contact between the two submarines because *Pargo* had been provide [*sic*.] the positions that we were expected to be at, and thus could preposition for an ambush.

In any event, we were approaching the dived rendez-vous from several miles away when we detected a contact on broadband sonar. It seemed to be in the general direction of the rendez-vous but we were quite a ways back from the R/V

²¹³ *Ibid.*, 333.

that it didn't make sense that it was a submarine. I conducted a TMA manoeuvre²¹⁴ and we pegged the range of the contact at 9,300 yards (about 4.6 miles away). We looked down the visual bearing and saw nothing on the horizon. Then the Sound Room reported compressed cavitation and casing rattle on the bearing of the contact, and this pretty much confirmed that it was a submarine. We continued to close the R/V, and then at the appropriate time I initiated the underwater telephone contact and underwater telephone range check by sound chronoscope, and there she was - *Pargo*. We had actually detected her at over four and a half miles. That could never [have been] done pre-SOUP.

To be fair, *Pargo* was an older SSN, and would soon be decommissioned about six months later, so it's possible that the Americans weren't spending any money on her to keep her quiet. However this was an amazing experience, since none of us could believe that we actually had detected and were holding passive contact on a US SSN at just under 5 miles.²¹⁵

A vital point to be made is that OSPs could not be considered failures from any qualitative standpoint. Commodore Hickey remarked that the lessons learned were based upon a broad operational perspective: "The mission orders for each [OSP] would have had multiple mission aims, with the order of goals or objectives being prioritized. Thus, if the primary mission aim was not realized during the patrol, no doubt secondary patrol aims were met. Likewise, you have to remember that Canada was stepping into the big leagues in starting the OSPs, so it was an evolutionary process."²¹⁶

When Britain chose to phase out its *Oberons* entirely in 1987, the price of replacement parts to Canada rose beyond reason. The LSA had proved inadequate after it was signed in 1989, and so Canada bought HMS/M *Osirus*. She was destined for cannibalisation, and cost \$180,000. Canada also received HMS *Olympus* in 1989 as a harbour training vessel. British Prime Minister Margaret Thatcher privatized the Ministry of Defence's supply department in the late 1980s, and

²¹⁴ *Terminal Manoeuvre Area*.

²¹⁵ Hickey-Adomeit E-Mail Correspondence, 24 July 2016. The SSX in question would have occurred sometime before 14 April 1995, *Pargo*'s decommissioning date. Wikipedia link provided by Commodore (RCN, Retired) Laurence Hickey.

²¹⁶ *Ibid.*; Whitby, "Boomers, Draggers and Black Boxes," 369, 371.

thereby allowed resupply lines to Canada to remain open until 1997. These preparations, upgrades, and windfalls prolonged the life span of the Canadian *Oberon* fleet, and indeed their operational usefulness, for years. SOUP “allowed submarines, for the first time, to be counted against Canada’s obligations to NATO.”²¹⁷

Prior to SOUP, SACLANT could not justify counting Canadian boats against its force commitment because, as mentioned earlier, the “O”-boats were just obsolete enough to meet Canadian, but not alliance, purposes, whereas surface vessels could. Even though the RCN used NATO uncertainties about Canada’s ability to conduct ASW operations to arm themselves during their procurement campaign to obtain the *Barbels* in sufficient numbers, the government was more concerned about cost than military efficiency, and as a concomitant side-effect, less concerned about the political capital Canada could have raised in NATO by supplying an effective submarine fleet for ASW operations.²¹⁸ The Canadian government preferred to follow the USN’s lead (albeit through SACLANT²¹⁹), and had decided Canadian military planners and A/S assets should concentrate their attentions on USN priorities. SOUP was implemented because although the political strength behind RCN acquisitions was lacking, the Navy and its supporters convinced Canadian politicians that it would be a grave mistake if they were to drop the capability entirely. One of the strongest arguments used during this period in support of maintaining Canada’s submarine fleet was that Soviet plans toward war were progressing, and their nuclear and conventional fleets were being placed, in forward, foreign bases world-wide: “Previously,” says Milner, “the Russian threat in the Atlantic had been limited to submarines, a few large cruisers, and some long-range aircraft. During the 1960s the Soviets [deployed]

²¹⁷ Milner, 273, 280; Jockel, *Canadian Nuclear-Powered Submarines*, 13.

²¹⁸ Haydon, “Rayner,” 257-258.

²¹⁹ See Chart 1.1.

[c]ruisers, destroyers, submarines, and swarms of very-long-range aircraft, all carrying missile systems.”²²⁰ Canadian Armed Forces had to be positioned to help NATO counter a naval assault by whatever means it could. As a result, although SOUP was developed as an interim measure to keep the *Oberons* operational, it was a primarily a political move intended to balance both maritime-domestic and allied military need, with conflicting domestic funding needs, which lay mostly along the lines of establishing and maintaining social welfare initiatives *contra* the RCN’s potentially unrealistic dreams of submarine procurement essentials.

Although the *Oberons* had been upgraded, the navy was looking for its next generation of submarines. In the *Oberons*, the RCN got the navy the government wanted it to have: it was an acquisition that was the result of multiple compromises as to kind, capabilities and numbers. For their replacement, the RCN was hoping to get a submarine force closer to its dreams.

²²⁰ Milner, 271.

CHAPTER THREE: Replacing the Oberons, Losing the Nuclear Submarine Programme, and Procuring the Victorias

“[W]hat makes sense militarily seldom makes political sense.”

- Peter T. Haydon²²¹

“If we have nuclear subs, it will be on American terms.”

- M. Nichols, *The Ottawa Citizen*²²²

Peter Haydon once remarked that Defence White Papers come with an implicit caveat: they are *not* binding commitments for any proposed course of action.²²³ One of the strongest critiques of a submarine programme in the 1980s through the mid-1990s was that there was no perceived need for a weapons platform that was almost strictly offensive in nature – Canadian politicians did not see subsurface ASW as a high priority. This chapter discusses the creation and progression of two *Oberon*-class submarine succession programmes, which took form in a poorly considered SSN procurement dream, and in the *Upholder*-class SSK acquisition in the 1990s. *Oberon* succession planning began in 1978, and the path it took saw two decades pass before anything concrete was delivered to the RCN. Responding to an inquiry, Commodore (RCN, Ret’d) Laurence Hickey wrote: “Procurement of the Upholder class was not informed by an [*sic.*] policy arising in the immediate post-war period. They were acquired simply to maintain a submarine capability until the next generation of submarine that met Canadian requirements could be sourced and delivered.”²²⁴ This is indeed what happened.

²²¹ Haydon, “To Be or Not to Be Nuclear,” 58-59.

²²² *Ibid.*, 44, 44n126.

²²³ *Ibid.*, 58; Michel Rossignol, *Canadian Defence Policy (BP-173E)*, (Ottawa: Library of Parliament Research Branch, 1988), 11.

²²⁴ Hickey-Adomeit E-Mail Correspondence, 13 September 2013.

Canadian naval procurement programmes typically had three phases: first was the unfunded DND response to a request for proposal (RFP) from construction companies interested in the project. Once DND had a chance to evaluate the RFPs, it would start the second phase and award funds to the two leading contenders in order to create a project definition (PD) contract. Whichever company offered the best PD would be awarded the construction contract. The plans to procure conventional diesel/electric submarines in the 1980s, immediately prior to MND Perrin Beatty's SSN acquisition attempt, added a step called source qualification *prior* to the RFP. During this phase, the Navy would assess which Canadian companies were capable of constructing which classes of boats during this phase. The Canadian Submarine Acquisition Program (CASAP) intended to extend requests for source qualification (RFSQ) in 1986, allowing firms six months to respond. It would call for RFPs in April 1987. Under this schedule, construction on a new class of boat would be started in 1988-1989, and the first boat of the class would have been commissioned some time in 1994.²²⁵ While this revised format was implemented, the timeframes between the theory and reality did not match, due in large part to MND Perrin Beatty's decision to cancel the SSK succession programme in order to replace it with an SSN procurement programme. Beatty's effort failed in turn, necessitating the development of another SSK procurement programme.

This chapter will sketch out this process. The incidental value of submarines could have been incentive enough to replace the *Oberons* with more modern boats had Canadians held greater interest in possessing a submarine service: Vice Admiral R. Simpson-Hamilton, Chief of

²²⁵ *Ibid.*; Croften, 50.

the South African Navy, once commented that “submarines make small navies credible.”²²⁶ Canada certainly had a numerically small navy²²⁷: maintaining even a small submarine fleet would protect Canadian political interests abroad, and allow exogenous political and military entities to benefit from the practical side of the legend of “Canada’s altruistic commitment to the global community and international peace” and the nation’s “enduring contribution to the Atlantic Alliance.”²²⁸ But militarily, Canada sought to do and gain as much as possible with as little expenditure in funds or effort as was possible.

The potential for the initial SSK succession programme to be profitable for the Canadian shipbuilding industry was great, and the government encouraged Canadian companies and foreign firms (which, under Canadian law, could not compete for Canadian federal contracts without Canadian partners) to form consortia between themselves and equipment manufacturers. Fifteen Canadian firms and several foreign companies formed seven consortia, and between them millions of dollars were spent creating their RFSQs.

[These consortia] were told by [Rear Admiral Ed] Healey²²⁹, now in Killick’s old job [as Assistant Deputy Minister (Matériel)], that they must identify the best designs and combat-control systems in their RFSQ. When CASAP and other experts objected to this on the ground that Canada might end up with the wrong boat or wrong combat-system, Healey held firm, explaining that his decision would protect the navy from cost overruns in a program of such high technical risk. CASAP also imposed a condition – the submarines needed to be proven, i.e., either at sea, on order by another navy, or under construction.²³⁰

The operational requirements for the submarine programme were:

²²⁶ Vice Admiral R. Simpson-Hamilton, quoted in McLean and Hales, 24, taken from Ian Curtis, “Submarines and Small Powers Finally Marry,” *Defence and Foreign Affairs Strategic Policy* (November-December 1996), 8.

²²⁷ See Chapter One.

²²⁸ Leuprecht and Sokolsky, 7-8; Theodore Guillory, *Canada: The Decision to Procure Nuclear Attack Submarines and its Significance for NATO* (Master’s Thesis in National Security Affairs), (Monterey, California: Naval Postgraduate School, September 1988): 1.

²²⁹ Admiral Healey was previously Chief, Engineering and Maintenance (CEM).

²³⁰ Ferguson, 340.

- surveillance of national waters;
- retaining an underwater warfare capability within the collective security environment especially with the United States;
- training for both Canadian and allied forces, particularly those of the United States; and
- leverage with allies for intelligence and information sharing concerning submarines.²³¹

The trend throughout these requirements appears to be close cooperation between Canada and the United States.²³² Each component can be interpreted as being beneficial for Canada as a NATO signatory, just as each component can be perceived as being just as beneficial for the United States as it would be for Canada: thus, each component is not independent of one another but are in fact *desiderata* of North American collective security. The Cold War was still in full-force when the Canadian government began searching for replacements for its aging *Oberon*-class submarines during the 1980s, and when Ronald Reagan became president of the United States, the nuclear character of the Cold War seemed to rear its head once again. The response to this rather tense defence situation found its way into Canadian government policy through Minister of National Defence Perrin Beatty's 1987 White Paper on National Defence, *Challenge and Commitment*, and found its focus in the Canadian Arctic.

If Canada had the capacity to keep tabs on its own waters, as an SSN fleet could allow, Canadian national security would benefit through taking the initiative to protect its own borders; it would also free United States' maritime forces for other commitments. If Canada successfully obtained enough of a subsurface capability to police its own waters, it would enhance Canadian sovereignty while incidentally forcing USN elements out of Canadian waters.²³³ And at the very

²³¹ Haydon, "To Be or Not to Be Nuclear," 58.

²³² Sutherland quoted in Haydon, *The 1962 Cuban Missile Crisis*, 55. R.J. Sutherland wrote in 1962 that this state of affairs was not only anticipated, but natural: "...Canada can never, consistent with her own interests, ignore the requirements of American security; because, in the final analysis, the security of the United States is the security of Canada."

²³³ Beatty, ii. Beatty referred to this as Canada being able to "pursue its own interests." See also Rossignol, 13, 22, 31-32, 39-40.

least, the USN would no longer be able to operate its submarines in Canadian waters with impunity, a situation that would force revisions of Canadian and United States collective security agreements to be made: this could have unfortunate consequences for Canada.²³⁴ The presence of Canadian SSNs in the Arctic would curtail USN activities insofar as the latter would no longer be accountable only to itself. The USN submarine service would have to inform Canada, or at the very least Maritime Command (as the maritime component of the CAF, abbreviated to MARCOM, was known between 1968 and 2011) of their activities and the USN's operational regions in order to avoid being mistaken for Soviet boats. These considerations, rationalised in such a way, would be a difficult sell under the best of circumstances, but in a political environment hostile to submarines on the conceptual and moral planes, it was impossible. The Department of National Defence developed therefore a statement that would help policy makers view submarines in a more positive light and sidestepped the possibility of annoying the United States:

Submarines have several distinct advantages of government policy, both nationally and internationally. They may be prepositioned in an area of interest. Overtly or covertly. They enjoy an unparalleled degree of freedom of action and independence. Finally they can be easily withdrawn without diplomatic cost or commitment.²³⁵

Reasoning that training Canadian, USN, and NATO allies in ASW would lead naturally to an exchange of information between Canada and its allies, without threatening the North American *status quo*, Canada would gain information on nuclear powered submarine technologies and tactics by using its SSKs for allied ASW training. By learning and developing counter SSN/SSBN tactics, Canada would naturally require allies to share much of their intelligence and

²³⁴ Christopher Kirkey, *The Canadian Nuclear Propelled Submarine Program: The Paradox of American Opposition and Permission*, (Unpublished Conference Paper, 31 August 1995), 10, 10n21; Haydon, "To Be or Not to Be Nuclear," 59, 59n180.

²³⁵ *Ibid.*

technical specifications with participating nations' vessels.²³⁶ For a nation with a small navy, and which relied heavily upon the efforts of other nations to keep its maritime regions secure yet required information in order to develop foreign and domestic strategies, tactics, and even technologies, this situation was ideal. However, the possibility that the United States would be forced to share with Canada – or indeed any nation – intelligence regarding its submarines' covert movements, even to allow an allied submarine squadron to operate safely and accurately, was not one that thrilled Washington. The USN simply did not want or need Canadian “help” in the Arctic.

§I. *Phasing Out the Oberon-class*

At the end of their operational life spans, the *Oberon*-class boats in the Navy had exceeded their initial mission plan of being strictly training boats, but “since the early 1970s [Canada had realised that] the Oberons could carry out effective operational roles by providing on-the-spot surveillance of other submarines.”²³⁷ Rear Admiral John Anderson, in charge of the nuclear submarine acquisition programme in the late 1980s, noted that “[t]he less [an *Oberon*-class submarine] moves, the more effective it is patrol.”²³⁸ This did not mean, in any sense, that the “O”-boats were at all competitive at the end of the Cold War.²³⁹ Rear Admiral Richardson pointed out that the “O”-boats' capabilities were limited by the nature of their propulsion systems: they had limited range because of their reliance on diesel engines, and sustained sub-

²³⁶ Kirkey, 10, 10n21.

²³⁷ Croften, 33. Hence SOUP and OSPs.

²³⁸ *Ibid.*; Tracy, *A Two-Edged Sword*, 188.

²³⁹ HMCS *Ojibwa* was paid off as soon as the *Victorias* were acquired, in May 1998, and “*Okanagan*'s planned refit that same summer was cancelled so the refit cost could be put toward the *Upholder* lease-to-own price and she could be used for spares to keep HMCS *Onondaga* operational until July 2000.” See also Haydon, “To Be or Not to Be Nuclear,” 15.

surface operations were limited in turn to mere hours because of the limitations of their electric battery-based motors. SOUP provided the *Oberons* with a new sonar suite, and modern torpedoes: these additions were what made the post-SOUP *Oberons* an effective deterrent – but it took a massive upgrade programme to make them so.²⁴⁰

In his 1987 White Paper on National Defence, *Challenge and Commitment*, Beatty argued that the Canadian Armed Forces' military obsolescence had forced Canada's allies to doubt its ability to stand up to its commitments on the international stage, a situation that led to further doubts about Canada's ability to stay a sovereign nation. By 1984 the Navy in particular was said to be far below its capacity to meet its domestic and allied commitments.²⁴¹

If Canada retained its *Oberons* and refused to upgrade its submarine squadron, or if it chose to eliminate its submarine capability altogether, its allies would be forced to infer Canada was no longer interested in maintaining its own maritime security, forcing others to take over this role. This could have been a reasonable assumption if Canada was eliminating a significant subsurface maritime capability considered important by allied nations involved in collective defence with Canada. But Canada had not used its submarines for territorial surveillance and enforcement to begin with. Rather, its "O"-boats were used initially as training vessels, and they were deployed on OSPs only in the latter phase of their operational life spans. As a result, submarines were valuable to Canada only in the sense that if Canada possessed them, it could offer a rare ASW training service to its allies needing to learn to hunt SSKs, and thus retain military-political influence, and gain political capital, abroad. Canada patrolled its waters with

²⁴⁰ Lt. Cdr. Doug McLean and Cdr. Doug Hales, "Why Canada Needs Submarines," *Canadian Defence Quarterly* (Summer 1997), 20-25: 23. This is an excellent piece, with clear facts and well-formed arguments.

²⁴¹ Middlemiss, 272; Rossignol, 14.

surface vessels, utilised sonar buoys, aircraft, and other means of surveillance.²⁴² Accordingly, the successor SSK class could not be much more expensive than the *Oberons* had been, and had to produce as much benefit, if not more, than what their predecessors had produced.

As the 1987 White Paper on National Defence was being developed, considerable attention was being turned toward the Canadian Arctic. The Assistant Deputy Minister for Policy (ADM[P]) of DND, Rear Admiral John Anderson, reported to the Standing Committee on External Affairs and National Defence (SCEAND) in 1985 that Soviet use of the Arctic was possible, but that “[if] that were seen as a serious emerging threat, the interests of Canada and the United States in doing something about it would be common.” The Arctic was considered to be the primary staging zone for Soviet SSBNs, and nuclear powered boats capable of firing guided missiles (SSGNs²⁴³): While the Kola Peninsula base was of manifest importance for the Soviet North Fleet, the Soviet fleet had secondary routes through which it could access the Pacific, through the Barents Sea (and the Bering strait) and the Kara Sea. The Arctic provided the Soviets with the best way to sail its submarines from the Kola base to the fleet station at Petropavlovsk.²⁴⁴ Transiting from the Kola Peninsula, Soviet submarines had to steam through the Norwegian Sea, risking NATO’s defensive cordon located along the northern approaches to the Atlantic Ocean along the Greenland-Iceland-United Kingdom (GIUK) gap, in order to reach

²⁴² See Rossignol, (1988).

²⁴³ Michael Kofman, “Russia’s Fifth-Generation Sub Looms,” *Russian Military Analysis BLOG*, 9 October 2017. Reposted by Kofman from: *USNI Proceedings* (<https://www.usni.org/magazines/proceedings/2017-10/russias-fifth-generation-sub-looms> [Accessed 20 October 2017]). SSGNs are also referred to as nuclear-powered guided-missile submarines.

²⁴⁴ Nicholas Tracy, “Why Does Canada Want Nuclear Submarines?” *International Journal*, Vol. 43, No. 3 (Summer 1988), 499-518: 500 (<http://www.jstor.org/stable/40202551>), Accessed 5 April 2016).

stations off the eastern seaboard of North America.²⁴⁵ Canada's submarine fleet was insufficient to patrol this region alone, and their age and increasing obsolescence, despite the mid-life refits and the SOUP the fleet had received, made it very difficult for the *Oberons* to counter the threat Soviet Russia's newest submarines posed. A new design, new boats, and a new mission were necessary.

²⁴⁵ Tracy, "Why Does Canada Want Nuclear Submarines?" 500-502; Jockel, *Canadian Nuclear-Powered Submarines*, 2; R.B. Byers, "An 'Independent' Maritime Strategy for Canada," *Canadian Defence Quarterly* (Summer 1988), 19-28: 19; Commander Peter T. Haydon, "The Strategic Importance of the Arctic: Understanding the Military Issues," *Canadian Defence Quarterly*, (Spring 1988), 27-34: 29-30; Rossignol, 6, 14-16. *See also* Adam Lajeunesse, "A Very Practical Requirement: Under-Ice Operations in the Canadian Arctic, 1960-1986," *Cold War History*, Vol. 13, No. 4, (2013), 507-524: 514-516 [<http://dx.doi.org/10.1080/14682745.2012.727800>]. Lajeunesse has written a great deal on Canadian Arctic sovereignty, and these sources can be found elsewhere.

The alternate route available to Soviet submarine skippers was through the Canadian Arctic archipelago, an area that was a navigational mess. The option that a savvy Soviet submarine captain could navigate the Canadian Arctic existed: it was based on the assumption that NATO would not bother to set up defences along effective choke points. If these defences were installed, Soviet attempts to utilise Canadian waters as an insertion point into North American Atlantic-zone waters would be ended. Neither the Bering Strait nor the Canadian routes, such as the Davis Strait, were likely choices for large-scale operational deployments, being too shallow, too hazardous, and too heavily defended. Early Soviet submarine-launched cruise missiles had limited ranges, and so only older boats needed to approach the North American littoral to be at all effective; newer SSBNs, such as the *Delta*- and *Typhoon*-classes, armed with SS-N-18 and SS-N-20 ballistic missiles, could simply sit directly across the polar ice cap from Canada and launch their weapons at strategic targets with impunity. This said, nuclear-powered submarines equipped with newer missiles would still need to close within 3,000 kilometres (km) of their target. Missiles such as the SS-NX-21 and SS-NX-24 fell in this category: the former could be launched through standard torpedo tubes and the latter would likely have a vertical launch capability. The United States' Air Defense Initiative (ADI), as formulated in the late 1980s, would be capable of defending against these weapons, but it was not feasible earlier in the Cold War. Darryl Williams, Operations Support Team Leader, Hydrographic Services Office (HSO) Halifax, provided me with a swathe of naval charts from the HSO archives, which helped me understand the larger navigational complexities of these regions; Marc LeBlanc, Superintendent of the HSO, also entered the conversation. Commodore Hickey, my SME, coordinated this correspondence, and clarified the discussions and questions between myself and Mr. Williams and Mr. LeBlanc. Strictly speaking, the charts are now unrelated to – and therefore not cited in – my thesis, but their contribution is greatly appreciated.

§II. *Acquiring the Victorias*

As will be discussed in detail in Section Three of this chapter, the *Oberon* succession programme took place in the wake of MND Perrin Beatty's failed attempt to acquire a fleet of new SSNs for the Canadian navy.²⁴⁶ The Cold War was ending, and MARCOM was concerned that its role in NATO, and as an instrument and extension of Canadian foreign policy, were not necessarily focused upon what the USN, via NATO, wanted its attention to be focused upon. The 1985 transit of *Polar Sea* through what Canada claimed as internal waters – the Northwest Passage – returned Canadian focus to domestic policy. Specifically, Canada was becoming more interested in supporting Canadian Arctic sovereignty because the apparently careless attitude the United States exhibited with regard to Canadian sovereignty triggered an internal desire for Canada to be able to police its own waters.²⁴⁷ A fleet of SSNs would also relieve MARCOM of the necessity to purchase numerous surface ASW vessels, permitting Canada to fulfill NATO service requirements with ease. Beatty promised to achieve both of these objectives, but his enthusiasm was not tempered by reality. His early inability to realize his proposal was exacerbated by his failure to secure Cabinet support for his project, and he therefore could not obtain the political capital he would need in order to obtain the massive funding block the programme demanded.

Previous SSK-to-SSN transition plans had stalled and had been cancelled in prior decades, indicating that an entirely new approach to succession planning was necessary following the muddle Beatty had inadvertently created; submarine technologies, for both nuclear and conventional weapons platforms, had developed further in the intervening decade between the acquisition of the *Oberon*-class boats and the SSN announcement, and this was a factor that

²⁴⁶ Discussed in *Chapter Three, Section Three*.

²⁴⁷ Rossignol, 18-19.

needed consideration.²⁴⁸ Canada was forced to consider SSKs with greater ardour than before, for it was now blatantly obvious that Canadian politicians would not support an SSN programme unless war was on Canada's doorstep, and perhaps not even then. The Canadian Patrol Submarine Program (CPSP)²⁴⁹ replaced the CASAP in the late 1980s, but its mandate and the reach of its infrastructure and bureaucracy was far less substantial than the CASAP's.

Advancing technologies rendered SSBNs vulnerable to detection, and the mere cost of SSNs encouraged navies to invest in conventional forces: “[t]he role of the conventional SSK will not diminish, rather it will grow....As Canada builds her fleet for the 21st century, the conventional SSK will play a greater and more important role than ever in the new ‘balanced’ fleet.”²⁵⁰ In other words, Canada needed to consider SSKs rather than SSNs in developing its “balanced fleet,” for SSKs would have greater utility, and broader political acceptance.²⁵¹ But why would a fleet of conventionally powered submarines become as important, if not more so, than their nuclear-powered cousins?

Up until the 1980s, SSKs were compared to “mobile mines” that were quiet in comparison to their nuclear-powered cousins, while the value of SSNs lay with in the speed and endurance the platform's nuclear plant afforded.²⁵² Canada continued looking at SSKs because the projected \$300 million per SSN was simply “just too rich for the Canadian budget.”²⁵³ Cost remained the primary impediment between Canada and an SSN fleet of its own. SSKs operating in a nuclear security environment can perform many of the same missions as SSNs, with the

²⁴⁸ Haydon, “To Be or Not to Be Nuclear,” 58.

²⁴⁹ *Ibid.*, 15. This initiative was *also* given the acronym CASAP, but for clarity, the two programmes will be referred to in this paper as CASAP for the earlier programme, and CSAP for the newer programme.

²⁵⁰ Anon., “Submarines at Sea: The Operational Role,” 110; Rossignol, 4, 11.

²⁵¹ McLean and Hales, 20; Rossignol, 13.

²⁵² Hickey-Adomeit E-Mail Correspondence, 19 January 2016.

²⁵³ Anon., “The Next Submarine Generation,” 172.

exception of the SSN's ability to stay on-station for extended periods. Therefore more SSKs were needed per SSN to flesh-out a consistent rotation of boats (on patrol, heading home, heading to an assigned station, conducting exercises with allies, and in maintenance and re-provisioning). When an operationally relevant weapon platform is offered at an affordable price, the circumstances seem to circumvent hesitation from uncertain quarters: lower prices, and the intensity of the pro-submarine lobby, appeal to politicians, and funding is secured.²⁵⁴

The Project M1837 Canadian Submarine Replacement Project was established in 1978 to begin searching for the successor boats to the Canadian *Oberon* fleet.²⁵⁵ In October 1980, approval to begin the assessment and acquisition process for four SSKs was handed down, and its preliminary report was given to MND Eric Nielsen several years later.²⁵⁶ Rear Admiral James C. Wood was in charge of the CASAP during the early stages of seeking a replacement SSK for the "O"-boats. The procurement programme began informally and was limited only by the Chief of Defence Staff's quiet aside to Wood that nuclear-powered boats "would never be politically acceptable."²⁵⁷ Wood aimed to obtain Cabinet approval for the programme by the end of 1981. His investigation was eventually completed as the Future Submarine Study, and the finding of greatest import was that an under-ice capability for Canada's future submarine class was essential.

Wood's team corresponded with the Royal Australian Navy (RAN), which was itself transitioning away from its venerable *Oberons*. The Navy was operating under the assumption that time and cost-savings could be possible if the two countries cooperated on a submarine

²⁵⁴ McLean and Hales, 20, 24-25.

²⁵⁵ Michael Craven, "A Rational Choice Revisited: Submarine Capability in a Transformational Era," in *Canadian Military Journal*, Vol. 7, No. 1 (Winter 2006-2007), 21-32: 25.

²⁵⁶ Croften, 49.

²⁵⁷ Ferguson, 335. This comment seems to have been prescient. *See Chapter Three, Section Three.*

succession project. “This joint venture proposal was incorporated into the final Cabinet document, which recommended that Canada acquire diesel/electric submarines, twelve if possible but no less than four, most of which would be built at home at a price of about \$6 billion [*in totum*].” The document did not reach Cabinet until 1983. The inaction on the topic stemmed from within the Navy itself. For instance, Wood’s “second-in-command, Commodore Chuck Thomas...was reluctant to support the [succession] program, and the Assistant Deputy Minister (Matériel) (ADM[M]) John Killick, actually obstructed it.” When Thomas finally allowed personnel to be dedicated to the programme and allowed office space to be allocated to it within his department, the decision was welcomed.²⁵⁸

Three events occurred in May 1983 that would ensure stability for the CASAP. First, the Australians formalised their Statement of Requirement and their Request for Tender. In addition to delivering these documents to Canada for perusal, Australia also invited Canada to “observe [the RAN’s] design evaluation process.” When Wood took command of MARCOM, he felt confident that although the CASAP’s report and recommendations had not reached Cabinet, the simple fact that he had signed the Memorandum of Understanding allowing cooperation between Canada and the Australians in their search for replacement submarines would keep the issue high on DND’s priority list. Second, Chuck Thomas and James Killick eventually began to support the project, obtaining \$100, 000 from the Deputy Chief of Defence Staff (DCDS), presumably for programme infrastructure expenses. Third, “the report of the Sub-committee on National Defence of the Standing Senate Committee on Foreign Affairs,” entitled *Canada’s Maritime Defence*, was published. It recommended that Canada acquire between ten and seventeen submarines. An optimal fleet strength of ten submarines during peacetime was proposed, “to

²⁵⁸ *Ibid.*

balance the fleet and enhance their ASW capability.” The offer of collaboration with the RAN, combined with the assessment that MARCOM required at least ten submarines, and allowed both MARCOM and the RAN to conclude that they could develop a mutual submarine succession programme and place enough orders that the contractor ultimately awarded the contract would give the two navies what was essentially a bulk-discount, making the entire process somewhat cheaper and somewhat less painful. Thomas and Killick’s apparent approval of the process had the potential to ease the transition.

As the CASAP team was examining which shipyards could potentially build submarines from scratch in order to bring that information to the RAN, and while they were actively sending information to the CDS, the MND, Cabinet, and the Treasury Board, a team of Canadians arrived in Australia and Killick promptly delayed the Canadian component of the joint project for nine months. “He was not going to have CASAP approach industry without Cabinet approval or have a premature submarine submission jeopardize the new frigate program.”²⁵⁹ There might have been a certain element of “gut instinct” on Killick’s part in making this decision: The RAN was proven guilty in December 1985 of collusion with two firms, and of “rigging their evaluation process” in order to make it easier for these firms to obtain the construction contracts. The Australians were reportedly loath to share information with the Canadian team to begin with, and more so after Killick lifted the restrictions on the Canadian side of the project: this reticence, despite the RAN’s apparent enthusiasm, could have raised a flag for Killick.²⁶⁰ The Canadian team returned to Canada in early 1984, confident that its members could start the submarine selection process immediately. CASAP had developed its own agenda, formed around an

²⁵⁹ Ferguson, 336-337. She is referring to CSAP here.

²⁶⁰ For a discussion of the *Collins*-class, see Peter Yule and Derek Woolner, *The Collins Class Submarine Story: Steel, Spies and Spin*, (Cambridge: Cambridge University Press, 2008).

acquisition of twelve to sixteen boats, and was intent on pushing its plan past the CDS and straight through Cabinet. It decided against the possibility of getting quantity discounts for working alongside the RAN. Regardless, the CASAP team returned from Australia with a more thorough understanding about submarine construction. Canada's learning curve informed MARCOM's later decision to abandon collaborative efforts with the RAN. Navy-to-Navy discussions continued through December 1985 and February 1987 between Canada, Britain, France, and the United States.²⁶¹

By December 1984, CASAP had received its first funding block, it had dedicated workspace, and Captain (N) Dent Harrison took command of the project: aside from being an engineer with a reputation for working hard, extensive experience, and integrity. He was also a submariner. Harrison reported to Rear Admiral Ed Healey (Chief, Engineering and Maintenance [CEM]). CASAP felt ready to take its proposal to Cabinet, but was stalled temporarily when Commodore John R. Hamilton, Chuck Thomas' second in command, asked for AIP to be included in the Statement of Requirement as a refit. Healey was interested in France's *Rubis*-class' unique nuclear reactor, and he found the fact that the *Rubis* was only slightly more expensive than modern SSKs very appealing. Harrison was intrigued by the possibility of modifying the proposal made by Energy Conversion Systems, Inc. (ECS). He was interested in the prospect that ECS and the RCN could develop jointly a marine version of the Slowpoke, a low-power reactor design for use in diesel/electrics as a means of operating under ice. The next priority for CASAP was to convince Prime Minister Brian Mulroney's first minister of national

²⁶¹ Croften, 49.

defence, Eric Nielson, that its plan made good sense. Nielson eventually "...support[ed] CASAP with spirit."²⁶²

Nielson scheduled a briefing for 28 August 1985, and Captain Harrison presented the proposed acquisition to a group including MND Nielson, CDS Gérard Thériault, ADM(M) Killick, CEM Healey, and MARCOM Vice Admiral Thomas. Nielson's interest and questions extended the half-hour briefing to two hours and, as Thomas was to remark later, "[Nielson] was a breath of fresh air."²⁶³ Ferguson relates an anecdote from this meeting: "Near the end, Nielson interrupted, 'Was nothing on nuclear-powered submarines?' 'Minister, all we gave you is the art of the affordable,' jumped in Thériault. Nielson pointed a finger at him and rejoined, 'That's my decision, not yours!'" Nielson promised to bring to Cabinet a plan for procuring four SSKs, and on 11 October 1985 he made good on his promise, signing a memorandum recommending to Cabinet the acquisition of four SSKs. Cabinet approved the request.²⁶³

Nielson established the Nuclear Submarine Option Study (NSOS) in 1985, which was to be conducted quietly in order to avoid scaring off competitors for the SSK contract being conducted by CASAP.²⁶⁴ CASAP decided to focus its attentions on two particular submarine designs. In the first instance, the French navy's engineering chief was in Ottawa to discuss procurement, and "quietly offered a diesel/electric version of their small *Rubis*-class SSN." Six other SSK options existed, but the respective design and construction firms for each of the contenders failed to make their projects efficacious: these included the French conventional *Rubis*-class, Germany's IKL 2000, and Sweden's Type A 47/1, none of which were proven

²⁶² *Ibid.*, 338. Again, CSAP.

²⁶³ *Ibid.*, 339. Nielsen made good on his promise on time: he had promised to approach Cabinet by mid-October. Nielson's decisions, rejoinders, and actions illustrate clearly the positive role politicians can play in military acquisition campaigns.

²⁶⁴ See *Chapter Two* of this thesis.

boats, and Italy sank its own bid by failing to meet Canadian deadlines. Only three boats remained in the competition: Britain's *Upholder*-class SSK, the expensive Dutch *Walrus*-class SSK, and the German TR 1700 SSK. Even though CASAP delivered its RFSQs on time, and all respondents named these boats as prime candidates for RFPs, the consortia soon began wondering why the government had not made any official announcements identifying the successful firms. In June 1986, the navy received permission to "seek Canadian sources for the construction of four SSKs," a process completed in March 1987.²⁶⁵

A steady stream of news stories discussing Canadian Arctic sovereignty and the potential that Canada might switch from SSKs to SSNs "increased to a flood." When the expected RFPs failed to arrive, the consortia reached the same conclusion that CASAP had when ADM(M) instructed CASAP to not send the documents out: the interminable months spent developing an SSK procurement programme were going to fall away, all but wasted, in favour of nuclear-powered submarines. The CASAP's SSK programme's director, Captain (N) Dent Harrison listened to Minister of National Defence Perrin Beatty read to the House of Commons his White Paper on 5 June 1987, and was greatly disheartened. Beatty was so certain that Cabinet would approve the SSN programme that he cancelled the CASAP's SSK project. Harrison worried that Beatty's ambition would leave Canada without a submarine service at all if Cabinet rejected the application for funding and the eight destroyers the new SSNs would have replaced slipped off the grid with no replacements planned. Canada's allies, however, had shown a preference for a more robust surface ASW capability. When the SSN programme was announced, displacing as it did the third batch of *City*-class frigates – a ship that had earned wide praise and respect within NATO – Canada's allies were not happy at all.

²⁶⁵ Croften, 49.

Proponents of the SSKs took advantage of the political respite to write various papers on AIP technologies, and the development of unpressurised reactors. When the media got hold of ill-advised comments made by various navy senior officers, such as those made by Captain (N) R.H. Thomas – who made a reluctant admission that Canada received “more return on the investment in frigates and destroyers than submarines” – the media immediately used the comments as “additional ammunition against a defence policy already in trouble as a result of the ending of the Cold War and a premature expectation of a ‘peace dividend’ for social programs.”²⁶⁶ Admiral Lynn Mason wrote a counter argument aimed at the media’s speculation pieces, stating that the submarine was an unequivocally “essential component of a well-balanced fleet. It was obvious that the navy had no intention of giving up its submarines.”²⁶⁷

Vice Admiral Chuck Thomas, who had been promoted to Vice Chief of the Defence Staff in the wake of the 1980s SSN debacle, and Navy Commander Rear Admiral Robert George “both privately predicted that if the government failed to make a decision on the submarines soon, it would be the end of the Canadian submarine service.”²⁶⁸ CASAP was tasked in 1985 to populate the navy with SSKs, boats that were intended to operate well into the 1990s: there was a small but vocal anti-nuclear opposition community. “What was not known at the time,” says Peter Haydon, “was that these groups would coalesce and form much of the nucleus for subsequent opposition to the 1987 Canadian plan to buy nuclear-powered submarines....The modernisation of the *Oberons* passed virtually unnoticed by the media and raised little public comment.”²⁶⁹ CASAP was tied to a full upgrade of the “O”-boats capabilities, SOUP.²⁷⁰ In

²⁶⁶ Haydon, “To Be or Not to Be Nuclear,” 57.

²⁶⁷ *Ibid.*

²⁶⁸ Ferguson, 364.

²⁶⁹ Haydon, “To Be or Not to Be Nuclear,” 16.

²⁷⁰ Rossignol, 14.

addition to the SSNs, Beatty promised an additional six frigates to supplement the six frigates already under construction: the navy would therefore have ten-to-twelve SSNs, twelve frigates, and the four *Tribal*-class destroyers being modernized in the Tribal Class Update Modernization Project (TRUMP). The navy would also benefit from cooperative efforts with the airforce, recently updated with CF-18 fighters, and the Aurora long-range patrol aircraft already in service. These assets, deployed in A/S roles, would be needed along Canada's three coastlines – Pacific, Arctic, and Atlantic. The most controversial component of the 1987 White Paper, the SSNs, would patrol the Canadian Arctic, operating under the icepack. Citing arms control issues, Rossignol indicates that both Canadian and allied policy makers were leery of accepting SSNs into the navy's fold:

Fears have also been expressed that Canadian [SSNs] might become involved in the [United States'] Forward Maritime Strategy ... aimed at destroying Soviet submarines carrying ballistic missiles in [the United States'] home waters. This offence-oriented strategy is viewed as a threat to the stability of deterrence.²⁷¹

However, Rossignol interpreted the USN's Forward Maritime Strategy (FMS) as a defensive policy extending logically from the United States' Strategic Defense Initiative (SDI), which was geared toward preventing Soviet SSBNs, nuclear-powered submarines carrying cruise missiles dubbed SSCNs, and SSGNs from launching their weapons from Soviet waters in the Arctic, or from within the command and control area outlined in SDI. He outlined that he, at least, harboured greater doubt about the likelihood of Soviet boats' presence in NATO/Canadian/United States waters than did the USN.²⁷² He stated that because the U.S. placed so much weight on the possibility of Soviet subsurface infiltration into the Arctic, Canada had no choice but to consider the USSR's presence in Canadian Arctic waters as seriously as the

²⁷¹ *Ibid.*, 14-16.

²⁷² *Ibid.*, 18.

USN did, with the limitation of using SSKs over SSNs.²⁷³ The invulnerability of SSBNs to a nuclear first strike was considered essential to an “assured destruction” capability, and thus one characteristic of a stable nuclear balance. The United States’ forward maritime strategy, which sought to eliminate or mitigate the threat posed by Soviet SSBNs, was considered by some to be a dangerous step. Just as they had with the SDI, critics charged that US efforts to threaten Soviet SSBNs in their Arctic bastions would make a US nuclear first strike appear more probable.

Rossignol wrote that Canadian policy-makers had decided to take its matériel and operational responsibilities in hand in order to protect Canadian sovereignty, a choice that would cost a great deal of money, and political capital to execute, as defined in *Challenge and Commitment*. In fact, “Canada must deal ‘with American perceptions of the threat as much as with the threat itself.’”²⁷⁴ This comment indicates the Canadian awareness that the United States was likely to violate Canadian sovereignty if it believed the threat in the Arctic, or in Canadian Atlantic or Pacific waters, was great enough.²⁷⁵ In other words, Canada would have to fight four battles both military and political in nature, all the while proving it was both benign, and capable of meeting the threats to which it was posed:

- NATO/Canada ASW in the Arctic *versus* the USSR;
- Canada *versus* USA in the Arctic (and complicated further by cooperative and bilateral operations);
- Canada *versus* NATO *versus* USA on ASW operations (incorporating also cooperative/allied operations);
- Canada *versus* USA paranoia.²⁷⁶

²⁷³ *Ibid.*

²⁷⁴ *Ibid.*, 18-19; Haydon, “To Be or Not to Be Nuclear,” 20, 23-25.

²⁷⁵ Rossignol, 19, 19n35.

²⁷⁶ *Ibid.* “A Canadian surveillance system to detect the passage of foreign submarines would not necessarily protect Canadian sovereignty since U.S. forces might still consider it necessary to patrol Canadian waters to deal with the intruders.”; Haydon, “To Be or Not to Be Nuclear,” 19-20.

It is this awareness of U.S. behaviour that carried over into the entire *Oberon* succession programme, and, while vital for Canadian foreign policy, was forgotten in the procurement process that led to the purchase of the *Upholder*-class submarines in the 1990s. Or, perhaps, this insight may have been set-aside deliberately in order to purchase Canada's token, ASW training-focused subsurface capability. If the latter were the case, Canada's greater concern would not have been to create a high-calibre navy but rather to prove to its NATO allies its commitment to training its own and its allies' militaries in ASW, and to hint that Canada was willing to entertain the possibility of purchasing a larger SSK fleet if necessitated by time of war.²⁷⁷

VCDS Thomas resigned in April 1991 in the wake of the new defence policy authored by the new minister of national defence, Marcel Masse, and went "public with his disgust at its contents." When Thomas resigned, the assumption within the submarine squadron and its administration was that there would be no aid forthcoming for their elderly boats. The new Conservative defence policy did, however, make provision for six new diesel/electric submarines, to come in two batches, and they would possibly be outfitted with AIP; and the Canadian Submarine Acquisition Program – CSAP – was resurrected.²⁷⁸ The *Oberons* received a life extension programme. The *Financial Post* clarified the submarine succession programme: "Canada would acquire 'up to three of an eventual six submarines.' In other words, the second batch of three was illusory."²⁷⁹

CSAP was preparing to go to Cabinet with its plans for a new office and preliminary project approval by early 1992. Commander Lloyd Barnes, the project lead at CSAP, announced

²⁷⁷ Rossignol, 35, 40, 42. This is discussed in *Chapter One*.

²⁷⁸ Paul T. Mitchell, "The Contribution of Submarines to Canada's Freedom of Action on the World Stage," *Canadian Military Journal*, Vol. 14, No. 3 (Summer 2014), 15-25: 17. Mitchell identifies that the idea of incorporating AIP into submarine designs had been present in Canadian naval planning since at least 1961 (*See also The Brock Report*).

²⁷⁹ Ferguson, 364-365.

his office was examining five proven SSK designs displacing 2,000 tonnes, all of which would be built offshore. Barnes' list of candidates was only slightly different than that created in 1986: it included Britain's *Upholder*-class, Holland's *Walrus*-class, the German TR 1700, the Type 471 from Sweden, and the diesel/electric version of France's *Améthyste*. CSAP hoped to float its new SSK in service by 2000, beginning construction in 1995-1996. But MND Masse announced in April 1992 that the submarine programme had been deferred for two years, citing "profound geostrategic changes and the imperatives of financial restraint." This was a decision DND made based on expediency rather than being a cut mandated by the government: the federal government was cutting funding across the board, and while the federal government did not *explicitly* reduce available funds to MARCOM, it was nevertheless forced to reduce its spending in order to assure sufficient funds to operate under a future, potentially austere, budget. The minister of national defence would not have made this decision on his own, however: it was clear that his decision was based on budgetary constraints, and this decision likely was informed by the attitude of the CDC in large part. Because the global geopolitical environment was changing so dramatically and with such speed, the government could not in good conscience continue a long-term submarine acquisition programme based on increasingly obsolete military projections. In the absence of a compelling strategic need, which the end of the Cold War provided, fiscal considerations drove the Canadian submarine acquisition efforts. Even though the end of the Cold War triggered a "traditional...short-lived disarmament euphoria," it became obvious that the messy collapse of the Soviet Union had ramifications Canada could not ignore. "For the Navy, the eight destroyers originally traded off for the 10-12 SSNs vanished out of the long-term plan."²⁸⁰ Admiral Lynn Mason, a staunch supporter of submarines, wrote counter-arguments to

²⁸⁰ Haydon, "To Be or Not to Be Nuclear," 56-57.

those of the disarmament community to the effect that although submarine fleets were children of the Cold War, they had evolved into a necessary and useful component of a well-balanced naval fleet. “It was obvious that the navy had no intention of giving up its submarines.”²⁸¹ SOUP, however, “...was really the last time Canadian naval policy was left to the military and the politicians alone to develop and implement; from that point onward, special interest groups and the media played a far more prominent role in the policy process.”²⁸² Special interest groups, such as the steel and ship building lobbies, would argue for industry; the competition for the source of materials and the shipyard would be conducted through Beatty’s new source qualification requirement. It should not be surprising that Canada was less interested in acquiring submarines in the years leading up to and away from the close of the Cold War: the Canadian government instituted changes that would increase MARCOM’s accountability to the civilian policy makers which governed it, and by so doing, made it increasingly difficult for the Navy to acquire new assets. Canada would soon require replacement SSKs, but the process by which they could be acquired became a quagmire of bureaucratic oversight informed by disinterest.

The Special Joint Committee on Defence (SJCD, formed by the Senate and the House of Commons) expected the new SSK programme to cost nearly \$4 billion. SJCD recommended that the navy keep its eyes open for a good deal: if existing funds allowed for the purchase so much the better. CSAP had already found a deal: the RN had been actively replacing its SSKs with an all-nuclear-powered submarine fleet, and had four *Upholders* floating alongside. With Britain’s enthusiastic attitude toward selling the boats and the “four for the price of one” price tag, at \$750 million over eight years, it was a deal Canada could hardly ignore. As the *1994 White Paper on National Defence* put it:

²⁸¹ *Ibid.*, 57.

²⁸² *Ibid.*, 17.

The Special Joint Committee on Canada's Defence Policy found that submarines can conduct underwater and surface surveillance of large portions of Canada's maritime areas of responsibility, require relatively small crews, can be operated for roughly a third of the cost of a modern frigate, and work well with other elements of the Canadian Armed Forces. It also recommended that, if it should prove possible in the current environment of military downsizing around the world to acquire three to six modern diesel electric submarines on a basis that was demonstrably cost effective (i.e., that could be managed within the existing capital budget), then the Government should seriously consider such an initiative. The United Kingdom is seeking to sell four recently constructed conventional submarines of the Upholder-class, preferably to a NATO partner. The Government intends to explore this option.²⁸³

Cabinet allowed DND to continue negotiations even though the emphasis of the new defence policy was no longer upon MARCOM's ASW role.

When Prime Minister Jean Chrétien and his Liberal government came into office in 1993, the need for submarines in the eyes of the Canadian voters and in the opinions of the politicians representing them was devalued. Britain was livid, and promptly offered the four boats to Chile and Portugal in an effort to punish Canada for its dithering. MARCOM developed a financial package that would avoid costs associated with Canadianization, and that would not exceed current funding levels. The First Submarine Squadron, which would be renamed the Canadian Submarine Force in 1995, was amalgamated with the Fifth Destroyer Squadron and would retain Canada's submarine capability as the navy drained the "O"-boats, all of which were approaching the end of their operational lives, of their military effectiveness.

Despite this, Canada's politicians demanded that the navy justify the need for submarines, ignoring work that had been done earlier for the same purpose. In 1995, four operational requirements that only submarines could fulfill were developed as rationale:

- Surveillance of national waters;

²⁸³ Canada, National Defence, *1994 Defence White Paper*, (Ottawa: Minister of Supply and Services, 1994), 34-35.

- Retaining an underwater warfare capability within the collective security environment especially with the United States;
- Training for both Canadian and allied forces, particularly those of the United States; and
- Leverage with allies for intelligence and information sharing concerning submarines.²⁸⁴

There was no new rationale in favour of submarines for Canada, but their usefulness was presented before a new generation of politicians. What is interesting, however, is that Haydon outlined that the navy explicitly made mention of the desire for political capital that Canada could gain from maintaining a submarine fleet. “Without additional explanation,” said Haydon, “this list of missions was a tough sell politically.”²⁸⁵ So, MARCOM restructured what it was attempting to say.²⁸⁶ “They enjoy an unparalleled degree of freedom of action and independence. Finally, they can be easily withdrawn without diplomatic cost or commitment.” Added to these factors were submarines’ unique ability to stay on station, covertly, for extended periods of time.²⁸⁷ Again, none of this was new, because surface navies shared many of the same qualities: they were just repackaged for new buyers. The 1994 defence policy was controversial, but by mid-1995 numbers such as \$800 million and savings of \$200 million was cited. An editorial published in *The Globe and Mail* in 1995 remarked, “[t]he economic and military argument for buying submarines now is unconvincing.... We cannot afford them and do not appear to need them, however attractive the price.”²⁸⁸ Coincidentally, rather than encouraging Cabinet to cancel the programme, critique instead sparked an exchange that focused on the *operational* aspects of a submarine programme, rather than the financial aspects to which the *Globe* attempted to bring public attention. Bringing attention to the operational facets of a submarine programme allowed

²⁸⁴ Haydon, “To Be or Not to Be Nuclear,” 58.

²⁸⁵ *Ibid.*, 59.

²⁸⁶ Kirkey, 10, 10n21.

²⁸⁷ *Ibid.*

²⁸⁸ *Ibid.*, 59, 59n183: *Globe and Mail, Editorial, 2 August, 1995.*

the public, media, and Cabinet to examine the utility of a submarine fleet even in the post-Cold War environment. Had the *Globe* successfully redirected attention to fiscal matters, it is quite possible that the operationally relevant components of the SSK procurement discussion would have been ignored; and yet, the British were offering a remarkably low price for the four *Upholder*-class boats, and it is likely that Canada would have purchased the boats regardless.²⁸⁹

The reshuffled Cabinet approved the acquisition of the *Upholders* in 1996, but the acquisition remained stalled: no further announcements were made until April 1998, when the minister of national defence, Art Eggleton, made the acquisition official. In the intervening years, the public enquiry into the “Somalia Incident” drew Canadians’ attention away from submarines. In Canada, new ministers mean that submarine acquisition programmes must return to “square one each time,” and two new defence ministers in two years, and two CDS in the same time frame, bogged down the submarine acquisition process interminably. Cynically, Haydon suggests that returning to square one can happen any time a minister is asked a question s/he could not answer: one of the most frequent challenges facing military acquisition programmes. Minister of National Defence Doug Young, echoing Huntington’s seminal question, declared that “[t]he navy must be able to provide a compelling explanation of why Canada needs to maintain a submarine service.”²⁹⁰ Even once he received the answer, the *Oberon*-class succession process continued to merely slump its way along. Continued lobbying by experts and special interest groups brought no immediate change. Disarmament groups stymied the process further by developing the “submarines or social programs...charade” despite sixty-eight per cent of Canadian voter support for the replacement of the “O”-boats.²⁹¹

²⁸⁹ McLean and Hales, 20.

²⁹⁰ Doug Young, quoted in Haydon, “To Be or Not to Be Nuclear,” 60.

²⁹¹ *Ibid.*

Britain was unable to sell the *Upholders* through this entire period, and while it was in Canada's best interest to acquire the newer boats, Britain was equally excited to offload them on someone. The United States even entered the equation, and the Permanent Joint Board on Defence (PJBD) hand delivered the minutes of the meeting to the prime minister: by this time, the [sales] package [pitched to the PJBD was so beneficial to Canada] that to decline the offer [of low prices combined with provocative industrial and trade offsets] would have made Canada look unbelievably stupid."²⁹²

Acquisition of the Upholder submarines, which will replace the three Oberon submarines in service with Canada's navy, was announced by the Department of National Defence on April 6, 1998. Funding for these submarines will be from the current defence budget and will cost \$750 million, including \$610 million for the acquisition and \$140 million for project-related costs. This is one-quarter of what it would cost to buy or build new submarines.

"Acquiring these submarines will give us a balanced naval fleet capable of subsurface and surface operations, which is another crucial step in creating an efficient, properly equipped Canadian Armed Forces," said Minister Eggleton.²⁹³

Eggleton visited the *Upholders* in England – HMS *Upholder* (HMCS *Chicoutimi*, SSK879), *Unseen* (HMCS *Victoria*, SSK876), *Ursula* (HMCS *Corner Brook*, SSK878), and *Unicorn* (HMCS *Windsor*, SSK877).²⁹⁴ Canadianization was limited, primarily taking the form of transferring the mk. 48 torpedo systems and fire control systems installed in the *Oberons* to the new boats.²⁹⁵ Dubbed the *Victoria*-class, the four boats were destined for a certainly unhappy early career.

²⁹² *Ibid.*

²⁹³ Department of National Defence News Release / July 2, 1998 / Project number: NR-98.052 ([<http://www.forces.gc.ca/en/news/article.page?doc=submarine-contracts-signed/hnlhlx8w>] [Accessed 15 February 2018]).

²⁹⁴ Ferguson, 366-367.

²⁹⁵ *Ibid.*, 368.

§III. Seeking SSNs Through the 1980s and Losing the Nuclear Submarine Programme in the 1990s

“[T]he acquisition of SSNs could be the key to the implementation of an ‘independent’ Canadian Maritime Strategy.”

- R.B. Byers²⁹⁶

As indicated above, as the navy acquired a limited submarine capability with the *Oberons* and later replaced them with the *Upholders*, the question of the appropriateness and feasibility of SSNs was a constant underlying factor and consideration. The introduction of nuclear submarines to the global maritime stage in 1954 forced the RCN to change its approach to submarine procurement. After experiencing a rousing passage on the nuclear-powered USS *Seawolf* in August 1957, senior Canadian naval officers were convinced that Canada should pursue nuclear propulsion technologies, and an investigative project was launched in 1959.²⁹⁷ Lt.Cdr Ed Gigg opined in 1960 that if the RCN bought SSKs in the political environment of the 1960s, the issue of SSN procurement would never be revisited: in other words, he thought that buying SSKs would close the door on procuring nuclear-powered submarines, permanently.²⁹⁸ Lester B. Pearson’s Liberal government viewed SSNs as an effective ASW capability, and looked into the question of acquiring SSNs again in 1964. In the end, it too concluded that nuclear technologies were too unsafe and too costly to use.²⁹⁹

The question whether MARCOM would entertain the purchase of nuclear-powered submarines persisted through the 1980s, due in part to the navy’s indecision regarding the value of its submarines as offensive weapons platforms or as dedicated training vessels, and whether Cabinet meant to cripple or encourage the growth of a nuclear fleet. The greatest argument in

²⁹⁶ R.B. Byers, 28.

²⁹⁷ Croften, 49; Ferguson, 275, 279.

²⁹⁸ *Ibid.*

²⁹⁹ Croften, 49.

favour of acquiring a nuclear-powered submarine fleet for Canada was to make it possible for Canada to provide surveillance in its Arctic waters for extended periods, something conventional diesel-electric submarines could not do. Cabinet had not ruled-out such an entity. The Canadian discussion to purchase and employ nuclear-powered submarines had been bandied about for nearly two decades, ever since the technology became available, and by the mid-1980s the project was at the forefront of the Navy's attention.³⁰⁰

When Brian Mulroney's government came into power in September 1984, the Department of National Defence immediately gave the Navy clearance to obtain four boats, and the Conservatives launched a supplementary defence review of their own, an investigation that would form the basis for their White Paper on National Defence. The review showed, first, that submarine capabilities were certainly a topic the Mulroney government could not afford to overlook; and second, that Canadian Arctic sovereignty was seemingly tied to Canada's political standing abroad. Michel Rossignol remarked that the External Affairs and International Trade Canada (EAITC) agenda to protect Canadian sovereignty, particularly in the Arctic, was published in December 1986, titled *Canada's International Relations*. The EAITC's report "reaffirmed Canada's alignment with the United States and its NATO allies." Whether the following affirmation was intended by the EAITC or not is up for debate: in addressing Canadian Arctic sovereignty, the foreign ministry was responding directly to the highly controversial – and evidently enraging – 1985 transit of the United States' ship *Polar Sea* through the Northwest Passage, a trans-Arctic route Canada claimed as internal waters.³⁰¹ *Polar Sea's* passage was coordinated by Canada and the United States, and Canadian icebreakers were used: but it

³⁰⁰ Ferguson, 270; Haydon, "To Be or Not to Be Nuclear," 2, 16-18. 1958 through to the present day.

³⁰¹ Rossignol, 13.

certainly caused a fuss, and could have lit the fires for the Canadian MND to announce a federal SSN procurement plan soon thereafter.

Mulroney's minister of finance, Michael Wilson, was greatly concerned about the cost of SSNs, and this concern was well placed: as CSAP started its SSK bid in force, the cost of SSNs was being publicised. Canada had just received its first block of six frigates, and acquiring SSNs would likely force the Navy to give up the second, and possibly the third, batch of six frigates.³⁰² Beatty announced in 1987 that the government of Canada had decided it would procure a fleet of ten to twelve nuclear-powered submarines in order to fulfill the need for a "highly capable, significant and versatile force."³⁰³ He would go on to acknowledge later in 1987 that Canada could not afford both SSNs and new frigates, but he emphasised that the cost of the new submarines could be had at the same cost as "a third batch of air defence frigates."³⁰⁴ It is notable that Beatty specified that the Canadian *government*, rather than the navy, had made the specific provision of SSNs for its supposed procurement programme. The formulation of Beatty's provisions for SSNs made it appear that the political leadership, and not just MARCOM, was supportive of SSN procurement.

Canada's intentions in the last decade of the Cold War were moderate: "A statement of Department of National Defence roles, objectives and tasks, published in 1983, lists Canada's military roles as sovereignty protection, defence of North America, the fulfillment of agreed [NATO] commitments, and international peacekeeping."³⁰⁵ Adam Lajeunesse made a valid point when he observed that the 1987 White Paper, bound as it was to Progressive Conservative rhetoric, was functionally an attempt to protect Canada from becoming a protectorate: with

³⁰² Ferguson, 341.

³⁰³ Beatty, 52-54.

³⁰⁴ *Ibid.*, 54-55.

³⁰⁵ Croften, 24.

SSNs, Canada could police its own waters in the Arctic and more importantly enforce its laws, retaining its status as a sovereign nation. For the Conservatives under the first Mulroney government, issues of national sovereignty and national security were inherently intertwined.³⁰⁶

When Perrin Beatty presented his White Paper in 1987, he introduced the “three-ocean” concept to common discussion: Canada has its borders on the Atlantic, Pacific, and Arctic Oceans.³⁰⁷ He argued that the sea is strategically neutral, and that navies “absorb” regions of waters for “strategic depth,” if they could be supported by sufficient naval resources. It was necessary, he said, to prevent enemy vessels from closing to within firing range of their weapons by deploying sufficient vessels to patrol requisite maritime regions: “Canadian naval forces must be able to respond to challenges within our own waters, if necessary denying their use to an enemy.”³⁰⁸ Canadian maritime strategy had to include the three oceans it touched. Beatty asserted that nuclear powered submarines had unique capabilities, including high speeds for greater durations than SSK platforms.³⁰⁹

In a period of tension or war, Soviet submarines could seek to operate off the deep channels of the Canadian Archipelago to intercept Allied submarines entering the Arctic....In light of these circumstances, the Canadian navy must be able to determine what is happening under the ice in the Canadian Arctic, and to deter

³⁰⁶ Adam Lajeunesse, “Sovereignty, Security and the Canadian Nuclear Submarine Program,” *Canadian Military Journal*, (Winter 2007-2008), 74-82: 79, 82.

³⁰⁷ Croften, 35; Ferguson, 345; Campbell, 240; R.B. Byers, 19. Campbell clarifies the length of the Canadian coastline well, 240n6: “Canada’s mainline coastline, including Newfoundland and Prince Edward Island, but excluding other islands, measures over 58,000 km.” Canada’s total coastline is some 71,000 km. Despite Beatty’s apparent focus on the Canadian Arctic, it seems curious that his rhetoric failed to accent the true size of the region under discussion. *See also* Nicholas Tracy, *A Two-Edged Sword: The Navy as an Instrument of Canadian Foreign Policy* (Kingston and Montreal, McGill-Queen’s University Press, 2012) for a detailed discussion on Canada’s preference to maintain Arctic commitment in order to avoid allowing large portions of its domestic defence commitments to fall into the hands of allied powers (i.e., the United States); Lajeunesse, “Sovereignty, Security,” specifically pages 78-81, also reviews issues of the dispute of sovereignty of the Arctic archipelago in some detail.

³⁰⁸ Beatty, 49, 50.

³⁰⁹ *Ibid.*, 52.

hostile or potentially hostile intrusions. At present [1987], the Canadian navy cannot carry out in the Arctic those roles essential to our security and sovereignty....Our existing naval vessels are obsolete and insufficient to perform today's tasks, let alone those forecast for the next 15 years.³¹⁰

Canada sought to acquire nuclear-powered submarines in part because the Soviet Navy was posing an ever-increasing threat, but also because politicians were beginning to increasingly view the United States as a potential threat to Canadian sovereignty.³¹¹ Soviet submarines' ability to launch cruise missiles was a great concern to Beatty. Their newer cruise missiles could be launched from anywhere in Canada-adjacent waters and would be able to destroy any military or industrial establishment within Canada; and, if launched from waters claimed by the United States, could do the same to the U.S. This would mean that Canada needed to protect its waters from the threat the Soviet submarine fleet could pose to North American security. It was apparent that Canada's traditional maritime strategic and operational roles would need to be expanded if Canada was to be successful against the USSR's imposition into Canadian-claimed waters.³¹²

According to Beatty, "60 per cent of Soviet ballistic-missile nuclear submarines and about two thirds of their nuclear-powered attack submarines are allocated to the Northern Fleet."³¹³ Soviet submarines focused their energies in an Arctic/Atlantic fleet based in the Kola Peninsula, and in the Pacific, out of Vladivostok and Petropavlovsk. Beatty argued that Canada could best contribute to collective security not by creating and entering the realm of nuclear weaponry, but by improving its conventional arsenal. "It may not be necessary to match the other side weapon for weapon, but the more effective the conventional forces, the less is the reliance which has to be placed on nuclear weapons." These conventional forces had to be "able to fight

³¹⁰ *Ibid.*, 50-51.

³¹¹ Lajeunesse, "Sovereignty, Security," 78.

³¹² Beatty, 11.

³¹³ *Ibid.*, 14-15.

over an extended period.”³¹⁴ This was, however, pure speculation on the nature of deterrence, for no one had hard evidence linking qualitative knowledge with an example. It is very possible that two conflicting views of Beatty’s SSN acquisition attempt are equally true. Oversimplifying the arguments, if the Navy and the federal government succeeded in “selling” the SSNs to the Canadian public on the basis of securing Arctic sovereignty, the government would be able to acquire SSNs in order to fulfill NATO ASW in the North Atlantic; alternatively, Lajeunesse argues that by selling SSNs to Canadians on the basis of Arctic sovereignty, Mulroney’s government would use its SSNs to enforce Canadian Arctic sovereignty.³¹⁵ Either perspective was valid at the time, but Soviet SSBNs did not have to come close to North America to launch their missiles as they could fire from their own Arctic bastions, making a Canadian SSN presence in the Arctic unnecessary and undoubtedly irritating to the United States.³¹⁶ Around this time the USN was suggesting a more offensive, A/S counter-force that would seek out, hold at risk and if necessary destroy Soviet SSBNs. This was part of the USN’s “forward maritime strategy”: some saw this posture as destabilizing since the relative invulnerability of SSBNs established the “assured destruction” component in MAD and therefore maintained the nuclear balance between the superpowers, and kept the uneasy peace.³¹⁷

Apart from the strategic perspective, technical considerations existed. Doug Frith identified to Patrick Croften, Chairman of the Standing Committee on National Defence (Canadian Submarine Acquisition Project) in 1988 that there were several advantages of the SSK platform over that of the SSN: lower *initial* cost; lower operating and crew costs; less susceptibility to detection by non-acoustic and sonar techniques; their small size made them a

³¹⁴ *Ibid.*, 20.

³¹⁵ Lajeunesse, “Sovereignty, Security,” 79.

³¹⁶ *See Chapter Two, Section One.*

³¹⁷ Rossignol, 4-5, 7, 16-22; Beatty, 7.

smaller target during engagements with other submarines; their size made them less attractive to magnetic mines; they had less rotating machinery and were generally quieter; they were better suited for operations in shallow coastal waters because of their shallower draft and greater control at low speeds; and their simpler design made for less time-consuming and complex overhauls.³¹⁸ Vice Admiral Chuck Thomas, Commander of MARCOM, clarified Frith's comments somewhat. In the first place, SSKs were roughly 1.7:1 less expensive than nuclear submarines; operating costs were thought to be lower, depending on which diesel engine was being used and depending on "how intensively you operate it."³¹⁹ However, while SSNs had a relatively uniform acoustic signature, SSKs could be very loud when "snorting," or operating at high speed, but could be far quieter than an SSN if it ran on its electric motors.³²⁰ Thomas pointed out that against nuclear submarines, or more realistically any modern seagoing target, an SSK had to adopt an *all-or-nothing* approach: because of its limited battery power, it would have to destroy the target with its first salvo, because "[the skipper] will not get a second time. He cannot run away and he runs out of sensors because he runs out of sensors if he tries. He has one hour at 20 knots or running his sensors or some combination thereof."³²¹ The A/S tactics that were being developed in the 1980s were predicated upon the assumption that the political relationship between the United States and the USSR would stay as it was, and that no major technical advancements would disrupt the *status quo*.³²² Rear Admiral Ed Anderson commented

³¹⁸ Croften, 33-34.

³¹⁹ *Ibid.*, 34.

³²⁰ *Ibid.* "Snorting" was something SSKs did roughly seventeen percent of the time they were submerged, and was something that had to be done at least once every twenty-four hours. As a result, an opposing vessel could track SSKs by computing the boat's speed based on known variables, and develop an approximate course, and approximately how much battery power a target SSK had. SSNs were not quite so predictable.

³²¹ *Ibid.*, 34; McLean and Hales, 23.

³²² Croften, 23.

that as useful as the post-SOUP *Oberons* had been as a surveillance platform, SSNs could do the job better, for longer, and across larger areas: this included the Canadian Arctic, an area virtually off-limits to Canadian conventional submarines. He commented that SSNs could do three times the work of an SSK, an appealing statistic for navalists and politicians, both of whom were interested in getting more for less.³²³

The top two contenders for the SSN acquisition programme were the British *Trafalgar*-class SSN, and the French *Rubis-Améthyste*-class SSN. The *Trafalgars* had evolved from a nuclear technology exchange programme between the USN and the RN in the late 1950s.³²⁴ France had developed the *Rubis*-class, the predecessor of the *Rubis-Améthyste*, independently. The *Rubis-Améthyste* was 79.65 meters long, and displaced roughly 2,890 tonnes when submerged: comparably, the Soviet *Typhoon*-class SSBN was “twice the size of the Queen Mary submerged.”³²⁵

Comparison: <i>Trafalgar</i>-class SSN & <i>Rubis-Améthyste</i>-class SSN³²⁶		
	<i>Trafalgar</i> -class SSN (Britain)	<i>Rubis-Améthyste</i> -class SSN (France)
Diving Depth	300m	350m
Length	85m	79.65m
Displacement (Submerged)	5, 028 tonnes	2, 890 tonnes
Torpedoes	5 tubes; 25 torpedoes	6 tubes; 22 torpedoes
Surface-to-Surface	Sub-Harpoon	SM-39 (Sea) Exocet
Motive Power	Twin geared steam turbine	2x Turbo Alternators
Speed (Submerged)	32 knots	25 knots
Endurance	60-85 days until replenishment; fuel virtually unlimited	

Table 3.1: *Trafalgar*-class & *Rubis-Améthyste*-class Comparative Technical Detail

³²³ *Ibid.*, 33; Ferguson, 273.

³²⁴ Croften, 1.

³²⁵ Vice Admiral Chuck Thomas, quoted in Croften, 34.

³²⁶ *Ibid.*, 36-39.

Submarines chosen under Anderson's auspices as the chief of the nuclear submarine procurement committee had to meet three criteria. In ascending order of importance they were: first, they had to be able to break through Arctic ice; second, they had to carry "highly effective torpedo[es]" in order to penetrate "robust Soviet hulls"; and third, they had to have engines that were designed to be quieter than Soviet engines. Anderson's committee had contemplated hybridised submarines as an option early in the selection process, but determined that diesel/electric engines combined with an AIP unit was insufficient for Canadian needs, because AIP technology was too "immature."³²⁷

Conventionally powered submarines typically rely upon two forms of power production: diesel engines, which require a reliable source of oxygen at predictable intervals (a process referred to as "snorting" through a hull-penetrating snorkel mast) and which charges the boat's lead-acid type batteries; and electric motors, drawing power from those same batteries.³²⁸ Snorting involves a period called "indiscretion time," during which the SSK travels at around six knots (11.112 km/h) and is highly vulnerable to detection.³²⁹ One of the reasons SSKs remain on the arms market is because they are remarkably quiet when they are not snorting, and are preternaturally quiet when running on batteries or AIP: nuclear-powered submarines are plagued with constant mechanical noises referred to as *pompholugopaphlasmisin*.³³⁰ While SSKs have similar noises, they were and are all but eliminated during the relatively short amount of time they can spend on battery power and combined with silencing technologies such as *anechoic tiles*

³²⁷ *Ibid.*, 37.

³²⁸ Anon. "Run Silent, Run Deep: Submarine Technical and Market Trends for the 21st Century," *Naval Forces*, Vol. 28, No. 1 (1997), 69-90: 70-71.

³²⁹ *Ibid.*

³³⁰ *Ibid.*, 70. The author assumes that this is onomatopoeia.

(sound dampening tiles glued to the hull of a boat), scythe-shaped propeller blades, sound-dampening hull linings, among other means.³³¹

A non-nuclear, air-independent form of AIP was demonstrated and proven, installed on a Swedish *Gotland*-class submarine, and on a German Type 212 submarine.³³² During the purchase-planning phase done by Canada in preparation to receive the British *Upholder*-class submarines, the idea to retrofit the boats with fuel-cell AIP systems was floated, and widely advertised.³³³ AIP came in three varieties: the Sterling Cycle power plant; fuel cells; and the MESMA system. The Sterling Cycle engine introduced liquid oxygen into diesel fuel, and helium was used as a working medium – the greatest concern with a Sterling engine as developed by Sweden’s Kockums, was the amount of space and additional weight liquid oxygen requires an SSK to store.³³⁴ The value of the Sterling engine for SSKs, as with all AIP systems, was that they excel at making the already quiet platform to which they are mounted even more elusive in coastal waters.³³⁵ The Department of National Defence cooperated with Ballard Power Systems (Ballard, or BPS) to create a “metal-membrane hydrogen purification” process for Ballard’s Ballard Alpha Generator Package. MARCOM considered installing four 250/500kW Alpha Generators per boat, storing the needed methanol in the boats’ “old diesel tanks at the bottom of the pressure hull.” The Alpha Generators would produce 250kW when operating solely in AIP mode, and 500kW each when snorting. Comparatively, batteries recharged by

³³¹ *Ibid.*, 74, 79, 87; Croften, 34.

³³² Anon. “Run Silent, Run Deep,” 74.

³³³ Dale Grant, “Canada Gets a Deal on Upholder Buy,” *Naval Forces*, No. 3 (1998), 6-16: 12, 16; David J. Bercuson, *A Paper Prepared for the Minister of national defence*, University of Calgary, 25 March 1997, 28-29 (extract); ATIP Request A9-0400, “1990 Records that Assess Summarize DND, Costs and Role in Developing Air Independent Power (AIP) and Fuel Cell Technology and its Possible/Actual Applications at DND,” Released 10 October 1997.

³³⁴ Anon., “Swedish Submarine Technology,” *Naval Forces*, Vol. 15, No. 3 (1994), 40-48: 44.

³³⁵ Richard Scott, “Power Surge,” *Jane’s Defence Weekly*, 1 July 1998.

diesel engines offer a total capacity of 1.0MW; the Alpha Generators would allow 2.0MW when snorting, and 1.0MW when operating in AIP mode.³³⁶ The Ballard fuel cell would store a comparable amount of power.³³⁷ Fuel cells were a very expensive option, due in part to their novelty, but their cost was expected to drop as production increased.³³⁸ The MEMSA system intended for use in the Pakistani Agosta 90B type submarine was a closed-circuit system, relying on the combustion of ethanol and liquid oxygen.³³⁹

AIP systems were neither miraculous nor “game changes” *per se*. They did not allow submarines to travel at higher speeds than conventional engines: they were in fact *comparable* to conventional diesel-electric systems. Nor could they be used to allow SSKs to “sprint” for extended periods. In comparison to diesel-electric systems, AIP systems did not offer any particular advantages, except in one way: they permitted batteries to be charged without forcing the boat to the surface to snort. “In theory, this [offered] the ability to conduct lengthy barrier patrols (that is, to wait in ambush) with greatly increased operational discretion. Whether this advantage [would] justify the added expense of the AIP system [was] highly questionable.”³⁴⁰ Joris Janssen Lok remarked that the technology available to SSKs in the late 1990s made them highly competitive, in the sense that they would now be able to fulfill command, control, and communications (C³I) duties in ways the platform had never been able to before, particularly

³³⁶ Grant, 12, 14.

³³⁷ *Ibid.*

³³⁸ “Run Silent, Run Deep,” 74.

³³⁹ *Ibid.* The article mentions that additional information on the technical side of AIP systems could be found in *Naval Forces*, VI/1996, ppf. 36.

³⁴⁰ *Ibid.*, 74. A briefing note for the minister of national defence prior to 5 August 1997 that the Ballard fuel cell could “increase a conventional submarine’s submerged endurance from 3-4 days to 3-4 weeks. The note mentioned that select companies were already extrapolating the technology for zero-omission vehicles and stationary electric power plants.

with respect to AIP, and improved fuel cells.³⁴¹ Lok argued that AIP increased the duration of sub-surface operations conducted by SSKs by as much as five times.³⁴² This was important, because non-AIP SSKs spent roughly seventeen percent of their sailing time snorting – and making a tremendous racket – which occurred at least once every twenty-four hours. A tracker could therefore calculate the speed and approximate course of an SSK, and estimate how much battery power the SSK had remaining. In other words, a snorting SSK allowed opponents to estimate its combat capability.³⁴³ Extended sub-surface operational periods would allow Canadian SSKs to operate under the Arctic ice cap.

Canadian DND officials viewed the *Trafalgar*-class positively, and considered it far superior operationally to the SSK platform, even if it were equipped with AIP. ADM(M) Eldon Healey stated in 1986 that, based on information from confidential sources, each of six *Trafalgar*-class boats would cost approximately \$453 million CAD, allowing for exchange rates on 16 December 1986. Including \$3 billion for infrastructural development and \$4.5 to \$5 billion in “sail-away” costs (including a weapons set, sonar and communications equipment, and spare parts), the government estimated the total cost of the *Trafalgar* acquisition programme would cost in the neighbourhood of \$7.5 to \$8 billion.³⁴⁴ The programme would include the purchase of four SSKs to replace the post-SOUP *Oberon*-class boats Canada was currently operating.

Anderson predicted the total cost of the programme to be three percent to three-and-a-half

³⁴¹ Joris Janssen Lok, “Submarines Make a Return to Convention,” *Jane’s Defence Weekly*, 19 February 1997, 21-23: 21-22. “Unlike batteries, fuel cells are electro-chemical converters that transform chemical energy directly into electrical power, with heat and water as the only by-products.”

³⁴² Lok, 21. There is a longer discussion of AIP later in this *Section*.

³⁴³ Croften, 34.

³⁴⁴ *Ibid.*, 39.

percent of the total Department of National Defence annual budget, equivalent to \$300 million annually over the course of twenty-seven years.

The Canadian Centre for Arms Control and Disarmament (CCACD) added \$6.8 billion to the cost, factoring in the cost of refits, and refuelling in their forecast. Robert Gillespie, Chief, Supply at DND acknowledged that the CCACD report appeared accurate, but both he and Rear Admiral Anderson reminded interested parties that such long-term costs were referred to in briefs to the government, and that the nature of upkeep costs demanded that they be considered annual expenditures rather than as upfront costs. In other words, the CCACD report attempted to conflate purchase and infrastructural costs with annual maintenance budgets, hoping to overwhelm Canadian politicians with excessively high numbers.³⁴⁵ Admittedly, the projected \$8 billion price tag developed by the DND read a little too good to be true – it was a highly optimistic estimate designed to appeal to politicians and attain their approval for the procurement project. Conversely, the CCACD’s approach was a form of fear mongering: a \$14.8 billion acquisition programme estimate would be enough to scare off most politicians, and would certainly raise eyebrows among the electorate. A more realistic cost for the SSN procurement plan, using the *Trafalgar* as the benchmark – excluding annual maintenance and long-term upkeep – was \$11.7 billion.³⁴⁶ Having said this, once government approval was obtained for the project, both in principle and in fact, cost overruns would be brought forward to Cabinet in order to obtain ameliorating funding. Both Gillespie and Anderson were careful to note that their methods fell within prescribed guidelines established by the federal government and the Department of National Defence: had they not done so, CCACD’s attempt to shut down the

³⁴⁵ *Ibid.*, 39-41.

³⁴⁶ Rossignol, 41-42. There were concerns as early as 1988 that Beatty’s SSN plan would be cancelled due to its potential cost.

programme early could have been successful on purely technical grounds.³⁴⁷ Furthermore, the Navy potentially saved a considerable sum by deciding against building nuclear fuel fabrication and enrichment facilities in Canada, as the government estimated that such facilities would be an unnecessary infrastructural investment for the relatively small amounts of fuel the Canadian SSN fleet would use. Armand Blum, Canadian Submarine Acquisition Coordinator with EAITC stated that Canada would establish a nuclear technology transfer programme – which would include a bilateral safeguard regime in which the “reputable [guarantor]” would “monitor Canadian use of nuclear materials” – between Canada and the supplier of the new boats in order to obtain fuel, thereby eliminating the need for on-shore nuclear refining capabilities and circumventing a potentially high infrastructural cost.³⁴⁸ Anderson clarified this point further by using the analogy of buying a new car: one is usually more concerned about its present cost and performance than about future repair and maintenance costs (e.g. fuel, tyre changes, windshield washer fluid, etc.). Beatty also testified to the Standing Committee on National Defence (Canadian Submarine Acquisition Project), that one *Trafalgar*-class submarine and its operating costs were similar to those of a DDH-280 helicopter; and a *Rubis-Améthyste*-class boat’s operating costs were lower than that of a DDH-280. In other words, Beatty turned the CCACD’s report and the high numbers it cited back on itself, using the known operating cost of an existing operational asset as a benchmark to contextualize his own argument.³⁴⁹

John Lamb of the CCACD pointed out a potential conflict of interest in the proposed arrangement. He noted that the recipient of the technology transfer (Canada) could develop nuclear weapons from materials acquired. He cited the case of Norway and Israel’s nuclear

³⁴⁷ *Ibid.*, 42; Croften, 39-40.

³⁴⁸ *Ibid.*, 46-47.

³⁴⁹ *Ibid.*, 42.

relationship, and indeed Canada's relationship with India. India and Israel had both developed nuclear weapons resulting from materials supplied in technology transfers, and Lamb used these examples as precedents. Beatty underscored in both *Challenge and Commitment* and in his testimony to the Standing Committee on National Defence (Canadian Submarine Acquisition Project) that Canada was not interested in the least in acquiring or developing nuclear weapon technologies. The Committee itself cited Article 14 of the International Atomic Energy Agency (IAEA) standard agreement, which restricted and limited the development of atomic weapons under the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT); it did not limit the development of nuclear propulsion technology, even for military vessels, however. Beatty and the Committee reinforced to Lamb that Canada and its two prospective suppliers of nuclear materials were NPT signatories, and the bilateral safeguard regimen established would ensure that every component transferred between supplier and recipient would be accounted for.³⁵⁰

Canada received technical specifications on both the *Trafalgar*- and *Rubis-Améthyste*-class boats, which were reviewed by DND, External Affairs, Supply and Services, and Regional Industrial Expansion in order to determine whether either boat met Canadian requirements. The largest count against the *Trafalgar*-class was Britain's relationship with the United States. Since 1958, the two nations had held an agreement that the United States Congress had to legislate on a case-by-case basis permission to allow any nuclear-technology information transfer, including reactor equipment and fuel, between the United States and any other party. The U.S. Arms Export Control Act signed by Canada and the United States allowed for the transfer of such items directly between Canada and the United States, and would thereby cut Britain out of the picture in anything but the design specifications of the *Trafalgar*'s non-nuclear components. If

³⁵⁰ *Ibid.*, 46-48. Neither India nor Israel were NPT signatories.

Canada was going to deal with Britain, Canada and the United States would have to agree to alter the U.S Arms Export Control Act to permit Canada to receive United States-derived technologies from a party other than the United States (in this case, Britain). This would also require the amendment of the existing Canada-U.S. Agreement for Cooperation on the Uses of Atomic Energy for Mutual Defence Purposes, signed in 1959. Amending the 1959 treaty required the approval of both the U.S. Senate and the House of Representatives, during or on completion of, a 90-day Congressional review process, and “[t]he review process could take up to 90 legislative sitting days from the time the President submits the proposed treaty for amendment.”

Fortunately, U.S. President Ronald Reagan had already agreed to permit the transfer of technologies.³⁵¹ DND needed the United States to approve the technology transfer before the end of December 1987 in order to meet its own deadlines.

Beatty, Rear Admiral Ed Healey (ADM[M], and the SSN project lead), Commodore Ed Bowkett (in charge of the Submarine Engineering and Maintenance Department under Healey), Allan Gottleib (Canadian ambassador to the United States), Robert Fowler (ADM[P]), Lt.Gen John (“Jack”) Vance (VCDS), and Commander of the Navy Vice Admiral Chuck Thomas travelled to the United States on 8 July, 1987 to petition for the technology transfer: they were promptly informed by the U.S. Defense Department and submarine service officials that “Canada was incapable of managing a nuclear-powered submarine project,”³⁵² and sent the delegation on its way.³⁵³ In an interview with Christopher Kirkey, Dent Harrison remarked that Admiral

³⁵¹ *Ibid.*, 53-56.

³⁵² Kirkey, 11; Ferguson, 349; Tracy, *A Two-Edged Sword*, 191: SACLANT Admiral Frank B. Kelso II (USN) concluded from Canada’s failed attempt to acquire SSNs that NATO signatories should constrain their military aspirations to those they could afford.

³⁵³ *Ibid.*; Tracy, “Why Does Canada Want Nuclear Submarines?” 506-507. The United States Department of Defence “[had] put considerable pressure on the Canadian government to drop the idea of nuclear submarines and concentrate on the surface and air anti-submarine field in which

Kinnard McKee, Chief of U.S. Nuclear Naval Propulsion Operations, “said to Perrin Beatty, right to his face: ‘I don’t know why you’ve engaged in this; you have sadly underestimated the magnitude of the task about which you have embarked.’”³⁵⁴ McKee and Admiral Bruce Demars, Chief Operational Submariner for the U.S. Navy, sharply criticized Canada’s decision to consider the French *Rubis-Améthyste* nuclear boat: “...if you had done a shred of operational research on that small French pick-up truck [it] wouldn’t be in your competition.”³⁵⁵ “Without saying so directly,” said Peter Haydon, “[Admiral Kinnaird McKee, head of the USN’s nuclear reactor programme] and his colleagues didn’t trust the Canadians to guard their nuclear secrets.”³⁵⁶ Admiral Chuck Thomas of the Canadian Navy commented to Kirkey that the U.S. delegation “thought we [Canada] were a technological third world nation....”³⁵⁷ The United States’ concern did not end there. A naval attaché from the United States in Ottawa spoke openly, though likely under the impression that he was off the record, to contractors about the United States’ doubts that Canada could begin and maintain an SSN programme; in March 1988, Senator J. James Exon, and Senator (and former Secretary of the Navy) John W. Warner presented their case that Canada could not run an SSN programme successfully, and both chose to underscore their concerns that Canada could not keep their SSNs safe.³⁵⁸

Beatty did not take this criticism well. To cope, he created what Ferguson calls a “dog’s breakfast” bureaucracy. He created a position at the rank of three-star admiral to run the SSN programme. This admiral was to report to Healey. Thomas developed a new department, Chief,

the Canadian navy is proficient.” An additional concern was that once Canada possessed SSNs, it could influence NATO policy in a manner unfavourable to the United States, but this possibility “[was] not openly acknowledged by the Canadian government.”

³⁵⁴ Kirkey, 11.

³⁵⁵ *Ibid.*, 12.

³⁵⁶ Haydon, “To Be or Not to Be Nuclear,” 48.

³⁵⁷ Kirkey, 12.

³⁵⁸ Jockel, *Canadian Nuclear-Powered Submarines*, 28; Rossignol, 42.

Submarine Acquisition (CSA), in response: it was possible that the new department was merely a front to keep Thomas in the loop of the acquisition project since he was no longer in Ottawa. Rear Admiral John R. Anderson, who had been described as a “surface sailor with little project management,” took his post as CSA in September 1987. CSAP and its assistant project manager, Captain Dent Harrison, was finally told to report to the CSA. Harrison was not pleased: “[t]he CASAP project felt slighted, believing their expertise had been devalued by the [creation of CSA]....”³⁵⁹ Under Anderson, CSA “worked on policies, operations, infrastructure, manning, safety issues, and the impact of nuclear power on personnel and health.” Harrison was answering to two bosses: the Treasury Board told him to report to ADM(M), and “CSA insisted that [Harrison] report to him [Anderson].”

The Department of National Defence accepted a revised Statement of Requirement from the RCN for its prospective boat, which called for:

- Very low noise;
- Very low radiation signatures;
- Excellent passive sonars;
- It had to be equipped with the best available tactical processing equipment;
- Six torpedo tubes compatible with mk. 48 torpedoes;
- And the boat needed to be able to surface safely through three metres of ice.³⁶⁰

Five consortia stepped forward in early 1988, expressing interest in becoming prime contractors for an SSN construction project. The Canadian government encouraged them to consolidate into two consortia in order to be able to cover as many aspects of the construction project as possible, i.e., not only cladding and pressure hulls, but air-conditioning units, torpedo systems, electrical and insulation work, etc.³⁶¹ Interested prime contractors would have eight months to respond for a request for proposals, which would themselves be followed by another

³⁵⁹ Ferguson, 349.

³⁶⁰ *Ibid.*

³⁶¹ Croften, 50.

inter-departmental review. At the time of the publication of the Standing Committee on National Defence (Canadian Submarine Acquisition Project)'s report, the naval procurement programme had not concluded, and the Committee wrote "National Defence planners have tentatively set December 1990 as the target date to begin industrial implementation of the project, with the first boat being completed in 1996, the second in 1998, and the remainder at 18-month intervals."³⁶²

In addition to these potential prime contractors, DND officials requested that a second commercial entity be formed as "a design agent and manufacturer of the nuclear-propulsion plants." This request, according to Rear Admiral Anderson, was both anticipated and expected. James Clarke, president of the Canadian Maritime Industries Association, expected a small number of power plants would be built offshore, and he recommended that a company such as Canatom, Inc., collaborating with Atomic Energy Canada Ltd., build the rest on-shore. He suggested that Canada seek foreign sources of specialized components for cost-effectiveness, and asserted that Canada was technically advanced enough to assemble the boats on-shore. Cabinet approval would be needed in each of at least four stages of the acquisition process for it to proceed: 1) original decision to opt for SSNs; 2) determination of the source country; 3) participation in the definition process; and, 4) final determination of the contractor. General Paul Manson, the CDS, insisted that any contracts written and signed during the process include clauses allowing the government to make unilateral changes to the terms of the construction contract. Beyond the military benefits that the Canadian SSN procurement project would gain, the civilian Canadian industrial community was expecting growth. Approximately 55, 900 person-years of direct employment would occur during the construction phases, also providing the nuclear engineering, electronics, and shipbuilding industries with immense economic benefit

³⁶² *Ibid.*

(approximately sixty-five percent of the programme costs would be “spent in Canada”) and with new, innovative, and otherwise advanced technologies upon which further technologies could be based.³⁶³

Neither the *Trafalgar*- nor the *Rubis-Améthyste*-class met Canadian requirements off-the-shelf. The *Trafalgar* lacked one torpedo tube, and was enormously expensive, but was quieter than the *Oberons*. The *Rubis-Améthyste* was too small to break through three metres of surface ice, was slower than the Soviet boats they would be tracking, and was very loud, but was highly manoeuvrable. CSAP lowered its standards somewhat to permit the *Rubis-Améthyste* to break through only one metre of ice and thereby remaining in competition alongside the *Trafalgar*. This decision garnered sharp criticism from both the United States and Britain that Canada was sailing into an ill-considered course, as “ice of one metre did not occur frequently enough in the Arctic for safety.”³⁶⁴ If Canada chose the *Rubis-Améthyste*, DND would be sacrificing safety for the low price of \$333 million per unit, to which the cost of Canadianization would be added. This would increase the cost of each boat enormously. The *Trafalgar*-class’ biggest drawback was that its fourth-generation reactor was based on U.S. technology, and there was no guarantee that the U.S. would permit the transfer of any nuclear propulsion technology beyond what it had provided to the Royal Navy in 1958 and 1959. CSA estimated that at the end of 1987 – considering that the first hull was to be built in the parent yard overseas – a single *Trafalgar*-class SSN would cost an “unsubstantiated” \$450 million.³⁶⁵

The selection process took time and was lengthy and highly convoluted, but ultimately the *Rubis-Améthyste*-class, developed independently by France without input from either the

³⁶³ *Ibid.*, 51-52.

³⁶⁴ Ferguson, 350-352; Kirkey, 14, 18n43. The *Rubis-Améthyste* utilized an “untested ‘ice-pick’ design, to effectively surface through Arctic ice of more than one meter in depth.”

³⁶⁵ Ferguson, 352-353.

United States or Britain, was chosen.³⁶⁶ 11 May 1988 was expected by many to be a banner day: Cabinet was to meet and approve funds for the project definition phase. It had to approve the concept of the project before it could approve DND's design choice – funding the project was the last phase. No news came, however, and when the end of June 1988 came and went without progress, even outsiders wondered what was going on. DND was undoubtedly panicking. Michael Wilson, the minister of finance, excused the delay as necessary until the G7 summit in Toronto, to which Britain and France were expected to attend. Apparently the 11 May meeting was cancelled and never rescheduled. Without any publicity, this un-meeting ended the DND's efforts to run a successful SSN acquisition programme. The Canadian public had no idea what was going on behind the scenes.

The Treasury Board had initiated a highly detailed inquiry of the 1980s SSN procurement programme: after all, it had been keeping a close eye on the process after Harrison had resigned in December 1987 to protest what he deemed a flawed procurement process. The Treasury Board's investigation alleged that the SSN project was poorly developed from the beginning. Costing was flawed, there had been little external examination of the programme despite the legislated necessity of same, and programme leaders deemed themselves and their decisions

³⁶⁶ *Ibid.*, 357; Jockel, *Canadian Nuclear-Powered Submarines*, 28, 31-38; Kirkey, 3-4, 6, 7, 7n10, 8. The USN and the RN had, by April 1988, some thirty years of experience running a remarkably safe and quiet nuclear reactor, a propulsion technology that had, clearly, proven itself. Frank Gaffney, assistant secretary of defense for international security policy (United States), voiced a thinly veiled concern that French designs compromised “quality, reliability, and safety,” three aspects the USN and RN were extremely concerned with keeping in their own SSN propulsion programmes. Ty Cobb, director of European and Canadian Affairs at the National Security Council, insisted that a “‘Chernobyl at sea’” – a nuclear disaster in an SSN or SSBN reactor – from any navy would “‘put the whole program in jeopardy.’” He was referencing specifically the USN's nuclear propulsion program, but as Andy Travill (a Canadian lieutenant in the nuclear submarine project management office) remarked, the USN had determined that the first Western nuclear submarine propulsion failure would also be its last for all Western nuclear propulsion programmes, rendering it unfeasible purely on the basis of the voters' disconcertment.

beyond reproach. The Treasury Board discovered that CSA's internal issues were suppressed and swept under the rug. CSA had kept the majority of the two submarine classes' operational requirements away from outsiders: this meant Cabinet would not have information relevant to which class of boat they were choosing. The ministers would have been voting blind, not knowing the comparable values of the two SSN classes or their respective and actual value to Canada.

The Treasury Board was also convinced that CSA, under Anderson, had chosen the French *Rubis-Améthyste* with insufficient supporting data, and that the small, if revolutionary, boat posed too great a technical risk to be safe for Canadian sailors. "[The Treasury Board] gave their opinion that the infrastructure and a few SSNs, probably five, could be had for \$8 billion."³⁶⁷ The Board prepared this information as a brief for the Privy Council, which read it on 8 May 1988, a Sunday. The Privy Council Office (PCO) alerted Joe Clark, who was serving as acting prime minister: he immediately called a meeting with the minister of finance and the minister of national defence. Both Clark and Wilson agreed that the 11 May 1988 meeting be cancelled, based on the Treasury Board's investigation.³⁶⁸ "When [Perrin Beatty] read [the brief] in the company of the two ministers, who had never liked the SSN program in the first place, his feelings must have ranged through shock and anger to embarrassment." While Mulroney ordered an external review, many blamed the Treasury Board for sabotaging the SSN project. Soon, Canadian interest in the SSN project faded away: press reports appeared in June that Cabinet would not meet again in July to discuss the project. Later speculation, despite Beatty's assertions

³⁶⁷ *Ibid.* Perhaps the United States was correct in their assertion that Canada could not support an SSN programme: if the Canadian public could not support a relatively inexpensive investment into SSKs, there certainly would not have been much support for the loss of the welfare state, built over the course of forty years, in favour of a handful of submarines with no easily understood, concrete purpose.

³⁶⁸ Tracy, *A Two-Edged Sword*, 190-191; Ferguson, 357-359.

to the contrary, held that the SSN project was under review, or that the Conservatives were “having second thoughts” about the SSN procurement plan. Interest died as the summer faded into autumn.

In a sense, MARCOM had dug its own grave, but it is important to note that the entire Navy was not to blame. The internal mechanisms it had created for submarine procurement had skipped the independent review process, communicated poorly with politicians, ignored Treasury Board requests for information, and had altered its Statement of Requirement in order to accommodate the French. This latter *faux pas* poisoned the atmosphere within the government, trending toward a distinct distrust of DND. “It is ironic,” Ferguson says, “that the nuclear-power issue ended up having nothing to do with the submarines’ fall from grace.” Instead, it was the timing, rather than the contents of the Treasury Board’s revelations, that sunk the SSN project on 8 May.³⁶⁹

The end to Canada’s aspirations to possess an SSN fleet in the 1980s and early 1990s came suddenly and without notice. Prime Minister Brian Mulroney had to face the economic imperatives facing Canada, or at least the potential threat that a declining economy could have on the SSN programme. The International Monetary Fund (IMF) informed his second majority government that Canada was facing a situation wherein it could encounter a drop of the value of the Canadian dollar, suffer higher interest rates, and could experience a stock market crash if it did not cut nine billion dollars in government spending immediately.³⁷⁰ One of the easiest ways to cut future spending was to cancel programmes not yet in progress: the plan to acquire SSNs fell into this category, and Mulroney decided to follow the IMF’s advice.³⁷¹

³⁶⁹ *Ibid.*

³⁷⁰ Haydon, “To Be or Not to Be Nuclear,” 54, 55, 55n170.

³⁷¹ Rossignol, 42.

The programme's fall was encouraged in part by the United States Navy's fear of Canadian SSNs compromising USN subsurface operations in the Arctic archipelago: Canadian SSNs, noted Joe Clark, would force the USN to disclose its operations to Canada in order to avoid "risks to very expensive apparatus of their own."³⁷² This illustrates two distinct arguments the United States levelled against the Canadian SSN procurement programme. First, Canadian SSNs could compromise the USN's SSN/SSBN operations in the Arctic, even if Canadian SSN missions were only to protect Canadian Arctic sovereignty.³⁷³ Second, the United States was concerned that Canada's entry to the elite SSN "club" would be performed using dangerously low standards of both technology and infrastructure, each informed by a distinct lack of financial and political support from the Canadian government.³⁷⁴ The reality, however, is that Canadian defence spending is historically mercurial, reacting poorly in peacetime, and responds to wartime with vigour: as a result, external observers have remarked that "Canadians

³⁷² Joe Clark (Secretary of State for External Affairs) as referenced in Kirkey, 10, 10n21. See also Joseph T. Jockel, "The US Navy, Maritime Command, and the Arctic," *Canadian Defence Quarterly*, (December 1989).

³⁷³ Rossignol, 42; Jockel, *Canadian Nuclear-Powered Submarines*, 1, 25-27, 32. Jockel remarked that Canadian SSNs would not be allowed to interfere with Soviet submarines in the Arctic during peacetime, beyond signaling the transgressing boat it was in Canadian waters, but could only "log the location, the time and the character of the submarine," information to be used in subsequent diplomatic and legal proceedings." Neither the *Trafalgar*-class nor the *Rubis-Améthyste*-class boats were deemed suitable to keep up with advancements in Soviet technologies, and USN submariners were concerned that Canada would barrage the USN with "incessant...requests for access to the advanced ASW detection and communications technology [the USN and US submariners] would prefer to keep in exclusively American hands...."

³⁷⁴ From an interview with William Siefken by Christopher Kirkey, 10; from an interview between Dwight Mason and Kirkey, 10, 10n21, 12n25 (Interview with Chuck Thomas). Without Canadian – or even any other allied nations' – submarines in the Arctic, USN submarines would be able to choose tactical targets by elimination: "We do not recognize that acoustic signature, therefore it must be hostile." If Canadian SSNs were in the area, tactical data and political discourse would become increasingly complex. In an interview with Kirkey, Dwight Mason opined that it was the USN's operational concerns – namely the ability to maintain a monopoly on sub-surface operations in the Arctic – that was of greater import to the negotiating team, than any concern over insufficient Canadian SSN infrastructure; Jockel, *Canadian Nuclear-Powered Submarines*, 28, 30.

have not chosen to allocate the necessary resources to provide for sustained naval preparedness,” and that “[e]mpirical studies of Canada’s contributions in two world wars and during its lengthy subsequent career as a peacekeeper show that the...level of commitment [Canada displayed] varied considerably.”³⁷⁵ But this was the reality of the situation. If Canada’s major ally – the one its defence spending was supposed to impress – was not “impressed” by a Canadian SSN program, then it did not meet the most basic objective of Canadian defence spending. When combined with the domestic fiscal realities that made the SSN program impossible, the decision to cancel was strategically sound regardless of the opinions of experts at the time.

There was an election in the fall of 1988 that was fought on the issue of free trade. The Mulroney government did not need the additional headache of a military procurement program for which there was little public support and insufficient backing within its own government. Along with the identified problems posed by excessive cost, and the potential sacrifice of additional frigates from Canada’s ASW surface fleet, there appeared to be valid reasons for cancellation of the SSN programme. In the face of these considerations, supporters of the SSN program could not mount compelling strategic or political counter-arguments. Neither the nature of the contemporary (soon to be dramatically altered) strategic environment, nor the concerns about Arctic sovereignty, could justify such a daring program.³⁷⁶

As expected in democratic-civil military relations, the civilian leadership, both elected and bureaucratic, had exercised its legitimate oversight role and reached conclusions different than those of the programmes’ supporters. It can be argued that the political leadership, well aware of Canada’s dire economic and fiscal situation, and the technological and manufacturing hurdles that needed to be overcome, should have stepped in sooner to kill the programme. Given

³⁷⁵ Guillory, 1; Haglund and Roussel, 6; Sokolsky, “Canada and the Cold War at Sea,” 209.

³⁷⁶ Rossignol, 13, 16, 18.

Canada's dire fiscal situation and the weak political support available for the SSN project, even within Cabinet, it is clear that the SSN procurement programme should have never have found its way into the 1987 White Paper, where it joined a list of equally unrealistic spending promises. This speaks directly to one of Nossal's main points, that DND and the CAF have a tendency to come up with unrealistic pie-in-the-sky procurements that exaggerate Canada's potential role in the world, and underestimate the political leadership's willingness to pay for such a role through higher military spending.³⁷⁷ As Nossal argues, procurement decisions may be needlessly complex and protracted, but he has also argued that governments pay no political price for this and therefore governments have acted realistically.

Major procurement purchases of this kind are ultimately based on public opinion. Most of the time the public is indifferent. But in the case of the SSNs, there was a vigorous public debate at the time and the fact was public opinion could not be mobilized in favour of this rather dramatic move. Not only was the strategic case somewhat weak, but the government itself was divided over the wisdom of the program. This was not a case of public ignorance. Here the 'know nothings, knew something'; they could easily sense that the RCN and the government had a weak case, especially given fiscal realities and the changing global environment. The 1987 White Paper, with all its hawkish rhetoric, seemed to be at odds with the concept of improving East-West relationships. By the time of the 1988 election, the SSN program had become a political liability, which the government, facing opposition to the Free Trade agreement, was only too happy to rid itself of. So in this case defence policy was partly, and appropriately based on public opinion.

³⁷⁷ Nossal, 19-20, 23, 27, 29, 110-120. Once the SSN bid was torpedoed, the naval staff returned to considering SSKs: this is discussed in Section Two of this Chapter.

CONCLUSION

“It seems clear that the move to a major procurement decision is often somewhat erratic, not always discernable, subject to marked (and perhaps unexpected) changes of direction, and certainly not always guided by what are considered to be military necessities. One must hope that the indecision and the stumbling – to a large extent not the fault of the naval service – [of submarine procurement decisions] will not be repeated.”

- Rear Admiral Mathwin S. Davis³⁷⁸

The story of the Canadian navy’s submarine posture during the Cold War and its aftermath is one of successive compromises. Yet these were compromises that reflected the realities of the international strategic and domestic political and fiscal environment in which the navy had to operate; they also reflected the navy’s own mistakes in trying to adjust to those realities when it came to procurement of a sub-surface capability. Throughout this period politicians, senior DND officials and the naval leadership all found it difficult to convincingly answer Huntington’s seminal question when it came to submarines: “What function do you perform which obligates society to assume responsibility for your maintenance?”³⁷⁹

The problems the navy had in answering this question were not, contrary to some predictions in the aftermath of World War II, that with the advent of atomic weapons sea power would no longer be important in global security relations. The concepts developed by Mahan and above all, by Corbett still applied, refined by Huntington’s understanding of the increasing “transoceanic” purpose of seapower in the modern era. The marriage of nuclear propulsion and nuclear weapons in the navies of the United States and USSR, and given the bipolar nature of the international system, would endow maritime forces with power and influence it had not witnessed in the past. Yet this development did not negate the importance of conventional naval

³⁷⁸ Davis, 40.

³⁷⁹ Samuel P. Huntington, “National Policy and the Transoceanic Navy.”

forces, especially for NATO signatories that sought to maintain a wide range of naval capabilities in order to help assure its primary land-oriented deterrent posture in Western Europe and essential transatlantic sea lines of communication. In this effort, the small to medium conventional navies of most of the allies could and did make valuable contributions to collective Western defence. Amongst the capabilities maintained by the more modest navies was the capacity for anti-submarine warfare, and submarines were useful weapons systems in this regard. Thus, the Canadian navy's efforts to maintain a submarine fleet were consistent with the prevailing strategic assumptions of the era.

These efforts were also consistent with successive Canadian governments' responses to the broader strategic environment. Canada wanted in: it wanted to be part of and contribute to Western collective defence efforts, especially NATO, but also to a cooperative approach with the United States in the defence of North America. This participation was consistently judged supportive of Canada's national security interests, its sovereignty, and its desire to be seen abroad and at home as an active and independent global actor. Canada could make a tangible contribution to Western collective security as a conventional sea power, and still meet Canada's political goals. But this still left the question of how much of a naval contribution could and should Canada make, of what kind, and in particular whether that contribution should include a submarine capability. If so, the questions of how large and how sophisticated did this submarine force have to be arose. Notwithstanding the strategic and political factors that favoured an ASW role for the RCN in the Cold War, there were never any clear answers, and once the navy had navigated the difficulties in arriving at a decision, its decision would plague the Navy's submarine service for decades.

Canada has acquired vessels that have been loaned, rented, second-hand and brand new: SM6, *Grilse*, and the *Victoria*- and *Oberon*-class boats respectively. In the case of SM6, Britain loaned a small number of vessels to Canada once Canada realised that the weapons platform was going to be a permanent fixture in world navies after World War Two. *Grilse*, and a handful of boats like it³⁸⁰, was acquired as a “stop-gap” measure to ensure some form of subsurface relevancy as the RCN developed A/S methods and explored extant boat classes, and technologies. These pauses in easily discernable Canadian submarine service progress have occurred when funding for larger submarine projects have not been available, or when the political climate in Canada has been against discussions of submarine acquisition projects. The same “stop-gap” mentality can be applied to the acquisition of the *Oberon*-class boats for they too were acquired with one eye trained on future procurement programmes, namely the *Upholder*-/*Victoria*-class acquisition: this is clearly articulated in MARCOM’s SOUP for the “O”-boats, specifically the purchase and installation of the mk. 48 torpedo system that would later be transferred to the new-to-Canada *Victoria*-class submarines. While in some instances dithering on issues of submarine projects at the Cabinet level has forced the navy into acquisitions of last recourse, the boats Canada has acquired have been able to meet Canadian strategic goals.

Fiscal and geopolitical changes post-World War Two made it necessary for Canadian politicians to axe most of its wartime fleet: after all, if there is no reason to keep a surplus of vessels, why should taxpayer’s money be used to maintain them? This engages the discussion of Canadian military “easy-riding” – in other words, making do with the barest minimum expenditure for the greatest gain while allowing larger nations to spend the bulk of operational

³⁸⁰ These other vessels have not been discussed in this paper, but include HMCS *Rainbow*, and HMS/M *Token*, for instance.

funds – within NATO and its other alliances. Consequently, Canada floated a small navy supported by the means of a medium-sized political power. The submarine service did not exist in a military or political vacuum. As the Soviet threat became increasingly apparent, NATO required its signatories to fulfill their commitments to the alliance. Part of this demand was an ASW-focused fleet from Canada. Policy-makers realised two things at the outset: first, an A/S fleet could not learn to combat submarines unless it had submarines to exercise with; and second, even if Canadian voters were not thrilled with the idea of possessing a full-sized and modern submarine fleet, it could nevertheless possess a handful of boats and fulfill its allied role as a “training fleet.” Canada therefore designed its navy, and its submarine fleet, along the lines of what Samuel Huntington dubbed a “transoceanic navy”: its surface fleet could operate as far from home as NATO demanded and Canadian willingness required, while its submarines stayed in home waters. By serving as “clockwork mice,” submarines would earn their place in the broader alliance structure.

Uniquely in the history of Canada’s subsurface fleet, the navy had a great deal of control over the design and construction phases of the “O”-boats, and so was able to get boats as close to the navy’s ideal as could be had. Dithering by the politicians in Cabinet cost Canada the opportunity to purchase several different weapons systems, such as the United States’ *Barbel*-class SSK: they were highly advanced, large boats, but the Canadian government’s overriding concern over price points made them unlikely acquisitions. In the end, Canada purchased the “O”-boats because Diefenbaker’s unfamiliarity with defence topics in general, and submarines in particular, made them the only available option. The First Canadian Submarine Squadron was pushed well past the “O”-boats’ comfortable operational lives as MND Perrin Beatty attempted

to acquire a large fleet of SSNs for MARCOM, and had to stay serviceable until SSK replacements could be found after Beatty's SSN bid failed.

Where it had been determined, finally, that future progress of the Squadron was reliant upon the bilateral relationship between Canada and the United States, policy-makers decided that there was so little need for submarines following the collapse of the Soviet Union that they returned atavistically to the RN, and purchased the four *Upholders* moored in a British shipyard, at a price too good to be true. It was. The *Oberons* were phased out due to necessity stemming from increasing obsolescence. The mid-life refit they obtained in the 1980s could take them only so far. Perrin Beatty's attempt to secure SSNs failed as a confluence of factors occurred: Beatty, in his enthusiasm, did not follow due process and was unable to secure the vitally important political capital in Cabinet he needed. The Treasury Board caught wind of mistakes in the process, mistakes of which Beatty was seemingly oblivious. In another failure of due process, Beatty was misinformed about the actual, much higher, costs of the SSN project. The Treasury Board's report caught him flat-footed, and the collapse of the SSN acquisition followed soon after. Three distinct factors ended the RCN's bid for either fast-attack nuclear-powered submarines or effective offensive conventional submarines (*Thresher*- and *Barbel*-classes, respectively) in the 1960s. First, the ministers whose departments would be involved with the acquisition process were "paralyzed" by the cost of the projects. Second, the aggressive nature of operational fast attack submarines deterred lawmakers from pursuing submarine procurement.³⁸¹ Third, the navy's submarine experts and supporters failed to "present a firm, united front on the subject." The delay this caused eventually formed a "strong desire ... to have anything at all that operated underwater clouded their resolve to hold out for SSNs or the Barbels." In other words,

³⁸¹ Milner, 183. The comparison Milner uses is the behaviour of wolves versus the role of sheep dogs.

the RCN's senior staff failed to present their strategic expertise and the technical evidence at hand in a manner that would conclusively convince the government of the need for expensive and modern submarines. The Navy capitulated to the government to such a degree that the Navy had to accept charity from its allies rather than creating, executing, and maintaining a modern subsurface capability of its own initiative.³⁸² This series of circumstances suggest that it was not capable of fighting for its boats in the political realm, and were thus unable to convince the cost-conscious politicians of the validity of its choices: the political capital the navy needed was lacking, as were those competent to wield it. In the background, the Navy had been exploring SSKs with AIP as a contingency, which led to the purchase of the *Upholder*-/*Victoria*-class boats, albeit without AIP.

Taken together, there were four factors that can explain why Canada acquired submarines in the numbers, and kinds it did. These influences were not secret. First, Canada had to find a way to contribute to NATO's maritime posture, despite a medium-sized demographic coupled with – or perhaps burdened by – low military spending. Secondly, this contribution had to come in the form of a non-nuclear navy, both nuclear propulsion, nor for nuclear weapons, for the Canadian polity would not support the financial cost of nuclear programmes. Third, NATO had developed a system of “burden-sharing,” in essence a programme that allowed nations to contribute to the alliance what they felt they could afford to contribute while allowing larger, wealthier nations to bear the brunt of military spending, rather than a strict GDP-to-demographic-to-population schema that was the alternative: thus anything any NATO signatory chose to contribute would be welcomed. Canada decided it could fulfill NATO's need for a conventional A/S training programme, and so it focused its navy's disposition on surface ASW,

³⁸² *Ibid.*, 226-227.

while minimizing its use of submarines for subsurface ASW to training roles. Finally, and perhaps most importantly, all of Canada's military alliance contributions had to fall within the degrees of solicitude the Canadian public presented: as mentioned, Canadian political and military fervour swings dramatically between time of war and time of peace. Because Canada was not being threatened directly throughout the Cold War, and because Britain and the United States had large enough navies to do the jobs Canadians did not want to do, the Canadian Navy and specifically the submarine fleet formed itself in a carefully maintained niche area of interest, with only a token contribution to Western collective defence. Given that the West "won" the Cold War, notwithstanding Canada's less-than-first-class and small submarine fleet, one could argue that successive governments made the correct decision to not sink a great deal of money and political capital into fulfilling the RCN's subsurface dreams. As far as successive governments were concerned, the submarine fleets born of a series of compromises created a subsurface capability that was "just enough."³⁸³

³⁸³ See Christian Leuprecht and Joel J. Sokolsky, "Defense Policy 'Walmart Style,'" (2014).

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