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NORAD - A NEW COMMAND AND CONTROL MODEL TO IMPROVE AGILITY AND RESPONSIVENESS (THE NORAD CFACC CONCEPT)

LCol M.A. French

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ABSTRACT

The North American Aerospace Defense Command (NORAD) has agility and responsiveness issues. They stem from the fact that Commander NORAD is also dual-hatted as the Commander USNORTHCOM and must focus on the Strategic-Political issues that the political masters in both Canada and the United States expect. The command is also a defensive command and has no offensive missions. Because of increased adversary capabilities, sitting in a defensive crouch and waiting to take the first blow before reacting is not the best defence design.

NORAD needs a defence design that: is agile, is responsive, can easily switch to unilateral or combined offensive operations, and incorporates the way allied forces fight in campaigns other than homeland defence. This design must provide the Commander with increased decision space at the strategic-political level and allow for vertical and lateral integration with other agencies in the global defence picture.

This paper will examine NORAD's gaps and seams and the current threats facing the commands. Then, following a discussion on doctrine and deterrence in defence design, it will evaluate two new models for NORAD command and control which will close the gaps, tighten the seams, and increase agility and responsiveness. It will conclude by selecting a model which incorporates a NORAD Theater-Combined Force Air Component Commander (NORAD T-CFACC) and three sub-theater regional CFACC's to effectively command and control NORAD's missions in the bigger picture of combined continental defence.

INTRODUCTION[1]

A common refrain in War Studies is "seize the initiative". It is embodied in the principles of war under offensive action.[2] By seizing the initiative, a commander compels an opposing force to react thereby rendering the enemy's plans futile. The history of conflict is replete with instances in which the side that seizes the initiative and maintains it becomes the victor. Operation Just Cause in Panama in 1989[3] or Operation Focus during the 1967 Middle East War[4] are just two examples where seizing the initiative has played a crucial role in the overall outcome of a conflict.

The ability to keep the enemy commander guessing and reacting limits an opponent's ability to seize the initiative. To accomplish this task, one must get inside the OODA loop of the enemy commander.[5] Put another way, one's own decision processes and agility must be quicker than those of the enemy.

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[1]LCol M.A. French, "NORAD and the Evolution of North American Defence"(Toronto: Canadian Forces College Joint Command and Staff Programme Solo Flight Paper, 2016) – This Canadian Forces College Paper was produced by the author of this current paper. It was used extensively in part two of this paper.

[2]Department of National Defence, B-GA-400-000/FP-001, *Royal Canadian Air Force Doctrine* (Ottawa: DND Canada, 3rd ed., November 2016), 13.

[3]Joint Chiefs of Staff, Joint Publication 3-0, *Joint Operations* (Washington, DC: U.S. Joint Chiefs of Staff, January 17, 2017), VIII-15. www.dtic.mil/doctrine/new_pubs/jp3_0.pdf.

[4]BBC News, "1967 Middle East War," last accessed 20 April 2017. http://news.bbc.co.uk/2/shared/spl/hi/guides/457000/457035/html/nn1page1.stm.

[5] The OODA loop, developed by Colonel John Boyd, USAF, refers to a commander's decision cycle and consists of four continuously running phases: observe, orient, decide and act. The speed of the cycle is dependent on many factors including: intelligence assessments, situational awareness, previous experience, cultural and environmental acuity, and mission focus (time-sensitive targeting or deliberate prosecution of targets). An entity (whether an individual or an organization) that can process this cycle quickly, observing and reacting to unfolding events more rapidly than an opponent can thereby 'get inside' the opponent's decision cycle and gain the advantage. Wikipedia, "OODA Loop," last accessed 27 Mar 17, https://en.wikipedia.org/wiki/OODA_loop; Air Staff Report, *British Air and Space Doctrine: AP3000 4th Edition* (Shrivenham, Swindon: UK, 2009), 65.

The mantra of air forces around the world is that "Flexibility is the Key to Air Power".[6] The inherent flexibility of air power provides a commander with a key ingredient needed to demonstrate *strategic, operational,* and *tactical* agility to seize and maintain the initiative. By striking first, striking often and in the location of one's choosing, the enemy is set back and left to react. This offensive action tends to dictate the terms of the conflict.

But what happens if, by law, virtue or some other reason, first strike offensive action is prohibited? How does a commander seize the initiative while remaining in a defensive crouch? How does one remain agile enough to deter an enemy's moves without the ability to go on the offensive first? Such is the dilemma facing the North American Aerospace Defense command (NORAD); a Bi-National[7] defence command with the mission to defend North America from aerospace threats.

This paper will examine this dilemma and propose a new organizational structure for NORAD which will improve its strategic agility while closing gaps and tightening seams in the command. First, this paper will define what is meant by *strategic agility.* Then, it will critically examine NORAD's structure and the current threats facing the command. Finally, using Allied doctrine as a baseline for concept development, this paper will show that a single NORAD Combined Force Air Component Commander (CFACC) able to control the air battle in all three regions is better than the current structure which has all three regions acting somewhat autonomously while simultaneously competing for the commander's attention, decision space

[6]Joint Chiefs of Staff, Joint Publication 3-30, *Command and Control of Joint Air Operations* (Washington, DC: U.S. Joint Chiefs of Staff, February 10, 2014), I-2; Maj Gen Charles W. Lyon, and Lt Col Andrew B. Stone, "Right-Sizing Airpower: Command and Control for the Afghanistan Counterinsurgency," *Air Power Magazine* (Summer 2011): 10.

[7]The term "Bi-National" is capitalized throughout this paper to distinguish it from the numerous bi-lateral agreements that exist between the United States and Canada. The term "Bi-National" is a stronger agreement and implies a binding obligation on both parties similar to a marriage whereas a "bi-lateral" agreement is a more neighbourly agreement that exists because of obvious immediate benefit to both parties.

and limited resources. This new structure will remain responsible and responsive to the governments of Canada and the United States and will be constrained by the current NORAD Agreement (2006) and the NORAD Terms of Reference; remaining true to their intents.[8,9]

[8]Agreement between the Government of the United States of America and the Government of Canada on the North American Aerospace Defense Command (28 April 2006) (Otherwise referred to as the "2006 NORAD Agreement").

[9]Terms of Reference North American Aerospace Defense Command (NORAD). 24 August 2016.

PART ONE: AGILITY, GAPS & SEAMS, AND SEIZING THE INITIATIVE

Strategic Agility

Military strategists define their thoughts in terms of *ends*, *ways* and *means*. Ends refer to the end state, objective or goal to be achieved. Ways allude to the manner in which the end state is to be achieved. Means are the capabilities to be used in the process of achieving the end state. When discussing the defence of North America, the ends are understandably fixed (i.e. the continent will be defended). With means shrinking (budgets, capabilities, and public appetite), the focus must therefore be on better ways. 'Do more with less' is a catch phrase which often sums up this problem. The bottom line is that improving organizational agility is a *way* to achieve this.

What is agility?[10]

Agility is the capacity to respond quickly, effectively, and efficiently to a wide variety of unpredictable demands. It is a mixture of strength, speed, power, and endurance and the ability to match these competencies in differing formulas to minimize wasted energy or time. To be agile, it is not necessary to be the biggest, the strongest or the fastest, but it is necessary to be big enough, strong enough, and fast enough to demonstrate agility in a winning scenario whether it is in athletics or combat.

In a military context, agility is the ability to identify and capture relevant opportunities faster than our rivals, to rapidly adjust priorities and shift resources to the main effort.

[10]Credit where credit is due: this section on agility is paraphrased from a paper that former NORAD & USNORTHCOM Commander, Gen Charles Jacoby and Lt Col (then Maj) Ryan Shaw worked on when the author and Maj Shaw were part of Gen Jacoby's Commander's Initiatives Group (CIG). Charles H. Jacoby, Jr., and Ryan L. Shaw, "Strategic Agility: Theory and Practice," *Joint Forces Quarterly* 81, 2nd Quarter (2016): 34-42.

Strategically, this involves three components: physical capacity, environmental dexterity and decisiveness. Physical capacity comes through force generation efforts. Environmental dexterity comes from collecting intelligence, developing cultural acuity and maintaining up-to-date strategic assessments. Decisiveness, while important at all levels, is a critical component for NORAD strategic agility at the national leadership levels of both countries (the Joint Staff, the Chief of the Defence Staff, the Secretary of Defense, the Minister of National Defence, the President, and the Prime Minister). Bold decisions will come from Commander NORAD when decisiveness is shown and supported by the leadership of both countries.

There is also a moral component to agility. It involves trust. A running back is encouraged to follow the playbook but also to seize opportunities as they present themselves on the field. The trust from the coach assures the running back that he will not be benched for deviating from the playbook in search of a greater opportunity to gain yardage. Similarly, to encourage agility in an organization, leaders at all levels should be empowered to seize similar opportunities as the running back as long as those changes in direction don't deviate from the overall commander's intent and are within the 'rules of the game'. This element of trust is crucial to the agility equation.

How does a military organization improve its strategic agility?

Vignette, Vimy Ridge, France, April 9, 1917.

In 1916, the Allies had been frustrated by successive defeats in their attempts to take Vimy Ridge, a strategic high ground in the north of France. The British had tried and the French had tried. Neither was successful using the methods and tactics of the day. The status quo was clearly not acceptable. General Arthur Currie lobbied to let the Canadians have a chance but only under Canadian command and only if given sufficient training time to develop new strategies and tactics. With radical new ideas, he and his staff devised a plan to use empowered soldiers, timing and science to their advantage.

They insisted that the commander's intent and common operating picture (COP) be pushed to as low a level as possible so that every soldier had an idea of how the operation would unfold and could seize the initiative and carry on the attack using mission command-type orders.

This empowerment was but one of many new radical ways of fighting. They also developed the 'creeping barrage' method for artillery, which allowed for soldiers to cross No Man's Land between the trenches while the Germans had to keep their heads down due to slowly advancing artillery rounds at a pre-set timed rate. Finally, the Canadians used science to determine that as the artillery barrels warmed up, the rounds fell short. This additional knowledge fostered trust that leadership was doing everything possible to eliminate friendly fire as the soldiers advanced.

On April 9th, 1917, four divisions of Canadian soldiers, fighting for the first time as a unified Canadian Corps, advanced and took Vimy Ridge after four previously unsuccessful Allied attempts. It was celebrated as a 'birth of a nation' moment in Canada but it is also a powerful example of how non-materiel solutions, clean command and control lines, and empowered leadership can carry the day against otherwise equal forces.

A military organization must have an appreciation for its strengths and weaknesses. The United States and its coalition partners in recent conflicts have used their strengths to their advantage. In order to improve maintain agility, the competitive advantages outlined in the following table must be maintained:

Table 1.1 – Competitive Advantages Which Contribute to Agility

Elements of Agility	Agility Efforts	Competitive Advantages
Physical Capacity	Force Generation	All-Volunteer Force Technological Advantage Excellence in Training
Environmental Dexterity	Domain Awareness	Strong Partnerships Strong Alliances Defend Forward Intelligence Sharing
Decisiveness	Joint and Combined Operations Interoperability National Resolve to Succeed	Clean Command and Control Clear Commander's Intent Common Operating Picture
Trust	Empowered Leadership	Encourage Bold Decisions Use Failures as Learning Tools

Source: Jacoby, and Shaw, "Strategic Agility: Theory and Practice", 37-39.

Some of these advantages require materiel solutions and great expense in order to maintain them. An all-volunteer force with a technological advantage and superb training is extremely expensive to produce and maintain in a high state of readiness. Domain awareness requires multiple intelligence, information systems, and human intelligence (HUMINT) resources. These materiel solutions cannot be neglected. There are, however, areas where non-materiel solutions can yield considerable gains at little additional expense. Ensuring that the command and control relationships are as clean as possible, communicating the commander's intent to subordinate commanders, and establishing a COP and pushing it to as low a level as possible are examples of these non-materiel solutions. Encouraging intelligence and communication to flow in both directions, celebrating small bold decisions to encourage more, and recognizing failures as an opportunity to learn are all *ways* that leadership can promote agility in an organization.

NORAD HQ is already engaged with both governments on the technological requirements necessary to improve NORAD's agility and on the need to increase all-domain Bi-National cooperation. Conversely, this paper is narrowly focused on the command and control (C2) arrangements, and subsequent changes in roles and responsibilities that will improve NORAD's agility, close gaps and tighten seams in the organization.

The difference between gaps and seams

In order to discuss gaps and seams, it is important to first define the terms. A gap can be thought of in terms of a lack of capability, information or knowledge. It can be an area where an adversary has an edge, for example, Russian or Iranian cyber-attack capabilities or alternatively, it can be an area where an organization or nation lacks knowledge such as Arctic situational awareness.

A seam, on the other hand, can be thought of as an area where organizational capabilities meet. Consider the post-Goldwater-Nichols creation of the United States Combatant Commands in the Unified Command Plan (UCP).[11] There are clearly seams throughout the globe where the Geographic Combatant Commands (GCCs) intersect. To say that the Commander United States Northern Command (USNORTHCOM) is responsible for the homeland defense of the United States is to overlook the fact that Commander United States Pacific Command (PACOM) is responsible for the homeland defense of Hawaii and Guam (both rightly parts of the United States). In essence, there are two commanders in charge of defending the United States proper

[11]The latest United States Department of Defense Unified Command Plan created 6 Geographic Combatant Commands (GCCs) and 3 Functional Combatant Commands (FCCs), often referred to as Co-Coms. By dividing the Earth up into manageable sections, the Combatant Commanders are able to become experts in their respective regions or functional areas and represent the military interests of the United States in those areas.
US Department of Defense, "Unified Command Plan," last accessed 3 May 2017, https://www.defense.gov/About/Military-Departments/Unified-Combatant-Commands.

and this represents a seam that could be exploited. However, it is not all-encompassing to simply say that borders represent the only seams since seams are also always present where organizational boundaries come together. Consider the seams that exist between the Royal Canadian Mounted Police (RCMP) who are nationally mandated to uphold laws throughout Canada and city police forces in parts of Canada. A certain degree of cooperation and interoperability between these police forces must exist. Some seams resemble a tightly sewn hem with even some degree of overlap. Others are as porous as a sieve, involve dysfunctional overlapping Areas of Responsibility (AORs), or have outright openings.

As an organizational leader, it is critical to understand the gaps and seams that exist in the operating environment. It then becomes possible to understand what is known and what is lacking; what information is needed and what is extraneous information. These gaps and seams represent organizational weaknesses that an adversary can exploit.

Example of an adversary exploiting a weakness in a Command and Control structure

Vignette, Pearl Harbor December 7, 1941

In December 1941, the defence of Hawaii was divided between Army and Navy. Army Commander General Walter C. Short and Navy Commander Admiral Husband E. Kimmel rarely spoke to each other about their respective responsibilities even though they played golf together. Each man assumed that the other service was in Hawaii to protect them. Neither man had any aviation experience and so the Navy assumed the Army's radar installations would warn of an attack whereas the Army assumed the Navy's long range aerial patrols would provide adequate warning. There was no system set up to jointly patrol for enemies, nor was there a joint system set up to warn each other of a pending attack. These stovepiped organizations proved completely dysfunctional on the morning of December 7, 1941 when waves of Japanese fighters, bombers, and torpedo-bombers simultaneously attacked the Naval yards and Army Airfields on Oahu with devastating results.[12] The glaring gaps and seams are presented in Table 1.2:

Table 1.2 – Gaps and Seams in the Defence of Hawaii – December 1941

Gaps	Seams
No long-range reconnaissance flights organized	Raw intelligence withheld in Washington due to secrecy concerns
Neither commander with aviation experience	No Army-Navy liaison established
Radar – poor communications and training	Assumptions of protection from other service
Alarms – no effective joint alarm system	Level 1 Alerts were incongruent – Navy (highest state), Army (lowest state)
Radar – reduced hours due to parts shortage	Service parochialism
No joint defence plan prepared	Commanders' personalities / pride
	Lower weekend state of readiness

The preceding vignette illustrates what can happen when an adversary seizes the initiative and exploits gaps and seams in a defence design. NORAD was also a victim of an adversary exploiting gaps and seams on September 11th, 2001 (9/11). It behooves all successful defence organizations to critically self-analyze and discover where their weaknesses lie. This critical self-analysis is difficult to perform and should begin with an understanding of how the organization originated. To identify NORAD's gaps and seams, it is necessary to first understand the history of NORAD and clearly specify its unique Bi-National nature.

[12]Osprey Publishing, Essential Pearl Harbor, "Where does the blame lie," last accessed, 27 Mar 2017. http://ospreypearlharbor.com/debate/where-does-blame-lie.php.

PART TWO: NORAD'S HISTORY, CURRENT THREATS, AND GAPS & SEAMS

NORAD History

NORAD was born out of a Cold War threat; the Soviet manned bomber. As early as 1954, the joint Royal Canadian Air Force (RCAF)-United States Air Force (USAF) air defence planning group concluded that the air forces deployed to defend North America were most efficiently employed when under a single commander who could conduct a properly coordinated air battle.[13] Thus, NORAD originally started out as a military-to-military agreement between Continental Air Defense Command (CONAD) and the RCAF Air Defence Command as a way to advance this single commander concept. There was much concern about how to define the operational control (OPCON) of each nation's air defence forces. It was decided that each nation would retain command over its own air defence forces but that operational control would be executed through the new organization. On 12 September 1957, both Canada and the United States stood up a system of integrated operational control for their air defences with its headquarters in Colorado Springs, Colorado.[14] Canadian politicians, always concerned about sovereignty, pressed for political assurances to this mil-to-mil arrangement so that the United States couldn't unilaterally drag Canada into a nuclear war while Americans were concerned about Canadian diplomats putting strict limitations on the use of air defence assets to the point of irrelevance and thus pushed for a binding agreement. The first NORAD Agreement occurred on

[13]Joseph T. Jockel, *Canada in NORAD, 1957-2007: a history* (McGill-Queen's University Press, 2007), 20.
[14]*Ibid*., 25.

12 May, 1958 when Ottawa and Washington "exchanged diplomatic notes setting the terms for NORAD".[15]

As stand-off ranges increased and newer long range weapons were introduced, the series of early warning radar lines moved further north (see figure 1) to satisfy the need for better awareness on the continental perimeter. It became increasingly clear that simply waiting for Soviet bombers to fly into the tripwire-like radar nets in order to be detected was ceding a first-strike opportunity to the enemy.

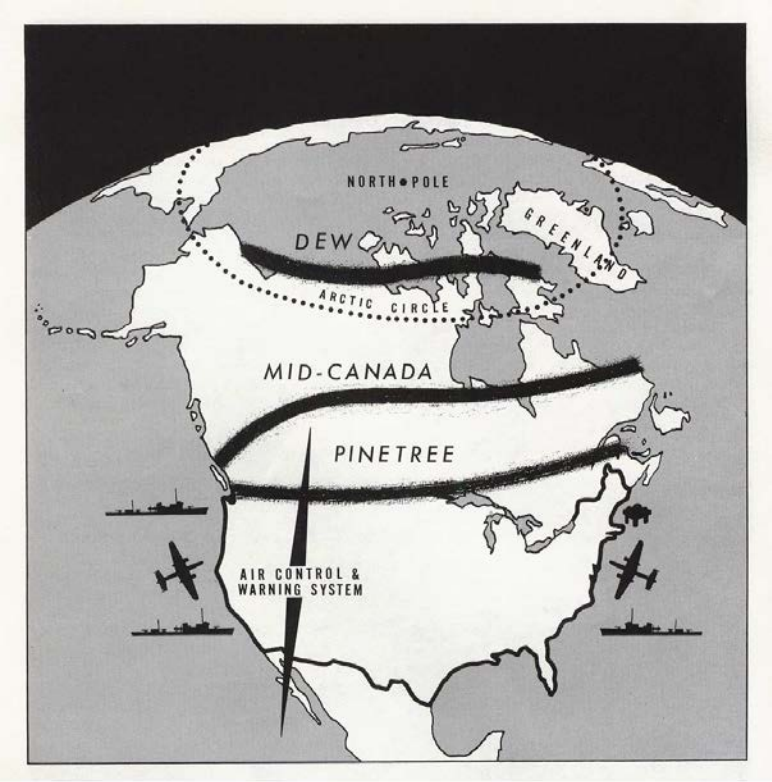

Figure 2.1 - NORAD Early Warning Radar Lines
Source: https://en.wikipedia.org/wiki/Distant_Early_Warning_Line.

Thus, to add to this series of early warning radars, forward operating locations in the Arctic were constructed to improve interception times. The resulting system of systems was

[15]*Ibid*., 3-4, 25, 82.

effective in pushing the Soviet and Russian threat away to the point where the population centres of North America were safe from attack. The air battle would be fought in Canada's unpopulated high north and Canada used this sacrificial territory as a de-facto payment for its inclusion in NORAD.

As technology and the threats continued to evolve, NORAD's defence design adjusted accordingly acquiring new missions and an adjusted name from 'Air Defense' to 'Aerospace Defense'.[16] Space-based systems were incorporated to detect and warn against ballistic missile launches from around the globe. Lieutenant-General Pierre St-Amand, the NORAD Deputy Commander (ND), succinctly divides NORAD's history into 4 eras: the manned bomber threat, ICBM's and cruise missiles, the terrorist attacks on September 11th, 2001, and a new era of zero stand-off range.[17] One could argue that there was a fifth era between 1991 and 2001 with the collapse of the Soviet Union where NORAD was in search of a mission and took on roles such as support to law enforcement and counter-drug operations.[18]

[16]*Ibid.*, 110.
[17]LGen Pierre St-Amand, NORAD Deputy Commander, interview with author, 9 January 2017.
[18]Jockel, *Canada in NORAD…*, Chapter 5.

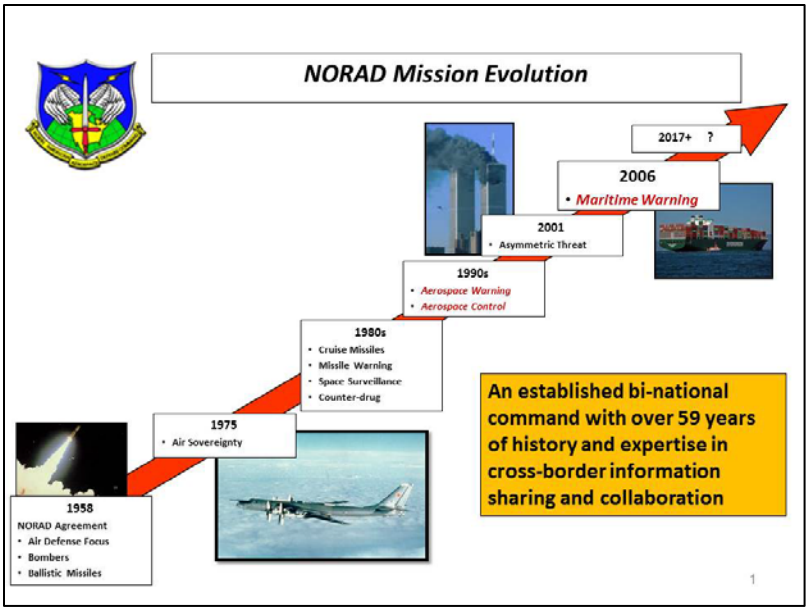

Figure 2.2 - NORAD Mission Evolution
Source: NORAD and USNORTHCOM HQ Bi-Command Brief

As technology advanced, there have been numerous organizational changes throughout NORAD's history. These changes were namely to the amount of forces on alert status and to the regional boundaries which currently comprises three NORAD regions in Alaska, Canada and the continental United States. However, two major external developments have forced significant NORAD structural change over its 59-year history: the terrorist attacks on September 11th, 2001 and missile technology.

The Terrorist Attacks on September 11th, 2001

> *America's homeland defenders faced outwards. NORAD itself was barely able to retain any alert bases. Its planning scenarios occasionally considered the danger of hijacked aircraft being guided to American targets, but only aircraft that were coming from overseas. We recognize that a costly change in NORAD's defense posture to deal with the danger of suicide hijackers, before such a threat had ever actually been realized, would have been a tough sell. But NORAD did not canvass available intelligence and try to make the case.*
>
> - The 9/11 Commission Report

9/11 changed the way North Americans view security. Prior to 9/11, with the collapse of the Soviet Union, NORAD was basically on life-support and in search of a relevant mission. The

focus had shifted away from peer nation threats to counter-drug missions. 9/11 shattered the illusion of a low-threat environment.

The dysfunction between the Federal Aviation Administration (FAA) and NORAD on 9/11 is evident in the 9/11 Commission Report by the number of steps that would have had to occur in order to obtain an engagement order to shoot down a civilian airliner on that day. Eleven steps to request shoot down authority would have had to flow from: (1) the air traffic controller to (2) a supervisor to (3) FAA Headquarters to (4) the FAA hijack coordinator to (5) the National Military Command Center (NMCC) to (6) the Secretary of Defense (SECDEF) to (7) NORAD Headquarters to (8) Continental US NORAD Region (CONR) to (9) Northeast Air Defense Sector (NEADS) to (10) the alert base and then finally to (11) the pilots.[19] Each step along the way would have required a re-explanation of the events as they were unfolding. Clearly the seams were exploited to the hijackers' advantage.

The terrorist threat is no longer viewed through the lens of a single-axis, externally generated enemy as it was during the first two eras of prior to 9/11. The threat of terrorism now has NORAD looking both inward and outward and not simply looking in the aerospace domain. Figures 2.3 and 2.4 illustrate the difference in fused radar coverage provided to NORAD from its own radars, NAV CANADA and FAA radar sites before and after 9/11.

[19]National Commission on Terrorist Attacks upon the United States, *The 9/11 Commission Report* (Washington, DC: U.S. Government Printing Office, 2004), 427-428. http://govinfo.library.unt.edu/911/report/911Report.pdf.

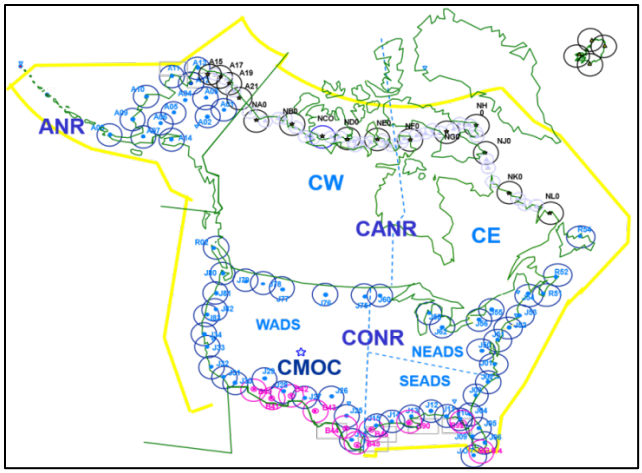

Figure 2.3 - NORAD Radar Coverage Pre-9/11
Source: Parent, and French, The Re-defining of NORAD

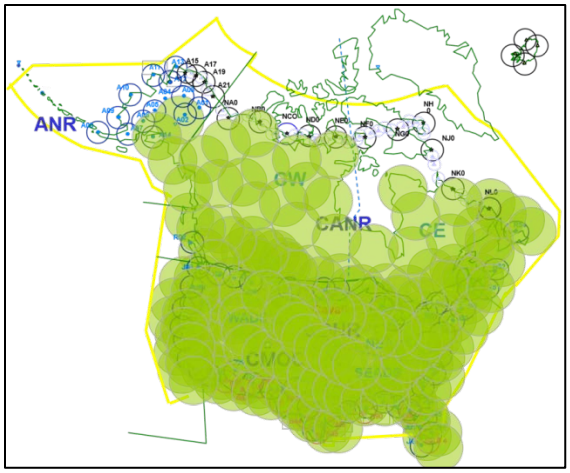

Figure 2.4 – NORAD Radar Coverage Post-9/11
Source: *Ibid.*

Since October 2001, NORAD has had an ongoing domestic operation, Operation Noble Eagle (ONE), designed to counter the airborne asymmetric threat and improve the cooperation and coordination between air traffic control and NORAD's air defenders who are continuously on alert status.[20] Additionally both the United States and Canada have established domestic commands in charge of homeland defence, USNORTHCOM and the Canadian Joint Operations Command (CJOC), thereby each placing the defence of the nation under a single combatant commander. NORAD is a supporting command to each of these commands insofar as the aerospace defence of North America is concerned. Military and civilian partnerships with Law Enforcement Agencies (LEA's) and intelligence agencies are crucial to NORAD's agility with respect to Op Noble Eagle.

For more on how missile technology has shaped NORAD, an examination of the current threat facing NORAD is required.

[20]David S. McDonough, "Canada, NORAD, and Missile Defence: Prospects for Canadian Participation in BMD, CDA Institute, Vimy Paper, no. 31 (April 2016):4. Operation Noble Eagle is an ongoing domestic operation which guards against the possibility of another 9/11-type attack by monitoring domestic and international air travel with partners such as DHS, Nav Canada, the FAA, the FBI and RCMP.

New Century, New Threats

Nation States

> *The time between when the Berlin wall came down and when Vladimir Putin first came to power was 8 years. In the history of nations, that is the blink of an eye. It is therefore prudent to assume that for Russia, the Cold War never really ended in their minds.*
>
> - Admiral William E. Gortney
> Former Commander, NORAD and USNORTHCOM
> Permanent Joint Board on Defense, 2015

Missile technology has improved greatly since the establishment of the North Warning System (NWS). Both Russia and China possess the ability to launch ICBMs, SLBMs, and Air and Sea Launched Cruise Missiles.[21,22] This makes maritime domain awareness a crucial part of North American security, particularly in the Arctic as the receding ice pack opens up new avenues of approach. Furthermore, the ranges of these weapons are such that, at least in Russia's case, they do not have to leave Russian airspace to hold cities in North America at risk. Given, the range and small radar cross sections of the newly developed Kh-101/102 cruise missiles, it is unlikely that they will be detected in time to provide a useful intercept.[23] The era of zero stand-off range means that Canada's sacrificial northern territory is no longer of use given the global reach of these nuclear-capable weapons.

Now it is one thing to consider the capability of these new weapons, but some would argue this is fear-mongering at best. After all, the concept of Mutual Assured Destruction (MAD) has been around for decades[24] Threat is generally understood to be both a measure of capability and intent. The truth is, new Russian doctrine now suggests the belief that a tactical conventional

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[21]Keith Johnson, "China's 'Guam Killers' Threaten U.S. Anchor Base In Pacific," *Foreign Policy*, 11 May 2016. http://foreignpolicy.com/2016/05/11/chinas-guam-killers-threaten-u-s-anchor-base-in-pacific/.

[22]Robbin Laird, "NORTHCOM: How America Should Deal With Russia's Nuclear 'Deescalation' Doctrine," *The National Interest*, 11 May 2016. http://nationalinterest.org/blog/the-buzz/northcom-how-america-should-deal-russias-nuclear-16154.

[23]*Ibid*.

[24]Tom de Castella, "How did we forget about Mutually Assured Destruction," *BBC News Magazine*, 15 February 2012. http://www.bbc.com/news/magazine-17026538.

or nuclear "escalate to de-escalate" exchange is winnable.[25] In the ambiguity of a crisis, the Russian belief is that a tactical kinetic exchange might be enough to avoid superpower interference in a regional conflict. With this doctrine in mind, Russia has demonstrated the use of plausibly deniable "little green men" to introduce ambiguity into the Ukrainian conflict.[26] They have also resumed the use of probing long-range bomber flights and intelligence collection ships off the coasts of North America.[27] Russia is clearly playing a high-stakes game of political chess. They have a bona-fide fear of encirclement based on historical past. NATO membership expansion is viewed as confirmation to this fear. The deployment of theater ballistic missile defence systems in Europe and efforts to delegitimize nuclear weapons as a legal weapon of deterrence also fuel Russia's fear of encirclement.[28] They also have shrinking window of opportunity in terms of demographics (aging population, negative population growth and very little immigration) and economics (sanctions, corruption and government inefficiency) in which to press home their agenda. And what is that agenda? It would seem that Russia is determined to retain a sphere of influence and return to great power status. In order to do that, they need to break apart the NATO/western alliances that are aligned against them or at least show their irrelevance.[29] General Joseph Dunford, Chairman of the Joint Chiefs of Staff (CJCS), recently argued that "Moscow was specifically seeking to undermine America's ability to project power and the credibility of our alliances because those two capabilities represent the centers of gravity

[25]Laird, "NORTHCOM: How…,".

[26]Stéfanie von Hlatky (speech, The Relevance of Deterrence in an Age of Hybrid War, Defence Engagement Program, NDHQ, Ottawa, Canada, 3 June, 2016).

[27]Lucas Tomlinson, "More Russian spy planes, bombers approach Alaskan airspace," *Fox News*, 21 April 2017. http://www.foxnews.com/us/2017/04/21/more-russian-spy-planes-bombers-approach-alaskan-airspace.html.

[28]Stéfanie von Hlatky (speech, The Relevance…).

[29] Peter Bates, Canadian Political Advisor to Commander NORAD and USNORTHCOM, interview with author, 28 February 2017.

from which the US military draws strength."[30] Thus, closing gaps and tightening seams so as not to expose any 'chinks in the armour' is critical for western alliances (NORAD included).

China, as a rising great power, is also determined to retain a regional sphere of influence and is developing Anti-Access/Area Denial (A2/AD) tactical nuclear weapons, known as carrier killers[31], and hypersonic glide vehicle delivery systems in the same vein; to deny American interference in a regional conflict.[32] It is clear in terms of both capability and intent that Russia and China must be honoured as threats.

Rogue Nations

Nations such as Iran and North Korea are well on the way to becoming nuclear missile-capable nations and their stated intents are to "wipe Israel off the face of the Earth" and attack America with a "nuclear sledgehammer" respectively.[33,34] Even with the Joint Comprehensive Plan Of Action (JCPOA) often referred to as the 'Iran Nuclear Deal', R. James Woolsey suggests that "Iran could be building a nuclear-capable missile force, partly hidden in tunnels, as suggested by its dramatic revelation of a vast underground missile-basing system last year. Iran

[30]Sebastian Sprenger, "Dunford: Power Projection, Alliances Key in New National Military Strategy," *Defense News*, (October 5 2016). http://www.defensenews.com/articles/dunford-power-projection-alliances-key-in-new-national-military-strategy.

[31]Harry J. Kazianis, "China's New Anti-Ship "Carrier Killer" Missile Hits 2,500 Miles," last accessed on 20 April 17. http://www.scout.com/military/warrior/story/1671447-china-new-anti-ship-missile-hits-2-500-miles.

[32]Keith Johnson, "China's 'Guam Killers'…,". http://foreignpolicy.com/2016/05/11/chinas-guam-killers-threaten-u-s-anchor-base-in-pacific/.

[33]Rick Gladistone, "Israel Calls on U.N. to Punish Iran For Missile Tests," *The New York Times*, (14 March 2016). https://www.nytimes.com/2016/03/15/world/middleeast/iran-israel-un-missile-tests.html.

[34]Wesley Pruden, "A Crazy Fat Kid and His Nuclear Toys," *The Washington Times*, (3 April 2017). http://www.washingtontimes.com/news/2017/apr/3/kim-jong-un-a-danger-with-nukes/.

is building toward a large, deployable, survivable, war-fighting missile force — to which nuclear weapons can be swiftly added as they are manufactured."[35]

Without further analysis, both capability and intent are clearly indicative of a threat. Missile technology has developed to the point where lesser capable nations have the power to hold our homelands at risk.

Terrorism

In terms of security, the threat of nuclear annihilation remains a least likely but most dangerous possibility. At the other end of the spectrum, there are more likely but less catastrophic threats to North American security. 9/11 clearly extinguished the North American notion of geographic insularity. Terrorism, in the form of lone wolf homegrown violent extremists (HVE) or the activities of violent extremist organizations (VEO), impacts the North American way of life on a daily basis with increased security apparatuses for every mode of transportation. NORAD has evolved through Operation Noble Eagle to be on alert for this asymmetric threat in addition to defending against symmetric attacks. The cross-border authorities and information sharing between Canada and the United States reduces the opportunity for terrorists to exploit our nations at the borders. Partnership clearly pays dividends.

[35]R. James Woolsey, William R. Graham, Henry F. Cooper, Fritz Ermarth, and Peter Vincent Pry, "Underestimating Nuclear Missile Threats from North Korea and Iran," *National Review*, (February 12, 2016). http://www.nationalreview.com/article/431206/iran-north-korea-nuclear.

Cyber Threats

The cybersecurity domain is perhaps the most difficult challenge for mil-to-mil cooperation since neither country has a solid national cybersecurity strategy to date. Cybersecurity covers espionage and infrastructure attacks, like the Chinese theft of F-35 plans[36], the Panama Papers revelation[37], or the Stuxnet worm attack in Iran[38]. Cybersecurity often requires the involvement of multiple federal agencies (RCMP, CSIS, CSEC, FBI, DHS, etc.). These agencies are all constrained by laws which limit information sharing, especially in cases where prosecution is sought. The mil-to-mil relationship in cybersecurity is further complicated in that neither military has been put in charge of protecting critical civilian infrastructure, such as transnational power grids or hydro-electric dams but in these instances, the military is likely to be faced with a significant aid to civil power clean-up mission in the aftermath of a successful attack. ADM John Richardson, Chief of Naval Operations, USN, acknowledged that cyber is a normalized part of warfare when he said "There is no such thing as a purely regional conflict anymore. Everything stems beyond transregionally if not globally, cyber being a big part of this. And that everything happens in multiple domains at once."[39] The cybersecurity domain is of growing concern in both countries and an effective strategy to counter cybersecurity threats remains elusive. It is expected that each military will have a role to play. Whether that role is restricted to protecting its own networks from attack or branching out to protect critical civilian infrastructure remains to be decided. Regardless, cybersecurity is clearly a domain where mil-to-

[36]Bill Gertz, "NSA Details Chinese Cyber Theft of F-35, Military Secrets," *The Washington Free* Beacon, January 22, 2015, http://freebeacon.com/national-security/nsa-details-chinese-cyber-theft-of-f-35-military-secrets/.

[37]Luke Harding, "What are the Panama Papers? A Guide to history's biggest data leak," *The Guardian*, 5 April, 2016, http://www.theguardian.com/news/2016/apr/03/what-you-need-to-know-about-the-panama-papers.

[38]Michael Holloway, "Stuxnet Worm Attack on Iranian Nuclear Facilities" (doctoral coursework, Stanford University, July 16, 2015), last accessed on 24 May 2016. http://large.stanford.edu/courses/2015/ph241/holloway1/.

[39]Richard Abbott, "Service Chiefs Acknowledge Cyber is Normalized Part of Warfare," *Defense Daily*, 4 May 2016, http://www.defensedaily.com/service-chiefs-acknowledge-cyber-is-normalized-part-of-warfare/.

mil cooperation can tighten a seam through which cyber players can wreak havoc on national networks and infrastructure.

Today's Current NORAD Structure

The threats facing NORAD have evolved. Has the NORAD structure evolved to meet the new threats? LGen St-Amand argues that NORAD's C2 structure is still structured regionally in a pre-Goldwater-Nichols construct that ignores the concept of componency.[40] With a clear understanding of NORAD's history, its unique Bi-National nature and the current threats facing it, it is possible to critically analyze NORAD's current structure and discover its weaknesses.

As stated in the 2006 NORAD Agreement, "the primary missions of NORAD in the future shall be to provide:

1. Aerospace warning for North America;
2. Aerospace control for North America; and
3. Maritime warning for North America."[41]

There is an important distinction to be made between warning and control. With aerospace warning and control, NORAD has the authority to detect, identify, assess and prosecute man-made threats in the aerospace domain. With maritime warning, NORAD has the authority to collect, collate, process, assess and disseminate information with respect to threats in the waters in and around North America but requires significant mutual support partnerships from those entities with the authority to detect and prosecute maritime threats (namely, USNORTHCOM, CJOC, and the Coast Guard). Accordingly, threats emanating in the maritime domain require a level of cooperation and integration that has already matured in the aerospace domain.

[40]LGen Pierre St-Amand, NORAD Deputy Commander, interview with author, 9 January 2017.
[41]2006 NORAD Agreement, Article 1.

As a Bi-National command, NORAD is responsible to both governments and is mandated to have a deputy commander from the opposite country from its commander. This commander-deputy mandate is echoed in the three regions, Alaskan NORAD Region (ANR), Canadian NORAD Region (CANR), and Continental US NORAD Region (CONR) and in the four air defence sectors in Alaska, Canada, and the Western and Eastern United States (see Figure 2.5).

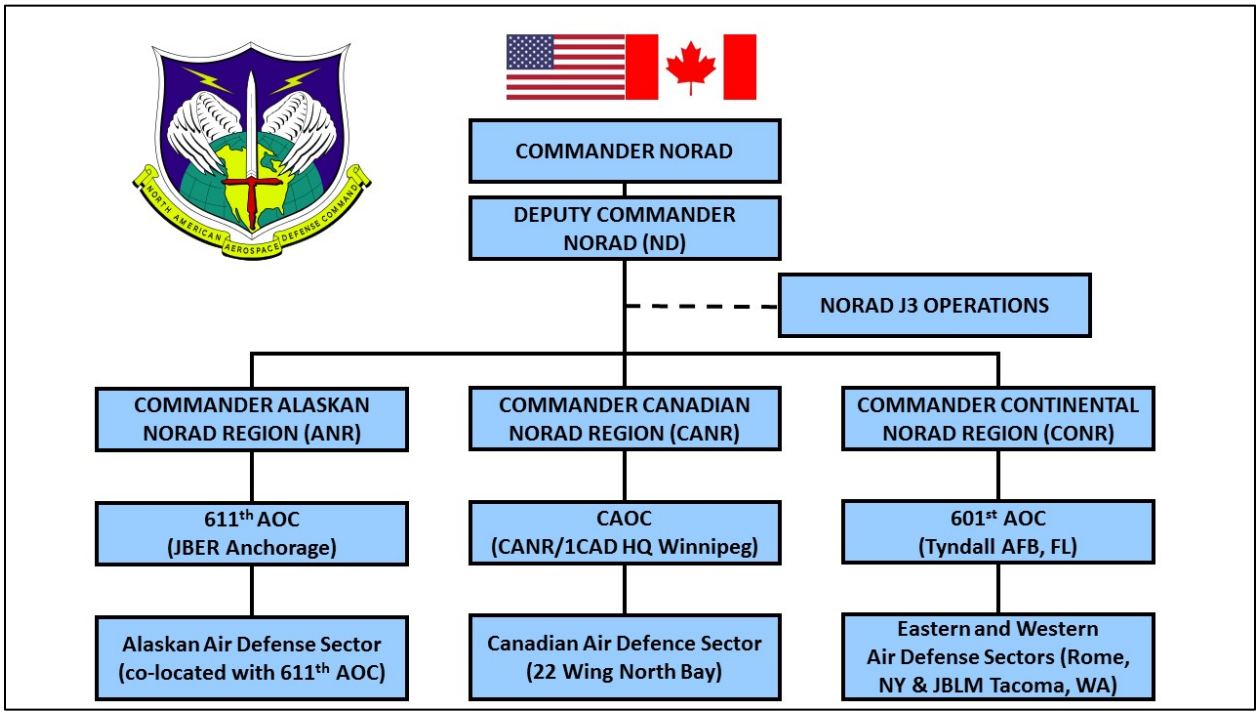

Figure 2.5 – Current NORAD Structure

Each NORAD region is set-up with a Cold War mindset in order to maximize survivability and retain the ability to provide warning for a retaliatory strike. Consequently, each region possesses its own command centre and one (or two for CONR) air defence sector command and control nodes. At increased levels of NORAD alert, region and sector commanders are delegated increased levels of authority in order to provide for a certain degree of autonomy in the absence of specific direction from NORAD HQ, thereby ensuring survivability of the defence enterprise. Each region commander acts as a Combined Force Air Component Commander (CFACC) in that they plan, task, and control air operations within their

region in order to accomplish the assigned missions.[42] Each region commander advocates for their own interests to NORAD HQ forcing the adjudication process to occur at the NORAD HQ level.

The structure gets more complex when the geographic combatant commands are considered since USNORTHCOM and PACOM both have significant equities in the defence of the United States. In the first case, Commander USNORTHCOM is actually dual-hatted as Commander NORAD and in the latter's case, PACOM supplies many of the assets to ANR, has a significant maritime homeland defence mission, and shares many of the same interests in domain awareness in its AOR with NORAD. In Canada, the global combatant command function is held by CJOC. There are similar overlaps in the defence of Canada equities between CJOC and NORAD as there are between NORAD and its American GCC's however, since USNORTHCOM's HQ is co-located with NORAD's HQ in Colorado Springs, there is more opportunity to blur the lines between NORAD and USNORTHCOM than with any other combatant command.

NORAD and USNORTHCOM - Two Commands, One Purpose

> *USNORTHCOM and NORAD operate in a strategic environment that is as ambiguous and dangerous as any in our recent history. Threats to the United States and Canada are increasingly global, transregional, all-domain, and multi-functional in nature. Forged by an indispensable partnership, the Commands operate both independently and synergistically, conducting complementary missions with a shared purpose of common defense. The synergies that exist between the two Commands enable us to conduct our missions expeditiously and seamlessly in the face of very real threats.*
>
> - General Lori J. Robinson
> Commander, NORAD and USNORTHCOM
> Senate Armed Services Committee Posture Hearing, April 6, 2017

[42]Joint Chiefs of Staff, Joint Publication 3-30, *Command and Control of Joint Air Operations* (Washington, DC: U.S. Joint Chiefs of Staff, February 10, 2014), ix. www.dtic.mil/doctrine/new_pubs/jp3_30.pdf.

USNORTHCOM was "born out of 9/11 and shaped by [Hurricane] Katrina".[43] Following the events of 9/11, the government realized that no single commander was in charge of defending the United States' homeland. Even though the rest of the world had been parsed into GCC's, the defence of the homeland had been left to the individual services with their domestically stationed forces. Changes were subsequently made to the UCP by amending the Goldwater-Nichols Act in 2002 to put one Combatant Commander (CCDR) in charge of defending the homeland. United States Northern Command was stood up on October 1st, 2002.[44]

Where did this leave NORAD? It left the defensive command with a dual-hatted commander in charge of the aerospace defence of North America as well as the additional missions of Homeland Defense (HD) of the United States (less Hawaii and Pacific islands), Theater Security Cooperation (TSC) with the countries neighbouring the United States and Defense Support of Civil Authorities (DSCA).[45]

With this dual-hatting, Commander NORAD and USNORTHCOM's job became much more difficult. There is now one commander in the United States responsible to provide protection for everything from the lone wolf attacker at a marathon in Boston to an ICBM launch from North Korea or from a hurricane aftermath in New Orleans to a menacing Russian submarine off the Carolina coast? Each of these threats requires extreme focus and a withdrawal from the commander's limited bandwidth account. As a Geographic Combatant Commander

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[43]Cong. Senate, Armed Services Committee. Hearing on United States Strategic Command, United States Northern Command, and United States Southern Command programs and budget in review of the Defense Authorization Request for Fiscal Year 2017 and the Future Years Defense Program. Mar. 10, 2016. 114 Cong. 1st sess. Washington: GPO, 2016 (posture statement of Admiral William E. Gortney, Commander United States Northern Command). http://www.northcom.mil/Portals/28/Documents/Gortney_Posture%20Statement_SASC_03-10-16.pdf.

[44]Dr. Lance Blythe, NORAD and USNORTHCOM Command Historian, "A Short History of United States Northern Command," last accessed 3 May 2017, http://www.northcom.mil/Portals/28/Documents/A%20Short%20History%20of%20USNORTHCOM%20(current%20as%20of%20March%202014).pdf.

[45]*Ibid*.

(GCC), the dual-hatted commander is routinely summoned to Washington DC to testify or attend one of a number of senate or house committee meetings and meet with other principals in the National Capital region. Today, the US National Military Strategy is focusing on global integration as "the military environment and the threats it presents are increasingly *transregional*, *multi*-domain, and *multi-functional* in nature"[46] This focus to think globally is forcing the combatant commanders to collaborate and integrate their sets of operational plans. It is a huge strategic piece which places significant bandwidth demands on the commander of NORAD and USNORTHCOM. Additionally, the commander has acquired various component and subordinate commands that have similar time and focus demands as the three NORAD regions (see Figures 2.6 & 2.7). As a senior military commander, the political establishment demands accountability and an 'up and out' focus which makes it increasingly difficult to focus on the 'down and in' issues.

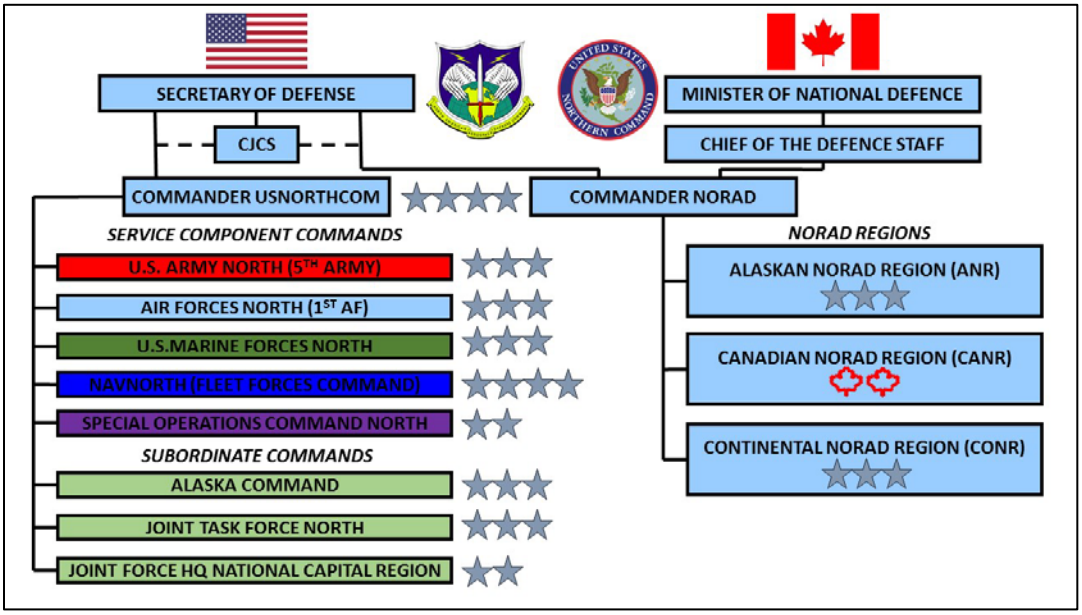

Figure 2.6 - NORAD and USNORTHCOM's Components, Regions and Subordinates

[46]General Joseph F. Dunford Jr., Chairman of the Joint Chiefs of Staff, *National Military Strategy 2016, Chairman's Foreword*. June 2016.

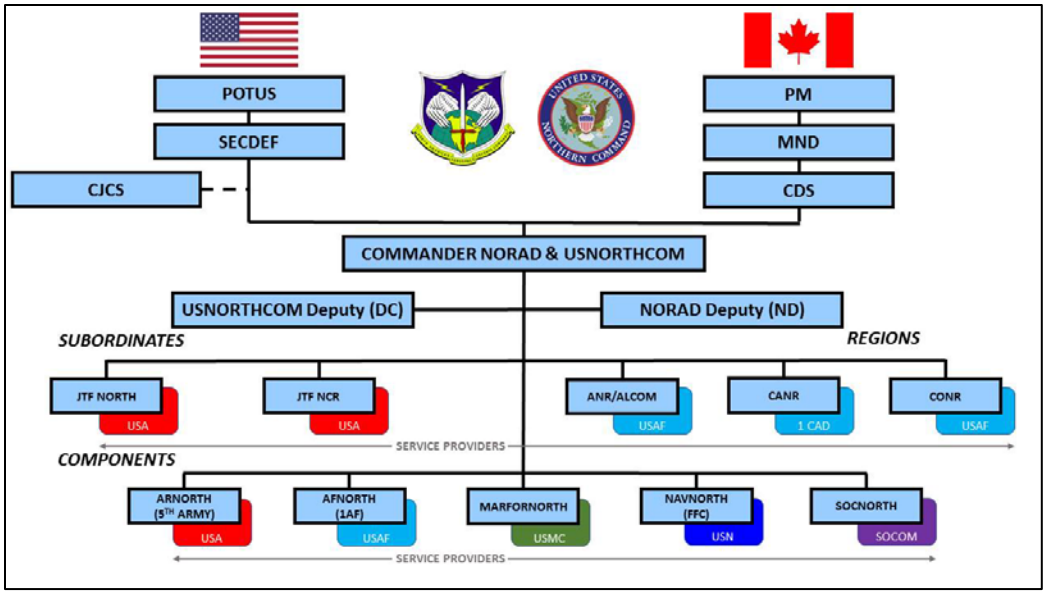

Figure 2.7 – Amalgamated view the Commands' Components, Regions and Subordinates

To illustrate the difficulty facing Commander NORAD and USNORTHCOM, consider the following example. Imagine an adversary submarine capable of launching cruise missiles located in international waters 500 miles off the coast of Washington state. The submarine is currently located in PACOM's AOR necessitating collaboration between PACOM and USNORTHCOM. The maritime warning message regarding this threat would be generated by NORAD. Any cruise missile launched by this submarine would also be prosecuted as an air-breathing threat to North America by NORAD. Normally the submarine itself would be prosecuted by USNORTHCOM using the assets of its component NAVNORTH however, NAVNORTH is assigned assets on the Atlantic coast directly through Fleet Forces Command but assigned assets on the west coast through Pacific Fleet (Third Fleet). Alternately, a Canadian air or maritime asset could be assigned to prosecute the submarine through CJOC with assets coming from Maritime Forces Pacific (MARPAC) or 1 Canadian Air Division. The amount of coordination required to obtain a kill solution on the adversary submarine is reminiscent of the steps required to obtain a shoot down order on 9/11. At the very least, it exposes the seams in the

organization and illustrates the amount of hat-switching the Commander NORAD and USNORTHCOM would have to do in such an event.

The question therefore becomes: Given the awesome responsibility placed upon Commander NORAD and USNORTHCOM by the citizens of Canada and the United States, how does a single commander best achieve mission success?

The answer is *trust in partnerships*. NORAD and USNORTHCOM partner with numerous defence, intelligence, security, and law enforcement agencies in both countries but in military terms, the essence of partnership is embodied in philosophy of mission command.[47] Empowered subordinate commanders who clearly understand the commander's intent and have the cleanest possible C2 structure are *prepared* for success. When they possess the requisite equipment and authorities, and operate under an umbrella of trust with excellent communications systems to report and share information they are *equipped* for success. Mission command "promotes initiative, decentralised command, and freedom and speed of action, yet remains responsive to superior direction."[48]

In reality, the answer is not as simple and succinct as the above paragraph implies. Relationships between partners require sustained effort at all levels and trust can evaporate quickly especially in times of great need with limited resources. NORAD and USNORTHCOM have difficult, if not impossible, missions. When success is based on 'no fail' criteria, the bar is set very high indeed. When combined with CJOC as the tri-command, the no-fail mission is

[47]A philosophy whereby superior commanders ensure their mission intent is clearly understood by subordinate commanders and that those subordinate commanders are empowered to use their operational and tactical knowledge to accomplish the mission in the best way possible with the least amount of wasted effort as long as it is lawful. By empowering subordinate commanders, who are better able to adapt to the fog of combat, superior commanders retain the initiative and remain flexible and agile. Department of National Defence, B-GJ-005-000/FP-001, *Canadian Forces Joint Publication 01, Canadian Forces Doctrine* (Ottawa: DND Canada, April 2004), 4-3.

[48]Air Staff Report, *British Air*…, 61.

crystal clear; North America will be defended. Any chink in the armour of homeland defence design has the potential to be a gap or seam through which an adversary can exploit. It behooves NORAD to be aware of these potential deficiencies.

NORAD's gaps and seams

The following list is by no means exhaustive but it does follow from the previous historical, structural and threat-based analysis. Some of the deficiencies noted are less systems-related and more command and control-related. Bearing similarity to the example of 9/11 where 11 steps were required to obtain the authority to have a pair of fighters engage a civilian airliner, many of these gaps and seams are problems that can be resolved with better partnerships, streamlined C2 and the requisite delegated authority.

Table 2.1 – Gaps and Seams Affecting NORAD

Gaps (Capability-Based)	Seams (Organizationally-Based)
One defensive command (NORAD) and one full-spectrum command with unilateral authorities (USNORTHCOM) sharing resources	Commander NORAD dual-hatted as Commander USNORTHCOM
Vast territory means that point defence of everything is impossible	Bi-National command = National seam
Limited resources (fighters, tankers, airborne C2, weapons and ground-based air defence assets)	Different Force Protection and Rules of Engagement between nations
Domain awareness – aging NWS, Arctic (awareness, communications, presence and infrastructure), maritime domain awareness	Regions advocate for themselves with a staff officer as a synchronizer (recommend authority not command authority)
4^{th} generation systems dealing with 5^{th} generation threats	GCC borders – who is in charge of China and Russia and who advocates for the homeland defence mission when covering these threats?
Lack of coherent cyber strategy in both countries.	National borders – different laws, different jurisdictions, and different perceptions of the problem or threat
	Maritime homeland defence design differs on each coast
	Canada not a partner in ballistic missile defence (BMD)

Some of the above mentioned gaps and seams are costly to fix. There are limited means to satisfactorily address them all. Streamlining NORAD's C2 structure is an attractive first step since it is mostly a non-materiel change that can drastically improve homeland defence design and buy down risk for both nations. Before presenting and evaluating two new NORAD C2 structures, an understanding of Allied joint doctrine, air power terms, and deterrence in defence design is required.

PART THREE: DOCTRINE AND DETERRENCE IN DEFENCE DESIGN

Doctrinal Comparison (United States, United Kingdom, Australia, Canada, and NATO)

Doctrine contains the 'fundamental principles by which military forces guide their actions in support of objectives"[49]. Doctrine is authoritative but not prescriptive in that it provides time-tested sound judgement for commanders. A nation's multinational doctrine describes how that nation believes its military forces will function during coalition or alliance operations. As such, it is no surprise that a study of allied nations' doctrine yields many similarities.

Air power doctrine from Australia, the United Kingdom, the United States, Canada and NATO all refer to the task model. In the Australian Air Publication AAP 1000-D, the task model divides and subdivides the task force components into Task Groups, Task Units and Task Elements. "Air Force elements will normally be organised into a Task Group and an Air Force officer will be appointed as the Commander Task Group (CTG). This officer will function as the JFC's [Joint Force Commander's] Air Component Commander and principal air power adviser."[50] During combined (i.e. multinational or coalition) operations, National Command is always retained by an Australian officer even if OPCOM/TACOM or OPCON/TACON[51] "may

[49]Department of National Defence, B-GA-400-000/FP-001, *Royal Canadian Air Force*…, 2.

[50]Royal Australian Air Force, AAP 1000-D, *The Air Power Manual / Royal Australian Air Force, 6th Edition* (Air Power Development Centre: Royal Australian Air Force, September 2013), 186-187.

[51] 1. OPCOM is operational command and is the authority to assign missions or tasks to subordinate commanders, to deploy units, to reallocate forces, and to retain or delegate operational control [(OPCON), tactical command (TACOM)], and/or tactical control [TACON] as necessary. It does not include responsibility for administration. While OPCOM allows a commander to assign separate employment to components of assigned units, it cannot be used to disrupt the basic organization of a unit to the extent that the unit cannot readily be given a new task or be redeployed. 2. TACOM is the authority delegated to commanders to assign tasks to forces under their command for the accomplishment of missions assigned by higher authority. 3. OPCON is the authority delegated to a commander to direct allocated forces to accomplish specific missions or tasks that are usually limited by function, time, or location, to deploy units concerned, and to retain or delegate tactical control of those units. OPCON permits commanders to benefit from the immediate employment of assigned forces without further reference to a senior

be delegated, depending on the operational requirements, to foreign commanders by the Chief of the Defence Force."[52]

In the United Kingdom, the *British Air and Space Power Doctrine, AP3000 4th Edition* recognizes that "the concept of component command is central to the joint command and control of the British armed forces on operations. The JFC will designate a Joint Force Air Component Commander (JFACC) to exploit the full air capabilities available to the joint force."[53] The JFACC's responsibilities include "planning, coordinating, allocating, tasking, executing and assessing air operations to accomplish assigned objectives"[54] from the JFC.

Canadian aerospace doctrine also refers to the task model and the concept of component command by addressing a scalable Air Task Force (ATF). The ATF could involve multiple squadrons in an Air Expeditionary Wing (AEW) or be a small as a single aircraft. Consequently, the C2 structure for an ATF could be either direct command (for small, short duration missions of limited scope) or component command when "a Joint Task Force (JTF) [commander] exercises authority through component commanders."[55]

NATO air power doctrine also makes reference to both methods of C2; the direct command method and the component command method. For anything but small-scale operations, employing the force elements provided by contributing nations under component

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authority. 4. TACON permits effective local direction and control of movements or manoeuvres necessary to accomplish missions or tasks assigned. In general, TACON is delegated when two or more units not under the same OPCON are combined to form a cohesive tactical unit for a specified period of time. Department of National Defence, B-GJ-005-000/FP-001, *Canadian Forces Joint Publication 01, Canadian Forces Doctrine* (Ottawa: DND Canada, April 2004), 5-4.

[52]Royal Australian Air Force, AAP 1001.1, *Command and Control in the Royal Australian Air Force / Royal Australian Air Force* (Air Power Development Centre: Royal Australian Air Force, 1 September 2009), 6-3.

[53]Air Staff Report, *British Air*…, 61.

[54]*Ibid.*

[55]Department of National Defence, B-GA-400-000/FP-001, *Royal Canadian Air Force*…, 47.

commanders who are subordinate to the JFC is the preferred method for NATO C2.[56] In most cases, since the Combined JFACC (C/JFACC) operates throughout the entire Joint Operations Area (JOA), the C/JFACC's headquarters and operations centre is usually co-located with the JTF HQ. This contrasts with the maritime or land component commanders who usually have assigned Areas of Operations (AOs) and are not co-located. This centralization of air power allows for its effective use throughout all levels of operations (strategic, operational and tactical) while still maintaining the ability to capitalize on airpower's strengths of speed, reach, ubiquity and flexibility.[57]

A study of US doctrine on the use of air power in joint operations yields the most comprehensive results. The United States clearly espouses joint doctrine but also readily adapts to include coalitions and multinational forces in combined operations.[58] Inherent in US doctrine is the concept of the Geographic Combatant Command. The Combatant Commander will either be the JFC for the operation or assign JFC's to each operation in their Area of Responsibility. A current example of multiple JOA's within a single GCC AOR is the simultaneous operations in Afghanistan and Iraq; both separate JOAs within the CENTCOM AOR. Having multiple JOA's presents a problem for theater air power execution.

There are clearly strategic air assets that should be held at the theater level and not be assigned to a specific JOA. These include: strategic airlift, limited airborne command and control aircraft, strategic strike aircraft (such as B-2 bombers), some air-to-air refueling aircraft, and special-role aircraft. Also many space assets will be held at the national level with the request for

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[56]North Atlantic Treaty Organization, AJO-01(D), *Allied Joint Doctrine* (Brussels: Allied Joint Publication, December 2010), 3-5.

[57]North Atlantic Treaty Organization. AJP-3(B), *Allied Joint Doctrine For The Conduct of Operations* (Brussels: Allied Joint Publication, March 2011), 1-9, 2-10.

[58]Joint Chiefs of Staff, Joint Publication 3-16, *Multinational Operations* (Washington, DC: U.S. Joint Chiefs of Staff, July 16, 2013), I-1. www.dtic.mil/doctrine/new_pubs/jp3_16.pdf.

effects from these assets being retained at the theater level to maximize their effectiveness in operations. Air assets with limited range and/or no ability to switch rapidly between JOAs will be apportioned and assigned by the CCDR to a specific JFC based on the JFACC's apportionment recommendation. Figure 3.1 shows the C2 structure when the JFACC is assigned as a subordinate commander to the JFC under a CCDR. This is the preferred method when a single JOA is active within the AOR.[59]

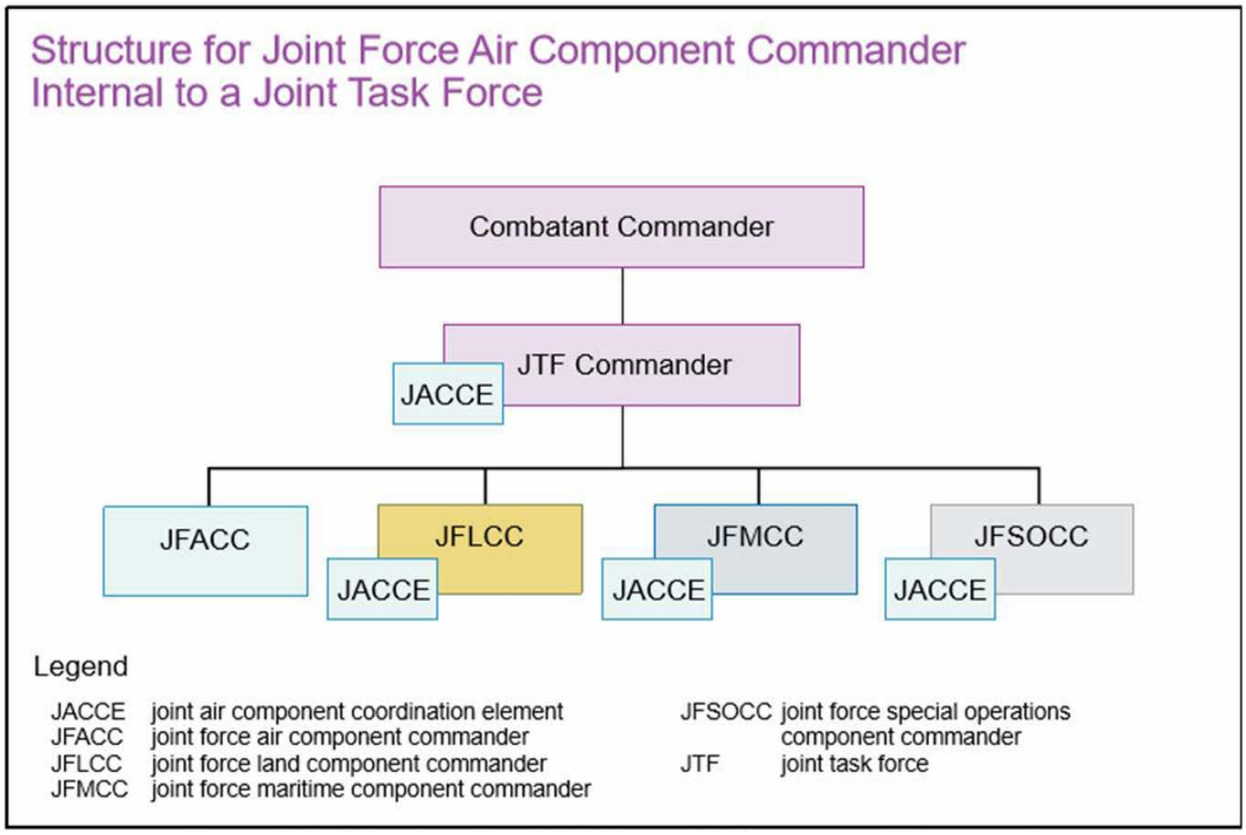

Figure 3.1 – Structure for Joint Force Air Component Commander Internal to a Joint Task Force
Source: United States, *Joint Publication 3-30, Command and Control in Joint Air Operations*, G-3.

As discussed in NATO doctrine, the JFACC may co-locate with the JTF HQ or may establish liaison elements known as Joint Air Component Coordination Elements (JACCEs) at

[59]Joint Chiefs of Staff, Joint Publication 3-30, *Command and Control of Joint Air Operations* (Washington, DC: U.S. Joint Chiefs of Staff, February 10, 2014), G-3. www.dtic.mil/doctrine/new_pubs/jp3_30.pdf.

JTF HQ and within each component commander's location. These coordination elements allow the JFACC to integrate air power into all operations assigned by the JFC.

When multiple JOAs are active within an AOR, the preferred method is to retain the JFACC role above each JFC and assign the theater-JFACC role as a supporting commander to each JFC.[60] Figure 3.2 illustrates the structure when a CCDR retains the JFACC role at the theater level in order to support multiple JOAs. Although only one JTF structure is illustrated below the CCDR, duplicate structures can be added in parallel.

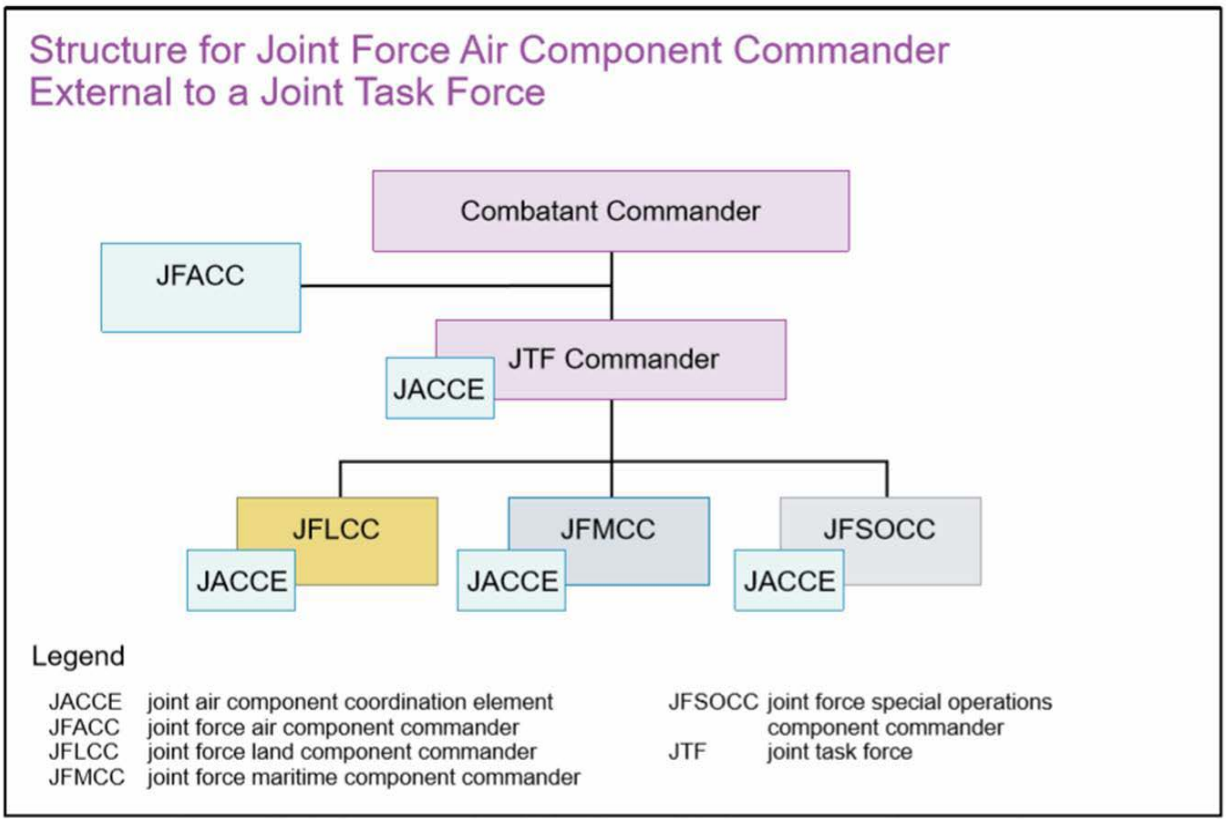

Figure 3.2 – Structure for Joint Force Air Component Commander External to a Joint Task Force
Source: United States, *Joint Publication 3-30, Command and Control in Joint Air Operations*, G-4.

In the above figure, it is important to note that the Theater-JFACC is not superior to the JTF Commander. The Theater-JFACC is a supporting commander to the JTF Commander but

[60] *Ibid.*

may also be supporting another JTF Commander simultaneously. With limited air assets, the Theater-JFACC takes on an adjudicator role between competing JTF Commander requests.

And so, a quick study of four nations' air power doctrine and NATO Allied doctrine reveals that component command is the favoured way to employ air power for all but small scale operations. Canada's doctrine is the most resistant to unilateral action and insists that its forces will always be employed in a joint and combined manner in a coalition or multinational task force except for domestic operations.[61] Australia's doctrine is by far the most ambitious but not surprisingly so given the isolation between itself and any powerful allies in the region. Australia clearly understands the need for joint operations and the benefits of component command but provides options for both unilateral and combined expeditionary operations.[62] The United Kingdom's doctrine is written with the expectation of having to go it alone in unilateral joint operations. Their experience in the Falkland Islands makes this prospect a reality. British air power doctrine easily makes the transition between unilateral operations and joint combined operations mimicking the NATO's Allied Joint Doctrine.[63]

The United States joint doctrine is clearly the most comprehensive and is the only set of the five to consider multiple separate large scale operations in a single theater. When span of control becomes an issue for a single JFC in a campaign or strategic air assets are required in multiple geographically separated areas, a theater approach to air power should be adopted.[64] This multi-JOA approach has been used by CENTCOM in Southwest Asia Theater when Operation Iraqi Freedom and the International Security Assistance Force in Afghanistan both

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[61]Department of National Defence, B-GJ-005-000/FP-001, Canadian Forces Joint Publication 01, *Canadian Forces Doctrine* (Ottawa: DND Canada, April 2004), 6-3.

[62]Julian Kerr, "Auspicious Ambitions," *Jane's Defense Weekly* Vol 54, Issue 6 (8 February 17): 24-31.

[63]Air Staff Report, *British Air*…, 15.

[64]Joint Chiefs of Staff, Joint Publication 3-0, *Joint Operations* (Washington, DC: U.S. Joint Chiefs of Staff, January 17, 2017), IV-11. www.dtic.mil/doctrine/new_pubs/jp3_0.pdf.

created a demand signal for strategic air assets (long range strike, inter-theater and intra-theater airlift, and UAV's). According to *Joint Publication 3-0 – Joint Operations*, the President, Secretary of Defense or a Geographic Combatant Commander are the authorities to define a theater of war or a theater of operations in US doctrine. A theater of war occurs when there is a formal declaration of war or when more than one theater of operations (or a JOA and a separate theater of operation) exist. A theater of operations is an operational area defined by the GCC for the conduct or support of specific military operations.[65]

This use of componency in air power operations and the employment of a JFACC, at least by function if not by title, is reminiscent of the methods employed by General Douglas MacArthur and his senior Airman, Lt Gen George Kenney, in the Pacific theater or by Lt Gen George Patton and Brig General Otto P. Weyland in the European theater during World War II.[66] The first documented employment of a JFACC by name occurred during Operation Desert Shield and Operation Desert Storm in the early 1990's when General Norman Schwarzkopf and his senior Airman, Lt Gen Chuck Horner, successfully executed a prolonged air campaign in advance of and during the short 100-hour long ground offensive to liberate Kuwait from Iraqi forces.[67] Air power doctrine has evolved since Operation Desert Storm and the JFACC concept has clearly been incorporated into many allies' joint doctrine yet NORAD still retains a regional structure from 1985 and has yet to incorporate componency into its evolution.

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[65]*Ibid.* IV-10-11.

[66]Their relationships and their successes were because of "frequent and meaningful interaction between the two men and their staffs underwritten by access to resources and authorities." In short, empowered component commanders can achieve mission success when trust and coordination are present. Lt Gen Gilmary Michael Hostage III, "A Seat at the Table: Beyond the Air Component Coordination Element," *Air and Space Power Journal* 24, no. 4 (Winter 2010): 18.; Stephen J. Zaloga, *George S. Patton: Leadership Strategy*, *Conflict* (Oxford, UK: Osprey Publishing, 2010), 38.

[67]Maj Pux Barnes, "The JFACC and the CAOC-Centric RCAF: Considerations for the Employment of Air Power in Joint Operations. Article #2 in a series on command and control and the Royal Canadian Air Force," *The Royal Canadian Air Force Journal* Vol. 3, no. 3 (Summer 2014): 14-15.

Roles and Responsibilities of the Theater-JFACC

When the component method of command and control has been decided, the senior commander (the GCC in US doctrine or the Joint Force Commander in other Allied doctrine) must make a span of control decision. Can the single JFC handle the entire theater or should a multi-theater approach be taken? A secondary question in the aerospace domain is whether to subordinate a JFACC to each JFC or to have a single Theater-JFACC support multiple JFC's.

Either way it is important to define the JFACC and the roles and responsibilities this nominated commander is assigned. A JFACC stands for the Joint Force Air Component Commander. If the joint force is multi-national, the JFACC may also be referred to as the C/JFACC where the 'C' stands for Combined. Finally, if the decision is made to put the JFACC in charge of all air operations in the theater, the title may be referred to as the Theater C/JFACC (T-C/JFACC), or Theater CFACC (T-CFACC). In the latter case, the joint nature of air operations, meaning that multiple services (Air Force, Army, Navy, and/or Marine Corps) are involved, is assumed.

The role of the JFACC (C/JFACC, T-C/JFACC, or T-CFACC) is to "conduct joint air operations according to the JFC's intent and concept of operations"[68] The JFACC is usually the supported commander for the air offensive part of a campaign but supports the Joint Force Land and Maritime Component Commanders (JFLCC and JFMCC respectively) with air operations associated with their campaigns. As such, the JFACC: apportions air assets, plans the air campaign, coordinates air activities with all relevant parties, allocates air assets, tasks air

[68]Joint Chiefs of Staff, Joint Publication 3-0, *Joint Operations* (Washington, DC: U.S. Joint Chiefs of Staff, January 17, 2017), III-8. www.dtic.mil/doctrine/new_pubs/jp3_0.pdf.

elements, executes air operations, monitors the progress of air operations and assesses their effectiveness in accordance with the JFC's assigned objectives.[69]

The JFACC's responsibilities typically include:

a. developing a joint air operations plan (JAOP);
b. recommending to the JFC air apportionment priorities;
c. allocating and tasking the joint air capabilities and forces made available by the Service components based on the JFC's air apportionment decision;
d. providing the JFACC's guidance in the air operations directive (AOD) for the use of joint air capabilities for a specified period that is used throughout the planning stages of the joint air tasking cycle and the execution of the air tasking order (ATO);
e. performing the duties of the airspace control authority (ACA), if designated;
f. performing the duties of the area air defense commander (AADC), if designated; and
g. performing the duties of the space coordinating authority (SCA), if designated.[70]

When assigned the airspace control authority duty from the JFC, the JFACC is responsible for the overall control and deconfliction of the airspace within the JOA. This includes producing the airspace control plan (ACP) which establishes the guidance and procedures for the airspace control systems.

When assigned the duties of area air defence commander, the JFACC will develop the area air defence plan (AADP) which encompasses defensive counter-air missions (DCA), ground-based air defence plans and force protection measures to ensure the survivability of the air power force. When combined with offensive counter-air operations (OCA), this plan dictates the degree of air superiority expected to be attained and maintained.

If assigned as the space coordinating authority, the JFACC will plan and integrate space requirements on behalf of the JFC.

[69]Air Staff Report, British Air…, 61.
[70]Joint Chiefs of Staff, Joint Publication 3-30, *Command and Control*…, x.

How does a JFACC carry out all these duties? The JFACC operates a weapons system known as the Air Operations Center or AOC (also known by other names such as the Combined Air Operations Center (CAOC)). The AOC differs from the previously mentioned Air Component Coordination Element (ACCE) in that an AOC is the system an air component commander uses to *control* air power centrally. The ACC "normally *commands* the air component and the AOC" but does not need to command the assigned forces directly.[71] From the AOC, authority is delegated to various task groups, units and elements to carry out missions as assigned by the JFC. The director of an ACCE, as a coordination element, does not have the requisite authority to allocate, task, execute, monitor, and assess missions. Authority is the crucial difference between command and control in an AOC, and coordination and liaison from an ACCE. The decision on whether to employ empowered commanders or coordinating directors at the level below the JFACC is discussed in Part 4.

The Combined Joint Task Force Construct

Doctrinally, the Combined Joint Task Force (CJTF) is the way that allied forces train for and carry out contingency operations around the world. While keeping the 'train like you fight' mentality in mind, it makes sense that the same doctrine should apply when considering an effective homeland defence design. Therefore, in a conflict that requires the defence of North America that considers componency, the best and most logical approach would be that Canada and the United States would appoint a mutually agreed-upon JFC to command the forces

[71]Maj Pux Barnes, "Command or Control?: Considerations for the Employment of Air Power in Joint Operations. Article #1 in a series on command and control and the Royal Canadian Air Force," last accessed 3 May 2017, 4. http://www.rcaf-arc.forces.gc.ca/assets/AIRFORCE_Internet/docs/en/cf-aerospace-warfare-centre/c2-article-1-command-or-control.pdf.

assigned by both nations to that task force.[72] It would be reasonable to expect a C/JFLCC, C/JFMCC and a C/JFACC to be assigned. NORAD's missions of Aerospace Warning, Aerospace Control and Maritime Warning would likely fall in the C/JFACC and C/JFMCC's lanes.

According to the Canada-United States Basic Defense Document (BDD), either Commander USNORTHCOM or Commander CANADACOM (now Canadian Joint Operations Command) could be nominated as the Joint Force Commander for a designated Canada-US command structure. Presumably the choice would depend on the adversary vector, the preponderance of force and which nation was designated as the lead nation for the conflict. In such a command structure, Commander NORAD is expected to continue the NORAD missions in a supporting role to the nominated JFC.[73]

Although the BDD implies the possibility that a Canadian could be selected as the JFC, it is highly doubtful that the US would elect to place their forces under the control of another nation when there is an existential threat to their homeland. Since the United States has already placed the responsibility for the defence of the continental United States in the hands of Commander USNORTHCOM and both Canada and the US have jointly named that same person the defender of the airspace over North America, it is safe to assume that in times of conflict that threaten the continent, the Commander USNORTHCOM would be assigned the job as JFC instead of the Commander CJOC. Therefore, doctrinally and logically the best homeland defence

[72]Although it may be the best and most logical military approach for combined operations, the author recognizes that there are many other outside factors that could preclude such an agreement such as sovereignty concerns about US forces operating on Canadian soil and vice versa or the political climate between the two nations at the time of the conflict.

[73]Department of National Defence, Canada – United States Basic Defence Document, Chief of the Defence Staff of Canada and the Chairman of the Joint Chiefs of Staff of the United States (Calgary: DND Canada, 8 July 2006), 5-6.

design for North America will involve componency. The assignment of a C/JFACC will most likely come from the existing NORAD organization.

Both US Joint and RCAF doctrine espouse the fundamental tenet for employing effective air power as the concept of centralized control and decentralized execution (CC/DE).[74] Both nations contend that this concept maximizes airpower's flexibility by ensuring that the proper level of control is maintained to focus on strategic objectives while delegating the proper level of execution authority to those who have the best situational awareness during operations. Air power assets are usually in high demand and low density and therefore must be apportioned where they are best suited to affect the overall campaign plan. That is why a centralized control approach is required. It protects against 'spreading the peanut butter too thinly', for lack of a better analogy.

The JFACC also needs to empower subordinate commanders to take the fight to the enemy in the dynamic and changing environment that is combat. Retaining all forces in order to be reactive means that fleeting opportunities to seize the initiative at the tactical level will be squandered. "Frontline commanders must have the flexibility to outmanoeuvre and defeat the enemy."[75] Eric Theriault argues in *Empowered Commanders: The Cornerstone to Agile, Flexible Command and Control*, that in a contested, degraded environment (CDE) not only is centralized control critical to success but that a new concept of centralized command, distributed control, and decentralized execution is an improvement on the accepted CC/DE concept. In a CDE, command and control at the highest levels cannot be guaranteed and therefore "empowering

[74]Joint Chiefs of Staff, Joint Publication 3-30, *Command and Control of Joint Air Operations* (Washington, DC: U.S. Joint Chiefs of Staff, February 10, 2014), I-3; Department of National Defence, B-GA-400-000/FP-001, *Royal Canadian Air Force Doctrine* (Ottawa: DND Canada, 3rd ed., November 2016), 16-17.

[75]Eric Theriault, "Empowered Commanders: The Cornerstone to Agile, Flexible Command and Control," *Air and Space Power Journal*, (January-February 2015): 99.

subordinate commanders by giving them access to shared data and a common operating picture limits the vulnerability of [an attack on] a central node and offers the trusted data needed for effective C2"[76] The notion of distributed control is thus two-fold. It requires not only delegated authorities (something NORAD already does at certain readiness levels with its region and sector commanders) but also the accompanying shared data and COP to ensure the commander's intent can be executed at any level of command below the JFC. The ability to mass and concentrate firepower where and when required for decisive effects is a prime concern for the JFACC and thus the proper balance must be achieved between centralized control and decentralized execution but by ensuring subordinate commanders have the proper situational awareness and the correct understanding of the commander's intent through distributed control, the JFACC always increases agility in the organization with increased responsiveness, trust and survivability.

Deterrence in Defence Design

> ***To win one hundred victories in one hundred battles is not the acme of skill. To subdue the enemy without fighting is the acme of skill.***
>
> - Sun Tzu, Sixth Century B.C.
> The Art of War

It can be argued that NORAD was never meant to fight, nor was it ever really meant to defend in as much as it was meant to deter. In order to be effective at deterrence, Dr. Stéfanie von Hlatky in her discussion on *The Relevance of Deterrence in an Age of Hybrid War* suggests that at least one of two prerequisites are needed; a threat of retaliation or denial of the enemy's ability to carry out their plans (deterrence by denial).[77] She argues that both of these approaches to deterrence must demonstrate a credibility of commitment. To this end, NORAD aims to

[76] *Ibid.,* 104.
[77] Stéfanie von Hlatky (speech, The Relevance…).

achieve both prerequisites. By providing aerospace warning and maritime warning of an attack on North America, NORAD allows the possibility of a counter attack by conventional or nuclear forces of the strategic triad. When North American leadership is provided with adequate warning of an attack, NORAD succeeds in providing the threat that retaliation will occur. By providing aerospace control through its alert forces, NORAD denies symmetric and asymmetric adversaries the ability to carry out their plans. The threat of retaliation for an attack on North America and the credible resolve to thwart any attack (or at least render it ineffective) must be maintained if NORAD is to be effective.

Unfortunately, von Hlatky argues, that the threat of nuclear retaliation doesn't work like it used to. In today's grey zone conflicts, the level of violence falls just under the bar for which massive retaliation would be justified yet continues to achieve the aim. Take, for example, Russia's annexation of Crimea and its ongoing conflict in eastern Ukraine. Neither warrants a massive nuclear retaliation nor the expense of sending massive amounts of troops to Eastern Europe to bolster a non-NATO, non-Article 5 partner. Russia is succeeding in undermining the rules-based international order that the western world has spent 70 years constructing. The credible threat of retaliation doesn't exist unless NATO admits that "it is willing to trade New York City to defend Riga [or Kyiv]."[78] A new deterrence calculus is clearly required.

Such a calculus asks the tough questions when it comes to the best possible defence design for NORAD. NORAD has always planned on 'shooting the archers' (the submarine SLCM shooters and ALCM-carrying bombers) before they got in range by projecting force and defending forward. The intent was to avoid having to shoot down all the 'arrows' (the cruise missiles). As the range of weapons that can hold North America at risk becomes greater,

[78] *Ibid.*

NORAD's plan to 'shoot the archers' before they launch their arrows becomes impossible without a first-strike option. The natural defence plan then becomes 'catching arrows'. Given the number and proliferation of long range missiles, the ability to point defend all the critical infrastructure and population centres in North America also becomes impossible; there simply aren't enough ground-based air defence assets or alert fighters to go around. Flexible deterrent options such as long-range combat air patrols (CAPs) to project defence force as far forward as possible are a multiplier. Greater intelligence indications and warnings are required since the adversary will likely try to conceal its motives. The indications seen during peacetime will be concealed as tensions escalate. Other methods of detecting and defeating an adversary's preparations to the 'left-of-launch' will be required. Most importantly, a defence force that is reactive, agile, integrated, interoperable and kept in a high state of readiness is a key deterrent. The Australian *Air Power Manual* accurately states that:

> The effectiveness of a coalition air campaign depends on adequate system interoperability, commonality of doctrine and concepts of operations, shared strategic objectives and long-term investment in joint training and exercises, brought together by mutually respected professional mastery. [79]

The same holds true for the Bi-National NORAD campaign plan. Deterrence in defence design must factor in the ability to project force, demonstrate the strength of conviction, and maintain a high level of training and readiness.

Specifically, NORAD needs to acquire the best capabilities to detect and characterize threats (i.e. eliminate capability gaps) and develop ways to affect an adversary left-of-launch. These capabilities include space-based, land-based and airborne systems to detect adversary preparations and approaching threats with small radar-cross sections. Highly reliable

[79]Royal Australian Air Force, AAP 1000-D, *The Air Power Manual…*, 193.

communications systems to correctly describe what is detected are also required. NORAD also needs to maintain and acquire the properly placed infrastructure to be able to react to a detected, characterized, and communicated threat. The system of systems needs upgrades and it is an expensive materiel endeavour.

Additional materiel requirements include training to the highest standards of readiness and interoperability (i.e. tighten seams between countries, regions, sectors, and units). NORAD also needs to retain the ability to shift multi-role forces to go on the offensive through unilateral action by USNORTHCOM and CJOC. This requires a robust force protection and survivability program.

There are, however, certain non-material ways that NORAD can enhance its deterrence posture. By demonstrating the resolve to defend the continent through words and action, and by publicly celebrating the strength of the alliance between the United States and Canada, the leaders of both countries can send a message that attacking North America is simply not worth it. The execution of an attack plan would be thwarted and the retaliation would be too costly.

Part of that resolve comes from improving the command's responsiveness. As a key element for the defence of North America, improvements in NORAD's ability to shift focus, rapidly deploy forces, and coordinate with supporting partners are inexpensive ways to improve agility, decision making, and responsiveness. Fixing an antiquated C2 structure by incorporating componency is a non-material step that NORAD can take.

PART FOUR: A NEW MODEL FOR NORAD

In Part Two, the difficult role of Commander NORAD and USNORTHCOM was discussed. The CJCS is making global integration the "hallmark of the new [US national military] strategy" because the threat environment is "increasingly trans-regional, multi-domain and multi-functional in nature."[80] He is insisting that his combatant commanders, Commander USNORTHCOM included, address the threat environment with globally integrated plans. In his foreword outlining the strategy he states:

> *Today, our planning and operations are focused on the regional construct we implemented in the 1990's. In order to counter threats of today and the future, the Joint Force must be able to operate across regions, domains, and functions and provide a full range of flexible and responsive operations to decision makers.*
>
> - Joseph F. Dunford, Jr
> General, US Marine Corps
> US National Military Strategy,
> Chairman's Foreword, January 2017

In an interview with Defense News after outlining the new strategy, he added "We don't have mission command today at the strategic level. And more importantly, we haven't set the fundamental conditions that are necessary to establish mission command. We owe the Secretary [of Defense] a better command-and-control structure."[81]

This requirement to integrate globally with other combatant commanders and focus on the strategic and political level leaves very little room for operational focus while answering to two masters; the CDS and the SecDef. Having three regional CFACC's reporting to one commander reveals the potential for three disparate approaches for aerospace defence to be

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[80]General Joseph F. Dunford Jr., Chairman of the Joint Chiefs of Staff, National Military Strategy 2016, Chairman's Foreword. June 2016.

[81]Sebastian Sprenger, "Dunford: Power Projection, Alliances Key In New National Military Strategy," *Defense News* (October 5, 2016). http://www.defensenews.com/articles/dunford-power-projection-alliances-key-in-new-national-military-strategy.

brought to the commander for adjudication. At the very best of times, the suggested approaches, while possibly coordinated among regions and well-synchronized will still be regionally-biased by the regional commanders. Recall that when NORAD was formed:

> The two air forces wanted in the mid-1950's to create a bi-national air defence headquarters primarily to provide for a single commander with operational control over the vast defences with which he could conduct a continent-wide air defence battle…[82]

This begs the question, does the regional system still satisfy the intent of placing Bi-National air defence under a single commander for which a continent-wide air defence battle can be properly waged or does NORAD run the risk of fighting three independent battles in three geographically diverse regions with competing limited resource requirements?

The regional model certainly passes the test in terms of survivability in that emergency authorities can be delegated to the region and sector levels. In the absence of direction from NORAD HQ, the regional and sector commanders retain emergency authorities to wage a defensive air battle autonomously. This insulates NORAD from a decapitation strike. For unity of effort however, it can be argued that Commander NORAD and USNORTHCOM's span of control is so broad that in times of conflict, the role of playing adjudicator for the regions' demands will consume more time and effort than a single commander has.

Currently, the role of presenting a well-adjudicated approach to the Commander falls to the NORAD J3, Director of Operations; a staff director at NORAD HQ. Hence there are three-star regional commanders (a two-star in CANR), reporting their needs and desires to a two-star staff officer for adjudication prior to them reaching the Commander. While this arrangement works well in peacetime when demands are relatively low and assets remain relatively fixed, it is

[82]Jockel, *Canada in NORAD*…, 192.

not the optimum arrangement in heightened states of readiness and alert when limited resources become scarce and require prioritization.

In these cases, Commander NORAD and USNORTHCOM, who is likely to be nominated as the JFC or will assign a JFC, would benefit from having a NORAD CFACC to present the air component's regionally-agnostic recommended plan for the aerospace defence of the continent vis-à-vis the current threat. So if componency is the way to defend North America and the CFACC is the air component of that defence, then the argument for having a NORAD CFACC is sound. What falls below that single unifying commander can take several forms.

Allied doctrine suggests that at the level below the CFACC, Air Component Coordination Elements should be placed alongside each ground and maritime commander. Across a large theater such as CENTCOM where two geographically separated JOAs (Iraq and Afghanistan) required the CFACC's attention, such a construct was found wanting.[83] The liaison element associated with an ACCE did not provide the ground commander with the resources and authorities required to exploit air power opportunities.

Lt Gen Hostage, the CENTCOM CFACC found that pushing an empowered air commander forward provided the separate JFC's with the authority and staff they needed to properly employ airpower in their AORs. An ACCE director simply could not satisfy the JTF commander's air power needs without significant reachback for authorization. An air commander, and not merely a liaison element, is required below the CFACC level in large theater operations.[84] Therefore a sub-theater approach to a large theater such as continental

[83]Hostage, *A Seat at the Table*…,19.
[84]Lyon, *Right-Sizing Airpower*…, 8.

homeland defence seems logical. Two models will be examined: the National CFACC Model and the Regional CFACC Model.

The National CFACC Model

One option for the sub-theater approach is to divide the theater along national lines by placing a US National CFACC (US N-CFACC) and a Canadian National CFACC (CDN N-CFACC) under the NORAD CFACC (see Figure 4.1).

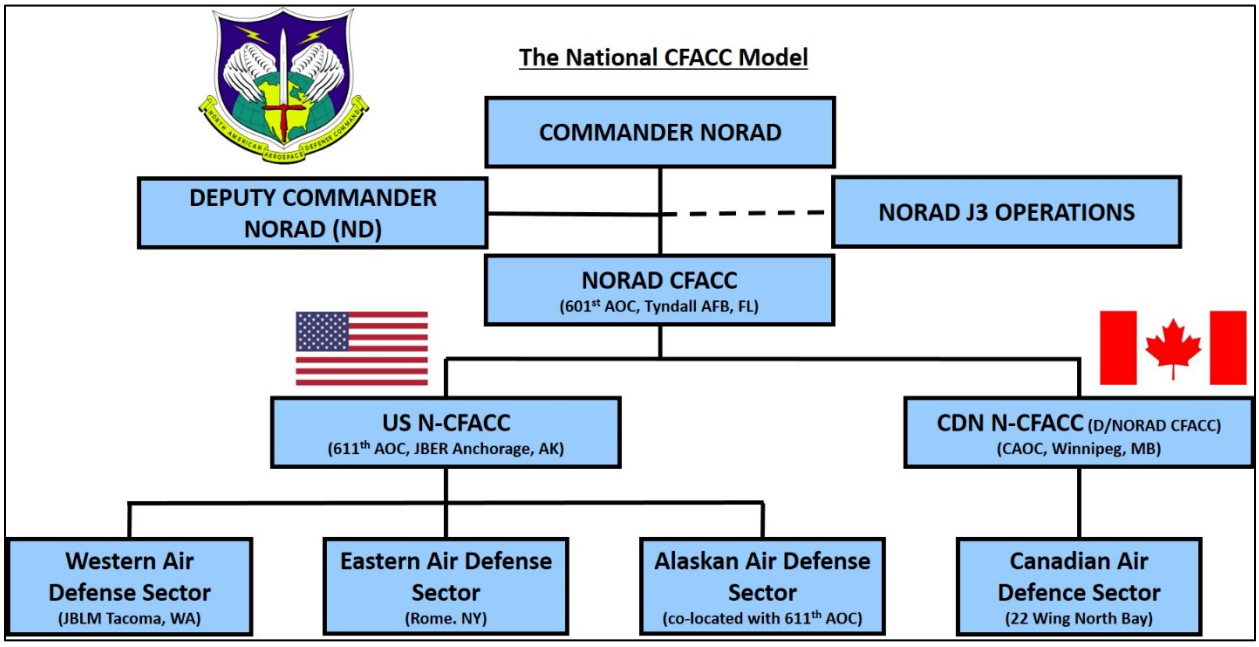

Figure 4.1 – The National CFACC Model

In this model, Commander NORAD is still dual-hatted as Commander USNORTHCOM and is still responsible and responsive to both governments for the NORAD missions. The NORAD Deputy is still a Canadian, still acts as second-in-command, and still acts as commander in the commander's absence. On a day-to-day basis, the ND's sole focus is on the NORAD enterprise and as such, provides sound Bi-National advice to the Commander on NORAD activities.

The dashed line between the NORAD J3 Operations and the Commander implies a coordination role as opposed to a command role. As such, the NORAD J3 becomes more of an advisor to the commander. The NORAD J3 would be responsible for maintaining NORAD standard operating procedures (SOPs), standards, and readiness reporting. The Inspector General role of unit, sector, region and HQ evaluations would continue to be overseen by the NORAD J3 as well.

The addition of a NORAD CFACC provides for a single theater commander in charge of the aerospace defence of North America; as per the original intent since NORAD's inception. Headquartered at Tyndall AFB in Florida with the 601st AOC, the NORAD CFACC would hold the duties of the ACA, AADC, and SCA and have a Bi-National support staff. This commander would hold engagement authorities delegated from Commander NORAD and be responsible for planning, coordinating, monitoring NORAD-wide air and space operations. The NORAD CFACC would be responsible to generate the theater-wide Joint Air Operations Plan, Air Operations Directive, Airspace Control Plan, and Area Air Defence Plan. The AOC staff would produce an Airspace Control Order and a single theater Air Tasking Order. The AOC would also maintain the Special Instructions (SPINS) document that amplifies which standard operating procedures will be employed during current operations. The architecture of the AOC would support Bi-National systems and would require additional Canadian personnel to support truly Bi-National roles. Being geographically separated from the main HQ in Colorado Springs violates joint doctrine (where the JFACC usually tries to co-locate with the JFC) but is viewed as a positive step in this case for survivability (farthest from anticipated threat vectors) and maintaining NORAD focus. The presence of an already functioning AOC also makes the stand-

up of a NORAD CFACC in Tyndall a less onerous and resource intensive procedure than trying to create a functioning AOC in Colorado Springs (where an AOC currently does not exist).

There are some drawbacks to placing the NORAD CFACC at Tyndall in addition to the fact that the NORAD CFACC wouldn't be co-located with the JFC. The 3-Star Air Force commander in Tyndall is currently also the commander of Air Forces Northern-First Air Force (the USNORTHCOM designated air component) and therefore the dual-hatting of commanders would probably continue. This is not necessarily a complete drawback since it allows the opportunity for the same commander to rapidly switch hats to transition assigned forces to unilateral offensive action under a USNORTHCOM authority. It does raise concerns as to whether a regionally-located NORAD CFACC could produce a truly regionally-agnostic, threat-based, and resource-informed plan to Commander NORAD. Of course, without an AOC in Colorado Springs, this supposed regional-bias would occur regardless of the selection of the NORAD CFACC's physical location. Finally, there is the concern of a distant network having to supply the NORAD and USNORTHCOM Command Center (N2C2) with a common operating picture.

When reviewing what falls below the NORAD CFACC on the two proposed models, it is not enough to simply place lines on an organizational chart. It is important to discuss each of the boxes in terms of the roles and responsibilities and relationships that each box symbolizes. Below the NORAD CFACC in the National CFACC model, there are two sub-theater commanders; a US National CFACC (US N-CFACC) and a Canadian National CFACC (CDN N-CFACC). In keeping with the spirit of the NORAD agreement, the CDN N-CFACC would also be the deputy NORAD CFACC. The National CFACC would be responsible to the NORAD CFACC for national interest issues and rules of engagement differences (the national red card

holder).[85] They would maintain and push a national COP to NORAD HQ and provide regional guidance to the sector commanders below them. Although the NORAD CFACC would retain the ACA duty, the National CFACC's would be crucial links to the national airspace control systems in their respective countries (FAA and NAV CANADA) for issues such as Emergency Security Control of Air Traffic (ESCAT) and other airspace control measures should NORAD require them.

The CDN N-CFACC, as Deputy NORAD CFACC, would also require additional US personnel and systems to be able to assume the role of NORAD CFACC when required and to maintain the ability to produce the single NORAD ATO.

Benefits to the National CFACC Model

The National CFACC Model satisfies the NORAD agreement and promises to increase NORAD's agility while closing gaps and tightening seams in the organization. By having a three-star commander who is solely focused on the air defence plan for North America, the model increases Commander NORAD and USNORTHCOM's strategic decision space, thereby placing the commander on par with the other CCDR's. Both the commander and the NORAD CFACC thereby benefit from the increased ability to coordinate laterally and vertically. In the commander's case, this translates into better coordination transregionally with other GCC's and CJOC thus satisfying the CJCS's desire to counter threats by integrating globally. For the NORAD CFACC, the increased focus on the air defence plan allows for better unity of effort

[85]Allied doctrine is similar with respect to the non-relinquishment of National Command in coalition operations. During combined operations, the Canadian National Command Authority delegated from the CDS to the Force Employment Commander, supported by a National Command Element, would effectively hold 'veto' or a 'red card' on coalition missions which were not in Canada's interests. Most nations have a similar construct. Department of National Defence, B-GA-401-000/FP-001, *Canadian Forces Aerospace Command Doctrine* (Winnipeg, Manitoba: Commander 2 Canadian Air Division / Air Force Doctrine and Training Division, 1st ed., March 2012), 35-36.

across the NORAD AO. It sheds the regional approach and offers the NORAD CFACC the ease of apportionment and allocation to position forces where they are needed regardless of regional desires.

Another tangible benefit to the National CFACC model is that it finally incorporates componency into the NORAD structure; something that has been lacking in NORAD since the early 1990's when componency was introduced to joint combined operations. The significance of this step cannot be overlooked. Training is expensive and neither country can afford to train their forces in multiple different approaches to combat operations. This 'train like you fight' mentality generates a consistency across the force that becomes a force multiplier. It makes it easier to augment NORAD forces with those not normally assigned to everyday NORAD operations such as E-2 Hawkeye (AWACS) units or Navy and Air Force fighter squadrons. Componency represents the common approach to the global fight which resonates transregionally and across multiple functions and multiple domains.

The National CFACC model also allows for ease of unilateral operations, both defensively and offensively, in that both National CFACC's have the 'red card' option to opt out of operations that are not in their country's best interests. Both countries maintain the option to unilaterally employ forces through USNORTHCOM or CJOC.

Drawbacks to the National CFACC Model

This ease of unilateral operations, however, is both a blessing and a curse. Russia's aim, as discussed in Part 2, was to undermine the credibility of the alliances that it perceives are arrayed against it. By having a National CFACC that merely becomes a Bi-National/unilateral toggle switch for operations, the relevance of NORAD comes into question. It presents a large

seam for adversaries to focus efforts. For example, Russia might seek Canada's alliance in matters relating to the Northwest Passage through the Arctic Council; a matter where the United States and Canada disagree on the status of the passage. As the two nations with the most at stake in the Arctic, a cozying up of relations between Canada and Russia would drive a wedge between Canada and the United States and undermine the strength of the alliance.

The model also appears to make a larger recognition of Canada's participation in continental air defence by placing a Canadian CFACC on par with an American CFACC. However the opposite is true. By making Canada a 'one of two' voice (two CFACCs) instead of a 'one of three' voice (three regional commanders), the model actually diminishes Canada's stature in the alliance. In NORAD, Canada has always been the junior partner. As such, Canada is distinctly aware of any time *us vs. them* issues or decisions arise. An example of this is Canada's non-participation in Ballistic Missile Defence (BMD). Even though missile warning falls under the auspices of Aerospace Warning as a NORAD mission, the missile defense portion falls unilaterally under USNORTHCOM. By having a 'one of two' voice as the junior partner, Canada faces the 'if you're not in, you're out' argument at every turn. Conversely, as one of three regions who advocate for North American aerospace defence, CANR often has similar views as ANR that are contrary to the views in the lower 48. Canada and Alaska often find themselves defending their similar viewpoints of being closer to the threat but isolated from the bulk of the population being protected. The diminished voice in the National CFACC Model, coupled with a diminished role for the Canadian director of operations and another American commander placed between the CDN N-CFACC and Commander NORAD, means that the seam created by dividing the theater along national lines actually weakens the alliance; something that is undesirable for Canada but also attacks one of the United States' centres of gravity.

On the policy side, the National CFACC model would require an amendment to paragraph 22 of the current NORAD Terms of Reference which specifies that "subordinate NORAD organizations include the Canadian NORAD Region, the CONUS NORAD Region, and the Alaskan NORAD Region."[86] This policy amendment would have to be approved by both the CJCS and CDS.

The Regional CFACC Model

A second option places a CFACC in each Regional Air Defence Centre (RADC) under the NORAD CFACC as per US joint doctrine for empowered commanders (not ACCEs) under the T-CFACC (see Figure 4.2).[87]

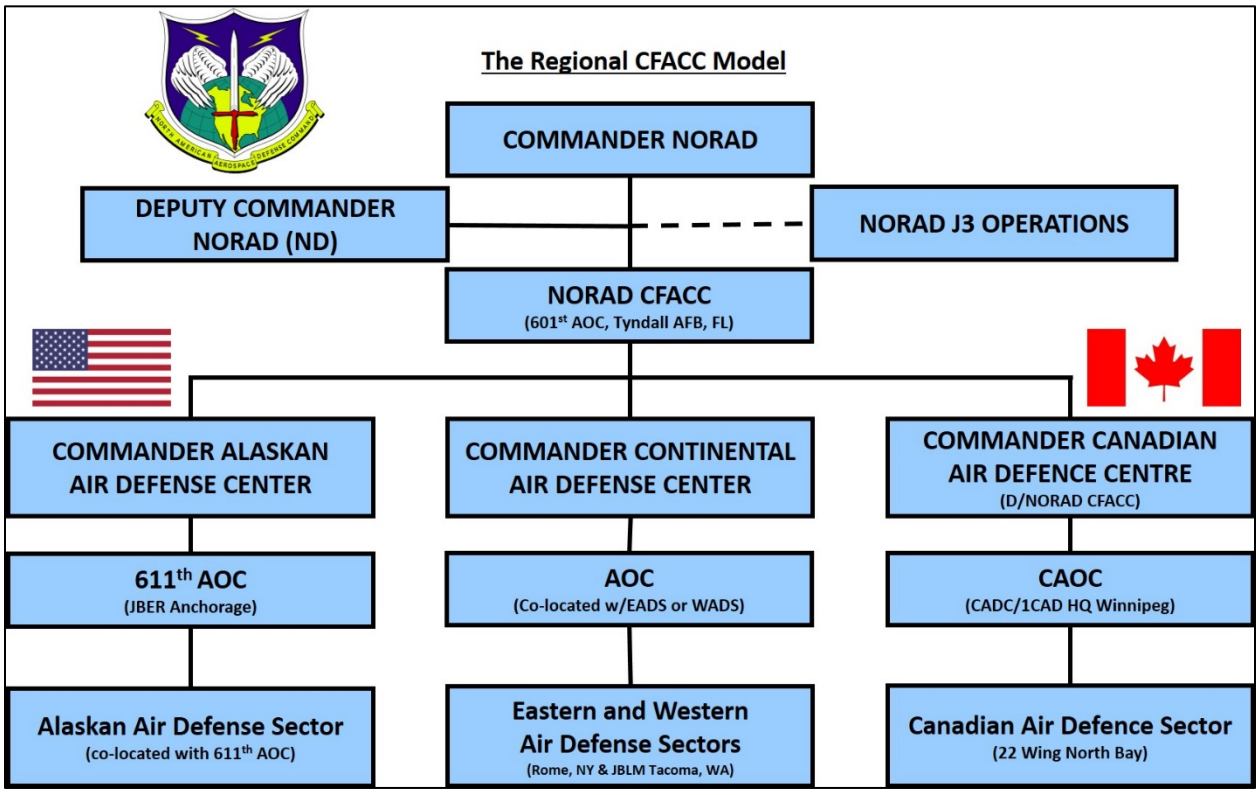

Figure 4.2 – The Regional CFACC Model

[86]Terms of Reference North American Aerospace Defense Command (NORAD). 24 August 2016, 7.
[87]Joint Chiefs of Staff, Joint Publication 3-30, *Command and Control*…, II-7.

The top four boxes in the Regional CFACC Model are identical to the National CFACC Model. The main difference between the Regional CFACC model and the National CFACC model is the establishment of three Regional Air Defence Centres (expected to align with the three JOA's that a JFC would create). These RADC's at Joint Base Elmendorf-Richardson, 17 Wing Winnipeg, and either Rome, NY or Joint Base Lewis-McChord, WA are already functioning AOC's with the appropriate staffs. The NORAD CFACC at Tyndall AFB in Florida would still require additional Canadian personnel and architecture in the AOC in order to produce a theater-wide daily ATO and 17 Wing Winnipeg would still require additional American personnel and equipment as the Deputy NORAD CFACC. The RADC commanders would be CFACC's for their region and would provide a regional COP to NORAD HQ and provide regional guidance to the sector commanders below them. They would be "delegated responsibilities and decision making authority for DCA operations within the region."[88] As tensions increase, it is expected that the authorities delegated to the RADC commanders would increase accordingly to insulate NORAD against a decapitation strike.

Benefits to the Regional CFACC Model

The Regional CFACC Model satisfies the NORAD Agreement but also satisfies the NORAD Terms of Reference in that it keeps the three distinct regional areas referred to in paragraph 22 however the devolution of command in paragraph 33 would have to be amended in both models to reflect the NORAD CFACC as third in command of NORAD before the NORAD Region Commanders.[89]

[88] Joint Chiefs of Staff, Joint Publication 3-0, Joint Operations (Washington, DC: U.S. Joint Chiefs of Staff, January 17, 2017), III-9. www.dtic.mil/doctrine/new_pubs/jp3_0.pdf.

[89]Terms of Reference North American Aerospace Defense Command (NORAD). 24 August 2016, 10.

Since the top four boxes in the Regional CFACC Model are identical to the National CFACC model, it also serves to increase Commander NORAD and USNORTHCOM's decision space and ability to coordinate both laterally and vertically. It provides the same benefits to the NORAD CFACC in terms of unity of effort and ease of apportionment and allocation. The ability to integrate into the JFC's overall campaign plan with a regionally-agnostic approach is retained in the NORAD CFACC's adjudicator role.

Once again the incorporation of componency into the defence design aids with unity of effort and consistency in training across the force. It could be argued that the retention of the regions contradicts the CJCS's desires to integrate transregionally however with the NORAD CFACC approach; the consolidated plan for North American aerospace defence occurs at the operational/strategic level such that the commander can operate at the strategic/political level with a synchronized and integrated plan and still satisfy the CJCS's requirements.

Most importantly for NORAD, the Regional CFACC Model retains Canada's voice as a 'one of three' region member and in doing so strengthens the alliance by removing a national seam that could otherwise be exploited. It also makes it harder for either country to opt for unilateral action as decisions are not viewed through the lens of one country voting with or against the other but rather compiling the best advice from all three regions. The odd number of regions is thus a strengthening construct.

Finally, the Regional CFACC Model complies with joint combined doctrine in that is does not divide coalition forces along national lines but focuses on interoperability as a force

multiplier. It is listed as the "most desirable" C2 structure and although it is the most demanding on C2 resources, NORAD benefits from having those C2 resources already in place.[90]

Drawbacks to the Regional CFACC Model

The Regional CFACC Model is the most demanding on C2 resources. It requires C2 architecture in 6 locations other than Colorado Springs and Bi-National representation in each. The largest anticipated addition of personnel and architecture is anticipated at the 601st AOC in Tyndall to incorporate Canadian architecture into the production of a Bi-National ATO. The next most demanding site is the CAOC in Winnipeg where US architecture is scarce and would have to be added to ensure Winnipeg can act as the Deputy NORAD CFACC. Finally, depending on the site for the CONUS CFACC, EADS or WADS would need to add C2 resources and personnel in order to double as a RADC and Air Defense Sector in the same fashion that the Alaskan Air Defense Center and Sector would operate.

With a NORAD CFACC coordinating the NORAD theater-wide response, the regional baggage retained in the Regional CFACC Model is reduced to the point where global integration is not affected, especially if the JFC subdivides the continental theater along the same lines.

Finally, as with the National CFACC Model, the Regional CFACC Model adds an additional layer between the regional CFACC's and Commander NORAD. It also reduces the role of the NORAD J3. This has the potential to limit responsiveness if Commander NORAD fails to delegate certain authorities to the NORAD CFACC.

[90]Joint Chiefs of Staff, Joint Publication 3-30, *Command and Control*…, II-18.

The Preferred Model?

Both models increase Commander NORAD and USNORTHCOM's decision space and aid in global integration. The NORAD CFACC promises a well-coordinated and integrated response to a NORAD crisis. Both models also incorporate componency and adopt the 'train like you fight' mentality. The NORAD Terms of Reference would require minor amendments in the case of the Regional CFACC Model and slightly more refinement in the National CFACC Model but ease of policy change should not weigh into the decision.

The additional expense of the Regional CFACC Model only applies to the selection of EADS or WADS as the Continental RADC location as all other expenses are similar between the two models. The main argument against the National CFACC Model is the large seam it presents between the United States and Canada in terms of unilateral action and the potential for adversaries to exploit it. The perceived weakening of the alliance is a reason why Canada should reject such an approach. The United States, which champions strong partnerships and alliances around the world, should also recognize this potential seam as a weakness in the National CFACC Model.

The Regional CFACC Model therefore becomes the preferred model for incorporating the NORAD CFACC and sub-theater structure to improve NORAD's agility and responsiveness.

Standing Organization or On-order?

Regardless of which model is selected, the two nations will have to decide whether to keep this new organization as a standing structure or one that is stood-up on-order as geopolitical tensions rise. There are benefits and drawbacks to each.

The more we train not the way we fight, the more we increase the rigidity of our responses.
- LGen Pierre St-Amand
NORAD Deputy Commander

The choice for a standing organization means that a well-oiled machine would be ready-to-go on a moment's notice. There would be little to no reaction time required as the C2 structures would be appropriately manned during peacetime. The NORAD enterprise would exercise and train the way it was intended to defend and this would maximize the commander's decision space in the lead up to a crisis. Additionally, on a day-to-day basis, the NORAD CFACC would provide a second look at all issues facing NORAD. The regionally-agnostic outlook would be active at all times.

A permanent structure change that exists on peacetime, transition, and wartime footings is the most expensive option in that the additional resources normally required during an escalation period would already be sourced by both nations. NORAD's actual fighting assets are already sourced for when alert levels rise however the additional C2 structure and personnel would have to be assigned.

On the other hand, an on-order structure is less expensive but would have to be sourced and exercised often in order to ascertain the exact needs of the NORAD enterprise at higher alert levels. It also runs the risk of being late-to-need if the cues to an escalating crisis are not identified in time. In fact, it is expected that additional sourcing for manpower and assets would be late in the build up to a crisis. The anticipated drain on resources during a global crisis is such that if the organization was not already properly sourced, it is unlikely to receive the requested resources. The structure would have to make due with current asset and manpower allocations.

An on-order structure would likely have certain triggers that would cause it to be activated. The current NORAD model could exist in peacetime. At some point during the

transition to a crisis, triggers would be met to enact the Regional CFACC Model. An in-depth study of possible triggers is beyond the classification of this paper. Suffice it to say that they would involve elevated global tensions such that the Regional CFACC Model is fully stood up as NORAD reached its wartime footing.

A detailed cost-benefit analysis needs to carried out to determine which method (standing or on-order) is preferred. From a military perspective, the preferred method is to always train and exercise in the manner expected in combat so the standing organization is clearly preferred if the expense can be justified.

Combined Joint Task Force – North American Defence

The figure below outlines how the NORAD Regional CFACC Model could fit into a Combined Joint Task Force-North American Defence (CJTF-NAD) should one be stood-up to defend North America against an existential threat. This figure assumes that the JFC, appointed by both countries under the Basic Defense Document, is also the Commander USNORTHCOM as discussed in Part 3.

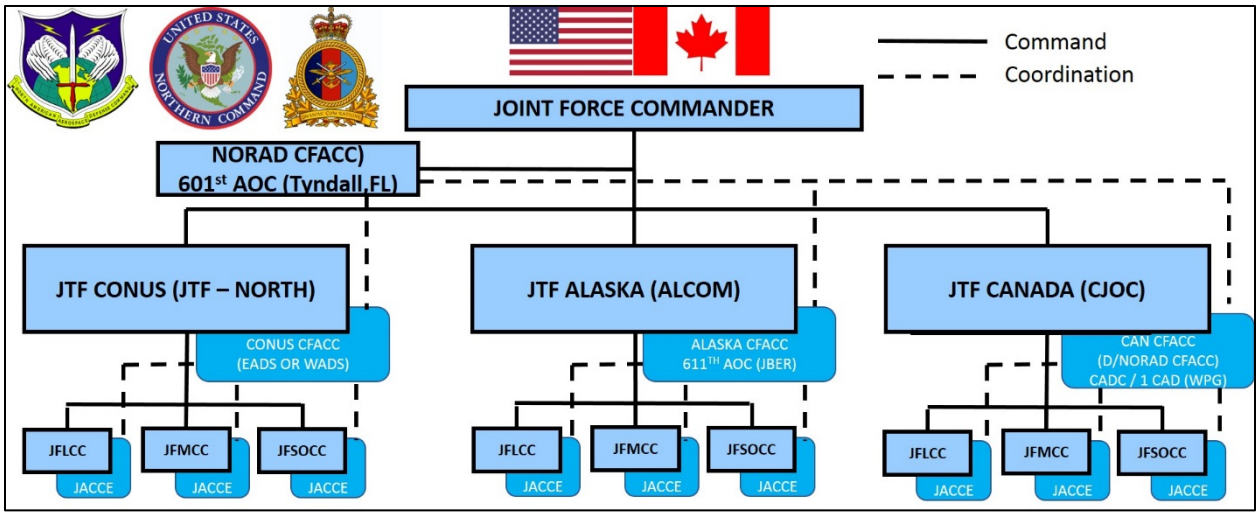

Figure 4.3 – The Three Sub-theater Approach to Combined Joint Task Force-North American Defence

The JFC could designate three separate JOA's (CONUS, Alaska and Canada) as three separate and regionally distinct areas and nominate a sub-unified commander for each regional task force. Using componency, the CONUS, Alaska and Canadian CFACC's would be subordinated to each regional task force commander in a supporting role but would remain part of the NORAD CFACC's supported structure for NORAD missions. For defensive counter-air missions, NORAD would be the supported commander. For offensive counter-air, and offensive and defensive land and maritime missions, the Regional Joint Task Force Commanders would be the supported commanders (potentially using NORAD's assets).

Of course, when considering an activated CJTF-NAD construct, the question becomes: doesn't NORAD just get in the way? After all, CJOC and USNORTHCOM could fight an offensive and defensive fight using the same assets without NORAD's involvement.

The fact remains, NORAD is a standing organization regardless of whether the NORAD CFACC concept becomes standing or on-order. Therefore, NORAD has a jump start on a recently formed CJTF-NAD structure that is facing a crisis. NORAD becomes the way to maintain updated defence plans and exercise the interoperability required by a standing organization that cannot be put together on an ad-hoc basis in a time of crisis. NORAD represents the best of cooperative aerospace defence between two nations anywhere in the world. Thus to capitalize on this extensive interoperability and almost 60 years of experience, a stood-up JTF would be wise to incorporate the existing NORAD structure into its defence plans.

When it comes to NORAD, its relevance has almost always been in question, especially since the collapse of the Soviet Union. Canadians have always been concerned about a loss of sovereignty that comes from an umbrella of US protection. Likewise, Americans have been

concerned about 'contracting out' the defence of their homeland. Al Stephenson refutes both concerns and shows why NORAD is important to both nations in his article, *Securing the Continent: Where is NORAD Today?* He argues that Canada's sovereignty has actually increased by participating in NORAD in that the infrastructure that allows Canadians to survey and patrol their landmass and the high Arctic is a direct result of NORAD (largely American) investment in Canada.[91] He continues that the burden sharing clearly benefits Canada while providing access to information and technology that would otherwise be unavailable. The relationships built on trust and confidence foster a senior government discourse that mitigates against U.S. unilateral action. In other words, Canada retains a voice concerning continental defence as opposed to having a unilateral umbrella of protection forced over its head.[92]

But NORAD is hardly a one-way street in terms of benefits. Stephenson clearly refutes America's concerns over outsourcing the defence of the homeland by outlining the "Active Layered Defense" that has so long been a part of US foreign policy.[93] Firstly, the United States fights the 'away game' with active global intervention in conflict zones around the world in order to avoid having to fight the 'home game'. On the other side of the layered defence, the United States robustly maintains forces to defend its homeland. Somewhere in the middle, Stephenson states that Canada participates in perimeter protection by helping to guard the continental approaches before a conflict reaches the US mainland.[94] Put another way by Dr. Andrea Charron, Canada's alliance in NORAD gives the United States the "freedom to roam internationally without having to worry about a peer in the backyard." She insisted that if Canada were an economic powerhouse (peer competitor) like Germany, for instance, the United States

[91]Alan Stephenson, *Securing the Continent : Where is NORAD Today?* (Toronto, CA: Canadian International Council, 2011), 4. www.cdfai.org.
[92]*Ibid.*, 8.
[93]*Ibid.*, 8-9.
[94]*Ibid.*, 9.

would be far less likely to roam because of economic insecurity.[95] Thus in strengthening an alliance with Canada, the United States enhances its security with the knowledge that it has a small but friendly ally in its large backyard; something China and Russia lack. But the alliance needs to demonstrate credible deterrence value in order to show adversaries that an attack on North America is an all or nothing venture; the cost of which would be too great to undertake or the retaliation from which would be too painful to endure. Showing that credible deterrence is exactly why NORAD needs to incorporate agility and responsiveness into its C2 structure.

Conclusion

The Regional CFACC Model allows both nations to share a common picture of defence. It maximizes unity of effort under a single Bi-National commander. It allows the positioning resources where they are needed most to deter and defend. It preserves both nations right to act unilaterally. It provides the Commander with the 'up and out' decision space required to remain strategically focused while being assured that the best possible defence is established. In strategic thought, the *ends* are fixed in that the continent of North America must be defended. The improved agility offered by this non-materiel restructuring model facilitates finding better *ways* in a time of declining *means*. It is simple and can be achieved with minimal additional manpower, equipment and operation costs.

This model says that NORAD will operate with componency to defend the homelands in the same way that both nations train and operate together on international missions. The 'train like you fight and fight like you train' mentality builds on interoperability, shared risks and above all, trust. NORAD interoperability is second to none. The shared risks are real in that what

[95]Dr. Andrea Charron, interview with author, 25 October 2016.

happens to one country deeply affects the other. Finally, there are no two nations in the world that have a Bi-National agreement like NORAD. Nowhere else in the world would a sovereign nation allow another nation to enter its airspace and employ its weapons against a common threat (be it a Russian cruise missile or a hijacked airliner). The NORAD agreement recognizes that because of interoperability, training, and the optimum placement of assets, a Canadian air asset may be better placed to prosecute a track of interest (TOI) even if that TOI is in US airspace and vice versa. The amount of trust placed in the air defenders of North America by both governments is truly unique.

NORAD started out as a mil-to-mil agreement to cooperate on the air defence of North America. The politicians eventually came to understand the benefits of this cooperation. NORAD is an organization that provides the United States with the room to manoeuvre overseas that other peer competitors lack. It provides Canada with mil-to-mil and political inroads in Washington that other countries covet. It is a valuable alliance for both countries but it needs to evolve to remain a relevant defensive command. This small tweak in the C2 structure mirrors the way both countries employ air power overseas. It is a step that both militaries could easily adapt to. The end state is that this new NORAD Regional CFACC C2 structure allows the Commander to focus on the ‘Up and Out’ fight while allowing a subordinate commander to focus on integrating the ‘Down and In’ fight across three sub-theaters. The new structure remains responsive to both governments, respects each other’s right to unilateral action while promising to see through and beyond the impediments which slow down our responsiveness. By advocating with one voice in the aerospace defence domain and by being able to rapidly shift focus, resources, and operations between theaters, the NORAD CFACC closes existing gaps, tightens seams and presents few new ones. The result is a more agile and better coordinated defence

command which informs the larger global fight while remaining true to its original agreement of continental aerospace defence.

LIST OF ACRONYMS

9/11	The terrorist attacks on September 11th, 2001
A2/AD	Anti-Access/Area Denial
AADC	Area Air Defense Commander
ACA	Airspace Control Authority
ACC	Air Component Commander
ACCE	Air Component Coordination Element
ACP	Airspace Control Plan
ADM	Admiral
AEW	Air Expeditionary Wing
AFB	Air Force Base
ALCM	Air-Launched Cruise Missile
ANR	Alaska NORAD Region
AO	Area of Operations
AOC	Air Operations Center
AOD	Air Operations Directive
AOR	Area of Responsibility
ATF	Air Task Force
ATO	Air Tasking Order or ‘the Frag’ (short for fragmentation order)
AWACS	Airborne Warning And Control System
BDD	Basic Defense Document
BMD	Ballistic Missile Defence

C2	Command and Control
CANADACOM	Canada Command
CANR	Canadian NORAD Region
CAOC	Combined Air Operations Center
CAP	Combat Air Patrol
CC/DE	Centralized Control / Decentralized Execution
CCDR	Combatant Commander
CDE	Contested, Degraded Environment
CDS	Chief of the Defence Staff
CENTCOM	United States Central Command
CFACC	Combined Force Air Component Commander
CJCS	Chairman of the Joint Chiefs of Staff
C/JFACC	Combined Joint Force Air Component Commander
C/JFLCC	Combined Joint Force Land Component Commander
C/JFMCC	Combined Joint Force Maritime Component Commander
CJTF	Combined Joint Task Force
CJTF-NAD	Combined Joint Task Force – North American Defence
CJOC	Canadian Joint Operations Command
CONAD	Continental Air Defense
CONR	Continental United States NORAD Region
COP	Common Operating Picture
CSEC	Communications Security Establishment Canada
CSIS	Canadian Security Intelligence Service
CTG	Commander Task Group

DCA	Defensive Counter-Air
DSCA	Defense Support of Civil Authorities
DHS	Department of Homeland Security
EADS	Eastern Air Defense Sector
ESCAT	Emergency Security Control of Air Traffic
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
FCC	Functional Combatant Command
GCC	Geographic Combatant Command
HD	Homeland Defense
HQ	Headquarters
HUMINT	Human Intelligence
HVE	Homegrown Violent Extremists
ICBM	Intercontinental Ballistic Missile
JACCE	Joint Air Component Coordination Element
JCPOA	Joint Comprehensive Plan of Action or ‘Iran Nuclear Deal’
JFACC	Joint Force Air Component Commander
JFC	Joint Force Commander
JFLCC	Joint Force Land Component Commander

JFMCC	Joint Force Maritime Component Commander
JOA	Joint Operations Area
JTF	Joint Task Force
LEA	Law Enforcement Agency
MAD	Mutual Assured Destruction
MARPAC	Maritime Forces Pacific
N2C2	NORAD and USNORTHCOM Command Center
NATO	North Atlantic Treaty Organization
NAV CANADA	Canada's Air Navigation Service Provider
NAVNORTH	Naval Forces Northern
N-CFACC	National CFACC
ND	NORAD Deputy Commander
NEADS	Northeast Air Defense Sector
NMCC	National Military Command Center
NORAD	North American Aerospace Defense Command
NWS	North Warning System
OCA	Offensive Counter-Air
ONE	Operation Noble Eagle
OODA loop	Observe, Orient, Decide, Act loop
OPCOM	Operational Command
OPCON	Operational Control

PACOM	United States Pacific Command
RADC	Regional Air Defence Centre
RCAF	Royal Canadian Air Force
RCMP	Royal Canadian Mounted Police
SASC	Senate Armed Services Committee
SCA	Space Coordinating Authority
SECDEF or SecDef	Secretary of Defense
SLBM	Submarine-Launched Ballistic Missile
SLCM	Submarine-Launched Cruise Missile
SOPs	Standard Operating Procedures
SPINS	Special Instructions
TACOM	Tactical Command
TACON	Tactical Control
T-CFACC	Theater Combined Force Air Component Commander
TOI	Track Of Interest
TSC	Theater Security Cooperation
UAV	Unmanned Aerial Vehicle
UCP	Unified Command Plan
USAF	United States Air Force
USN	United Stated Navy

USNORTHCOM	United States Northern Command
VEO	Violent Extremist Organization
WADS	Western Air Defense Sector

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