CSC 30 / CCEM 30

EXERCISE/EXERCICE NEW HORIZONS

Who Stands On Guard?
Contracting aerial surveillance of Canada's Exclusive Economic Zone.

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ABSTRACT

Canadians became acutely aware of the security threats against them after 11 September

2001. Ministers from all departments began using the word threat in their speeches and reports.

With the longest coastline in the world providing a virtually undefended avenue of approach to

Canada, there are economic, environmental and security threats that must be addressed. The

Canadian government has responded with committees, working groups and resources to

improve information sharing, technology and surveillance, but governmental process delays

their implementation. In Canada's perpetual quest for value, commercial surveillance becomes

a very attractive option, not in isolation from state activities, but as a collaborative and

supporting partner. With appropriate security measures in place to protect surveillance data,

legislation to ensure reliable labour and understanding that reacting to threats remains a state

responsibility, Canada should have a commercial surveillance company stand on guard. A

contracted private company, providing aerial surveillance of Canada's exclusive economic

zone, can deliver a more efficient and effective surveillance program at an affordable cost to

the Canadian taxpayer.

In 1927, Senator Raoul Dandurand explained to the League of Nations that Canada was a "fireproof house far from inflammable materials".[1] This uniquely Canadian sense of sanctuary was short-lived, as twelve years later the Second World War brought Nazi U-boats off Canada's coast sinking ships and killing Canadians. The Cold War increased the threat to Canadians with the spectre of nuclear exchange, which brought greater resources to those departments that protected Canada. Yet time eroded the prevalence of the nuclear threat to such an extent that Canadians began to feel safe by the late 1970's.

As the sense of security increased, government examined the resources assigned to protect Canada with a view to match resources to threats. Through the 70's and 80's, committee after committee reduced government fleets such that by 1990, Canada's capacity to provide maritime surveillance and security was at a fifty-year low. The Interdepartmental Program Coordination and Review Committee (IPCRC) was created to promote collaboration of the small fleets, but was ineffective and eventually disbanded in September 2001.[2]

However, new threats arose that, in and of themselves, did not warrant increased resources towards Canadian maritime security. In 1992, the Canadian Government, concerned about the threat of an oil spill on the West Coast, implemented special routing instructions for

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[1] Raul Dandurand's famous statement to the League of Nations in 1927 was meant to limit demands on Canada's contributions to European security. Jean-François Rioux, "The Legacy of Raoul Dandurand and Human Security" *Etudes Internationales*, Volume XXXI, Issue 4, (Dec 2000).

[2] With three departments controlling large fleets, Navy, Coast Guard and Fisheries and Oceans, investigations were made into the feasibility of their integration, in the interests of closer control and economy. *All the Ships That Sail: A Study of Canada's Fleets* (Ottawa: Treasury Board, 15 October 1990).

bulk oil tankers.[3]   In 1995, the Turbot War between Canada and Spain off the Grand Banks of

Newfoundland raised concern over migrating fish stocks and provided the impetus for new

legislation.[4] In 1999, the influx of illegal Chinese immigrants arriving by motherships on the

West Coast caused five government departments to expend unprecedented amounts of

resources in interdicting and processing 632 immigrants.[5] Additionally, the continued threat to

Canadian sovereignty from foreign eco-tourism cruises, foreign governments conducting

scientific expeditions in the Arctic and trans-national criminal organizations importing drugs

into Canada amounted to palpable threats.[6] Yet the government did not significantly augment

any departments' resources to combat these rising threats.

Immediately following the Al Qaeda terrorist attacks in New York on 11 September

2001, the Canadian public lost their sense of invulnerability and a paradigm shift occurred in

the way the government looked at threats to Canada. Interests and risks were now addressed in

terms of security. Threats to the environment were now environmental security threats and

migrating fish stocks took on an economic security spin. Security threats in Canada's maritime

environment now ranged from economics and the environment to the penetration of Canada's

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[3] The Canadian Coast Guard provides navigation advice to mariners on how to reduce the risk of oil pollution on the West Coast. Brad Judson, *Collision Risk Circumstances and Traffic Routeing in the Approaches to the Strait of Juan de Fuca, (*Vancouver: Queen's Printer, June 1972).

[4] Homer-Dixon, Thomas F. *Environmental Scarcity and Global Security*, (New York: Foreign Policy Association, 1993).

[5] RCMP considers the resources expended during the four months of 1999 completely out of proportion to those resources normally expended in interdicting the 15,000 illegal migrants arriving via airlines. Royal Canadian Mounted Police, *RCMP Fact Sheets 2000/01* (Ottawa: Queen's Printer, 2001), 16.

[6] China continues to lead the world in Arctic research exceeding Russia's efforts of the past decade. Chinese eco-tourist operators have recently changed tactics using internet announcements in lieu of applying for Canadian government permits to conduct tourism activities. The following website is typical of an eco-tourism announcement. *People's Daily Online*; available from http://fpeng.peopledaily.com.cn/features/arctic/express/8.7.htm; Internet; accessed: 25 March 2004.

borders by illegal aliens and criminals. None of these threats were new, but the 9/11 attack galvanized the government to examine Canada's security resulting in the view that maritime security was found inadequate. Some have argued that these security threats were issues for the Department of National Defence.[7, 8] The Canadian Forces, however, are not the proper instrument to address most of these concerns, even though they may be requested to support the responsible department as a measure of a force of last resort.

Who then is standing on guard for Canadians in our maritime approaches when economic, environment and immigration threats are present?   Anecdotal evidence from the new committee of the Interdepartmental Maritime Security Working Group (IMSWG) lists no less than sixteen federal departments having either legal, regulatory or customary responsibilities in Canada's Exclusive Economic Zone (EEZ). With the preceding decades of fleet rationalizations, which consisted of reductions to aircraft and ship fleets, there remain only a few departments with resources capable of operating in Canada's EEZ let alone providing security. These are the Department of National Defence (DND) with 29 warships, three submarines, 16 long-range patrol aircraft and 28 helicopters, the Department of Fisheries and Oceans (DFO) with 20 Coast Guard (CG) vessels, fourteen helicopters and a small number of contracted medium-range surveillance aircraft, and the Royal Canadian Mounted Police (RCMP) with five fair-weather patrol catamarans.[9] When one considers that Canada has the

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[7] Franklyn Griffiths, *Strong and Free: Canada and the New Sovereignty* (Toronto: Stoddart 1996).

[8] John Ralston Saul, *Reflections of a Siamese Twin: Canada at the End of the Twentieth Century* (Toronto: Viking 1997).

[9] An overview of the DFO fleet is available from http://www.ccg-gcc.gc.ca/fleet-flotte/main_e.htm; Internet; accessed 27 March 2004. DND fleet summary is available from http://www.navy.forces.gc.ca/mspa_fleet/fleet_home_e.asp; Internet; accessed 27 March 2004. RCMP fleet overview is available from http://www.rcmp.ca/pdfs/facts-english.pdf ; Internet; accessed 27 March 2004.

longest coastline and largest offshore economic zone in the world, these resources are insufficient to provide any real security.[10] Truly, an increase in aerial surveillance resources is required. The problem becomes one of which department or departments should receive an increase in funding and resources to provide surveillance. While security remains under the purview of the state, it is not unprecedented that the government contract portions of state security to private companies, as is the case in Canadian airports.[11] This paper proposes that, in the interest of efficiency and effectiveness, a contracted private company provide aerial surveillance of Canada's EEZ.

This paper will analyze the two most commonly considered disadvantages of contracting surveillance to a civilian contractor instead of a federal department and briefly explore the largest risk in hiring civilians to conduct state business. It will become clear that the disadvantages are few and the preponderances of the drawbacks are based on misconceptions not fact. The advantages that a private contractor brings to surveillance will then be examined. In particular, their ability to leverage competitiveness into effective and efficient operations that cannot be matched by government will be decisive in the development of the argument that the advantages far outweigh the disadvantages. Finally, an analysis of two federal departments' abilities to provide increased aerial surveillance will be given to develop the concept that the state is unable to provide the necessary surveillance and, therefore, must resort to contracting arrangements.

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[10] Canada boasts the world's longest coastline (243,792 km), largest offshore economic zone (3.7 million square km), and largest archipelago (Canada's Arctic islands, including six of the world's 30 largest islands, cover 1.4 million square km). *Fisheries and Oceans Canada Fast Facts* available from http://www.dfo-mpo.gc.ca/communic/facts-info/facts-info_e.htm; Internet; accessed 26 March 2004.

[11] Daniel O'Connor, *Making Sense of Airport Security in an Era of Advanced Liberal Governance, Flexibilized Work, and Mass Private Properties* (London: Emerald Publishing 2002).

The most common objection to contracting surveillance is the fear that the information collected by the contractor would be stolen or coerced from the company by an enemy of the state. With this surveillance information, an adversary would then be able to bypass the state's surveillance and security procedures. Data theft is a real possibility; however, invoking protective intelligence procedures can reduce the impact of loss. Methods commonly used by defence and intelligence agencies are compartmentalized acquisition, analysis, and dissemination of information.[12] The tenet of this process is the need to know, where information is shared among carefully defined groups of federal officials who are specified in advance and who hold appropriate security clearances based on lengthy, and costly background investigations. Typically, the contractor would only be responsible for the collection and delivery of the surveillance information. Government agencies would then analyze and store the information thereby reducing the risk of theft and misapplication of the data. The disadvantage of potential information theft can be reduced by implementing established security procedures of compartmentalization and need to know.

A second argument against the use of civilian contracts to conduct aerial surveillance of Canada's EEZ is that their aircraft are comparatively less capable than military aircraft. Inherent in this argument is expectation that the surveillance aircraft would also react to security threats by taking some form of action. Table 1 contains baseline data for the King Air

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[12] The Canadian and International Industrial Security Manual (CIISM) produced by the Department of Public Works and Government Services provides detailed unclassified information on security processes, need to know, and clearance procedures. *CISSM*, available from http://www.ciisd.gc.ca/ism/text/ch1-e.asp; Internet; accessed 28 March 2004.

200 representing a typical surveillance aircraft used by industry[13] compared to baseline data

for the CP140 Aurora aircraft used by Canada for maritime surveillance.[14]

Table 1 – Comparison of King Air 200 to CP-140 Aurora Surveillance Aircraft

	Beechcraft King Air B 200		CP-140 Aurora
Length	13.34 m		35.61 m
Wingspan	16.61 m		30.37 m
Height	4.57 m		10.30 m
Weight	5,670 kg		64,410 kg
Power	Two 635kW Pratt & Whitney PT6A41 turboprop engines		Four Alison T-56-A-14-LFE turboprop engines
Speed	515 km/h		750 km/h
Ceiling	9,144 m		10,668 m
Range	3,658 hm		9,260 km
Surveillance Equipment	AN/APS-504(V)5 Radar (multi-band) STAR Safire II (FLIR*) Agiflite handheld camera Hasselblad 205Tcc Digital Camera A.D.A.M. (Airborne Data Acquisition Management) Night vision goggles Gyro stabilized binoculars		AN/APS-506 Radar (X-band) OR-89 (FLIR*) Sonobuoys, Magnetic Anomaly Detector, Electronic Support Measures, Fixed 70mm camera, Hand-held camera, Night vision goggles, Gyro stabilized binoculars
Weapons	nil		Mk 46 Mod V torpedoes Signal chargers for smoke markers, Illumination flares, Survival Kit Air Droppable (SKAD)
Crew	4 to 5		10 to 15
* FLIR is a Forward-looking Infra-Red optical device with camera.			

The King Air has a more advanced radar, next generation electro-optical device, better

avionics, communications and data management system than the Aurora. The King Air is a

mission-tailored aircraft for surface surveillance that is better able to pass more complete

information ashore than the Aurora. However, the Aurora has four times the endurance and

[13] Aircraft data provided by Raytheon while equipment fit was provided by Provincial Airlines, available from http://www.raytheonaircraft.com/beechcraft/beechcraft_family.htm and http://www.maritimesurveillance.com/SystemBkg.htm; Internet; accessed 27 March 2004.

[14] Data extracted from Jane's All the World Aircraft and Air Force website available from http://www.airforce.forces.gc.ca/equip/equip1l_e.htm; Internet; accessed 20 February 2004.

nearly three times the range of the King Air as well as anti-submarine torpedoes and an air droppable sea survival kit. The Aurora, therefore, is a multi-role aircraft with combat capabilities that can to respond to a larger range of contingencies as well as remain airborne longer than the King Air. Regardless, it would not be the intention to have the civilian aircraft react to security threats, but instead provide an alert to government which would then respond to the threat with a ready duty ship or aircraft.[15] The argument, therefore, is that not only does a commercial aircraft provide an efficient and effective surveillance aircraft; it is complementary to existing DND reactive assets.

With these two factors in mind, analysis must focus on the ability to survey Canada's EEZ. To this end, the ability of the aircraft to fly in all weather conditions, conduct radar and visual surveillance and deliver the data to analysts ashore are fundamental. The Aurora has the ability to climb higher than the King Air, and, therefore, may climb above weather or, with its longer endurance, may extend a patrol waiting for a break in the weather. The King Air, having better surveillance equipment, is capable of surveying a larger area than the Aurora given the same time to complete the surveillance.[16] In 2003, the Aurora Incremental Modernization Program (AIMP) commenced installation of redesigned avionics and sensors, which will be completed by 2008.[17] This project will create an aircraft superior to today's King Air.

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[15] Both coasts designate a warship as the ready duty ship and assign a maritime patrol aircraft at eight hours notice to respond to emergencies.

[16] Multiplying airspeed by radar range allows for a rudimentary comparison. Using 65km radar detection range for the Aurora and 90km for the King Air, the latter is 5 percent more effective.

[17] An overview of AIMP can be found on the Air Force news release web site available from http://www.airforce.forces.ca/news/crew/07-03/07-03e_e.htm; Internet; accessed 24 February 2004.

When conducting surveillance a somewhat subjective view must be taken to evaluate the efficiency of the two aircraft. Both aircraft use similar operating methods, in that initially the aircraft will use a high altitude radar sweep to provide cueing for the crew in preparation of a descent to conduct visual reconnaissance. Once at a lower altitude, the aircrew will use electro-optical sensors to identify contacts before returning to higher altitude to search out the next grouping of vessels. The flight transitions from high altitude cruising to low altitude aggressive maneuvering are quite dramatic and are kept to a minimum due to the costs in fuel in regaining altitude after a descent and airframe fatigue from maneuvering. It is the shipping density and distribution of ships that determine the number of transitions that an aircraft must make during a surveillance mission. Canada's EEZ can be characterized as having very high concentrations of vessels distributed throughout the area.[18] Outside Canada's EEZ, shipping is less dense and likely to be found along the great circle routes approaching North America.[19] The number of transitions that an aerial surveillance aircraft must then execute during a patrol is much higher in the EEZ than outside the EEZ. Therefore, a smaller, lighter and nimbler aircraft would more efficiently conduct surveillance in the EEZ. Given that, the King Air, at one third the size and a tenth of the weight of an Aurora aircraft, is a much more efficient surveillance aircraft inside the EEZ.

Having examined the two most commonly considered disadvantages, there remains a significant detractor from contracting a private company to conduct surveillance. That is the

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[18] R. Olsen., and T. Wahl, "The Role of Wide Swath SAR in High-Latitude Coastal Management", *John Hopkins APL Technical Digest*, Volume 21 (1) 2000, 136-140.

[19] RADARSAT images that illustrate typical contact densities are found in this remote sensing report. M. Henschel, P. Hoyt, J. Stockhausen, P. Vachon, M. Rey, et al., "*Vessel Detection with Wide Area Remote Sensing*", (Vancouver: Sea Tech. 1998), 60-68.

potential for the employees of the contractor to strike and refuse to work. Considering the threats against Canada and the importance of surveillance activities, clearly no stoppage due to labour unrest could be tolerated. Federal departments such as DND and DFO would be unable to replace the lost flights. Therefore, contract negotiations for surveillance flights must consider severe penalties for non-performance and possibly even legislation for designation of surveillance flights as an essential service.

Notwithstanding the potential disadvantage, the basic premise is that having a private company join in the defence of Canada is the most effective and efficient method of improving maritime security of Canada's EEZ. The advantages are considerable. First is the ability of industry to incorporate new technology and innovation faster than government. Two examples will be offered to illustrate. As discussed previously in this paper, compartmentalized information so necessary for security does have its inefficiencies. The current ad-hoc data-sharing arrangement between government departments relies on the need to know system, which is ill suited to the new security threats. The dual requirements of appropriate security clearance and need to know designation inhibits the free flow of information to and from today's diverse community of relevant federal, provincial, municipal, and the private sector.[20] Surveillance data collected by a Canadian Forces (CF) Aurora patrol aircraft is automatically classified secret, and in order to be shared with other government departments needs to be processed. The final step is the manual data entry into an unclassified data format. Thus, the sharing of information between departments is a lengthy process burdened with manual data handling that delays the timely exchange of information. The existing data sharing arrangements among government departments are inefficient.

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[20] *CISSM*, available from http://www.ciisd.gc.ca/ism/text/ch1-e.asp; Internet ;accessed 28 March 2004.

It is impossible to anticipate which government employees, public servants or leaders

need to know surveillance information in a world where enemies are little understood, means of

attack are unpredictable, and potential targets are many, diverse and changing. The complexity

of having to both gather information about threats and vulnerabilities from all levels of

government and the private sector and to return needed information to them creates a

heightened government responsibility to protect core values of openness and privacy.[21] In the

previous example, the manual data processing by the CF is necessary to strip sensitive and

classified data before information is exchanged with another government department. This

creates the potential to deny essential information to another department. The status quo,

therefore, is inefficient.[22]

A private company providing unclassified surveillance data to many departments offers

the opportunity to overcome both the inefficiencies and ineffectiveness of the current data

sharing arrangements. This is best illustrated by the contract for aerial surveillance of Atlantic

and Pacific fishing grounds by the Department of Fisheries and Oceans (DFO) to Provincial

Airlines (PAL).[23] Surveillance data from the aircraft is transmitted directly to DFO's

operations centre on both coasts. This unclassified data is then shared with any authorized

department utilizing automated data streaming techniques.[24] Departmental intelligence analysts

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[21] James B. Steinberg, *Markle Foundation Task Force on National Security in the Information Age*, (Washington: The Brookings Institution 2003), 1-8.

[22] The Standing Senate Committee on National Security and Defence describes current data sharing as clumsy and outdated. *Getting the Right Thinkers Working in Unison,* Ottawa: Parliamentary Report Volume 1, October 2003), Chapter 3.

[23] DFO recently signed a five and a half year contract with Provincial Airlines. This new contract follows a five-year contract that started in March 1999. Fisheries and Oceans Press Release 16 March 2004, available from http://www.dfo-mpo.gc.ca/media/newsrel/2004/hq-ac20_e.htm; Internet; accessed 20 March 2004.

[24] Currently only DFO and DND utilize the information. However, the resulting analysis of the data is shared between Canada Customs and Revenue Agency (CCRA) Citizenship and Immigration Canada (CIC),

then amalgamate the data with other sources and the resulting knowledge is shared between departments at potentially higher classifications. The private company improves efficiencies by virtually eliminating data delivery delays and improves effectiveness by passing all information collected without human manipulation of the data. While the Interdepartmental Maritime Security Working Group (IMSWG) has too identified the problems with current data sharing, their interim solution remains only partially funded and unimplemented.[25]

A second illustration of how industry can more readily adopt technology faster than government is by evaluating the ongoing improvements to the radar in the CF Aurora and the Automatic Identification System (AIS) in Provincial Airlines' King Air. The CF incorporated the radar upgrade of the Aurora into the omnibus AIMP that commenced in 1998.[26] The project swelled to 23 sub-projects that will eventually upgrade 16 aircraft by 2008. This ten-year project will cost $1.4 billion and provide a multi-generational advance in radar technology. Until AIMP is completed, the fleet of available operational aircraft will dwindle with ever decreasing hours available for surveillance flights.[27] The radar upgrade, therefore, will take upwards of ten years to complete and managed by a large bureaucratic infrastructure unresponsive to changing security demands during the modernization process.

Solicitor General (SOLGEN), DFO, DND and Environment Canada (EC). Author implemented regional data sharing from 2000 to 2003 between Pacific federal departments as directed by CMS.

[25] The funding for the maritime information data exchange (MIMDEX) has been delayed by its amalgamation into an omnibus IMSWG Coordination Fund for which Treasury Board has yet to approve. *Getting the Right Thinkers Working in Unison,* (Ottawa: Parliamentary Report Volume 1, October 2003), Chapter 3

[26] The Aurora Incremental Modernization Project (AIMP) is about to deliver the first sub-project (Block 1) in April 2004. *AIMP*, available from http://www.dnd.ca/site/newsroom/view_news_e.asp?id=429; Internet; accessed 2 February 2004.

[27] The air force is providing 700 hours of Aurora flying time for the navy on each coast for surveillance and training. "Air Force officials say part of the problem is that the Aurora fleet is being modernized, which takes as many as five planes out of the flight line at a time." David Pugliese, "Navy Can't Afford to Patrol Coast" *National Post* 27 September 2003, 1.

Provincial airlines recently completed an upgrade to their surveillance aircraft that installed both AIS and a near real-time exchange with DFO for the provision of Vessel Monitoring System (VMS) data.[28] The upgrade was completed on each aircraft over a one-week period with engineering, testing and certification being completed on the fleet within a month. Should a radar upgrade become available or requested by a customer, the vice president of PAL expects the fleet changeover to take one month.[29] A government department's ability to innovate under imposed project management, capital financing and treasury board regulations cannot compete with industry's agility to innovate and incorporate new technology nearly overnight.[30] As well, should the surveillance requirement suddenly increase while a commercial aircraft is being upgraded, industry has the capacity to surge repairs to rapidly return the aircraft to service.

Competitive pressures that exist in the private sector drive a company to become more efficient. Competition means giving customers choice. In this instance, the government, as the consumer, may want to change civilian surveillance contracts if they are offered lower prices or better service, or are dissatisfied with the service they are getting from their present company. Knowing the consumer can switch will keep private industry on their toes.[31] There is a danger

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[28] PAL continues to be a world leader in implementing this new technology. *AIS Instaled in King Air*; available from http://www.provincialairlines.ca/documents/dfoNR.pdf; Internet; accessed 1 April 2004.

[29] Telephone interview between author and Eric Scott the vice-president of surveillance operations. 20 April 2003.

[30] At a surveillance seminar in October 2001, Major Mario Leblanc stated that AIMP was unable to incorporate any further technologies due to funding constraints. SMI Publications, *Maritime Surveillance*, (New York: SMI Publications: 2001), 155.

[31] Pacific nations regularly consider privatising and regulating many previously state operated enterprises with a view to improving their economy and focussing on governing vice competing with industry. Paul Holden, Malcom Bale, and Sarah Holden, "*Swimming Against the Tide? An assessment of the private sector in the Pacific*" (Manila: Asian Development Bank, 2004), 98-105.

in Canada that there are no peer competitors for Provincial Airlines. In other words, while competition rewards entrepreneurship, responsiveness, and enthusiasm; its absence promotes sluggishness and indifference.[32] Because of the increasing importance of the surveillance sector, Canada can ill afford the sluggishness and indifference that so often characterize the provision of products and services under monopoly conditions. As demand for aerial surveillance increases, so does the potential for competition within Canada with the resultant efficiencies and choice within a fledgling industry.

A third way that private industry can bring efficiency is their ability in overcoming structural inflexibility and other bureaucratic obstacles. A consistent complaint against government in Canada is bureaucratic rigidity. It does not matter whether one is within government or a citizen; red tape manifests itself as eternal forms, eternal delays, over regulation, and poor information flow.[33] Delays reduce productivity and when one considers that Industry Canada has identified productivity as a key to success, industry has the proven ability to be more productive than government in certain fields.[34] The current state of labour-management in Canada is such that government labour has decreased morale and productivity.[35] The outcome is general resistance to change. In other words, the government is

[32] William Kennard, chairman for the Federal Communications Council of the United States produced a review of the benefits of private industry competition in previously held government communications sectors. His observations are equally germane to the surveillance sector. William Kennard, "*Connecting the Globe*" (United States FCC Publication: June 1999), Chapter 5.

[33] David J. Grace, *Red Tape Reduction Task Force Interim Report*, (Halifax: Queen's Printer, 2000), 16-21.

[34] The key to success is found in section two of Brian Tobin's 2001 submission of Industry Canada's report to the Treasury Board Secretariat available from http://www.tbs-sct.gc.ca/rma/dpr/00-01/IC00dpr/IC0001dpr03_e.asp; Internet; accessed 29 March 2004.

[35] John Fryer, *The Fryer Committee Report: Working Together in the Public Interest*, (Ottawa: Queen's Printer: 2001), Section 5.

inflexible while industry, in response to meet shareholder and investor expectations for productivity and profit, can adapt much more rapidly than government. This provides for a more efficient organization. For the provision of aerial surveillance, the state is hampered by process. The determination of what department or combination of departments to assign increased resources requires working groups, committees and government approval. As well, if changes to Acts, legislations or laws are required, the state is burdened with an inability to implement change in a timely manner.[36]

The argument thus far, is that industry offers greater efficiency and effectiveness in conducting aerial surveillance than keeping surveillance delivery solely in the realm of the state. To be an accurate assertion, one must consider what would happen if the monies intended for surveillance were not spent for a commercial contract, but were given to one or more departments that currently conduct surveillance for maritime security. The intent of this spending would be to add more aerial surveillance of Canada's EEZ. For the purpose of this examination, only two government departments will be analyzed: the Department of National Defence (DND) and the Department of Fisheries and Oceans (DFO). These departments are selected as they currently expend the most resources towards maritime surveillance in Canada. Could they could deliver aerial surveillance more efficiently and effectively than a commercial company?

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[36] The AG comments that DFO has continued to apply the *Navigable Waters Protection Act* for purposes it was not intended when passed over 120 years ago. Two years later, DFO has yet to initiate changes to the act. Auditor General of Canada, *Report of the Auditor General of Canada, December 2002, Fisheries and Oceans Canada: Contributing to Safe and Efficient Marine Navigation,* (Ottawa: Queen's Printer December 2002), Chapter 2.

Elementary to the analysis of what DND would do with increased monies for surveillance is understanding the capacity of the CF to conduct more surveillance flights. The National Post article from September 2003 put forward the premise that the Navy could not afford more patrols due to budget cuts and equipment shortages.[37] Over the past decade, the number of hours that the Air Force has allocated to the Navy for surveillance flights have decreased by an average of 9.5 percent per year.[38] The current allotment of 1400 hours to the Navy for training and operations, of which surveillance flights use the majority of hours, is very small and represents about 12 percent of all Aurora hours.[39] In terms of presence, an Aurora conducts surveillance over some part of Canada's three oceans for no more than 230 minutes every day, covering no more than 2.5 percent of Canada's EEZ. If one considers that 80 percent coverage provides excellent coverage, the Air Force would need to allocate 21,240 Aurora hours for surveillance of Canada's three oceans. This is more than double the current Aurora flying rate. With AIMP and routine maintenance reducing the Aurora fleet to ten of 18 available, it becomes clear that the CF does not have the capacity to increase surveillance much beyond current levels without purchasing additional airframes.

At 25 million dollars (USD) for a used P3-Orion aircraft (Aurora equivalent), the additional 12 airframes needed to dramatically improve maritime surveillance requires a three billion dollar investment in equipment. Clearly, this is not an option and therefore, no further consideration will be given to increasing the capacity of the CF to generate greater surveillance

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[37] David Pugliese, "Navy Can't Afford Patrol Flights", *National Post* 27 September 2003, 1.

[38] *National Procurement Assessment Study, September 2003*, available from http://www.dnd.ca/crs/pdfs/npas_e.pdf; Internet; accessed 20 January 2004.

[39] The Air Force allotment is stated as yearly flying rate (YFR), which is then further subdivided into training and operations allocations by the Navy. The 2004 YFR is 1400 hours.

coverage. Additionally, one cannot guarantee the CF's current level of surveillance coverage.

During Operation Apollo in the Arabian Sea, Aurora aircraft provided maritime surveillance

for Coalition forces. The 499 flights over two years were accounted for by transfers from

domestic surveillance, among others, to the campaign against terrorism.[40] Given the

government's intention to employ the CF in distant regions to combat terrorism, relying upon

military surveillance to protect Canada's EEZ is tenuous. As the world situation changes, there

exists the possibility that the Aurora would be required for higher priority missions outside of

Canada. Of growing concern is how the modernized Aurora will be employed, and how the

flying rate will be apportioned, after AIMP. The Aurora will have new capabilities in strategic

land surveillance and reconnaissance, which, if apportioned for these missions, will further

reduce the capacity of the CF to conduct maritime surveillance. This issue has yet to be

addressed by DND. Another alternative is that the CF could purchase or lease another aircraft

type in which to conduct EEZ surveillance. The fragile state of the air force and the continuing

struggle to reduce the number of aircraft types, makes it highly unlikely that a purchase or lease

option would be considered. In any event, a government management model could not

compete with the efficiencies of a commercial company.

It is somewhat paradoxical that DFO conducts surveillance missions essential to the

security of Canada without an explicit mandate for security. Transport Canada is responsible

for leadership in marine security issues. Currently, DFO is mainly responsible for supporting

other departments and agencies in these matters. This includes the collection and dissemination

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[40] The Air Force conducted 499 operational flights for approximately 4,400 hours in support of OP APOLLO according to the Aurora fact sheet available from http://www.airforce.forces.gc.ca/equip/equip11_e.htm; Internet; accessed 30 December 2003.

of information through the Marine Communications and Traffic Services centres, aerial

surveillance, and the presence of Coast Guard vessels on Canadian waterways. It was not until

the 2003/2004 report on plans and priorities that DFO indicated they had a maritime security

role (yet to be legislated) in their report to Treasury Board.[41] A review of DFO's previous

submissions of the past three years find no similar acknowledgments of a security role.

Therefore, it seems that a department without legislated direction to provide security, and with

minimal powers to enforce maritime security, is the default agency to conduct surveillance of

Canada's EEZ. One must consider what DFO would do with additional funding designated for

increased surveillance patrols.[42]

The Auditor General of Canada noted that there are significant barriers that prevent

DFO from implementing required improvements to the programs for which they are

responsible.[43] Of particular concern was that Coast Guard operated as five distinct regions that

failed to consistently implement national policies. Even more revealing was the observation

that budgets and resources were reallocated from national to regional issues, depending on each

region's individual priorities.[44] One may deduce from examining any priority list, that

surveillance as a footnote to a large list of safety and maintenance objectives may not be

uniformly conducted throughout the five areas. It should not be surprising, therefore, that the

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[41] Under the sub-heading "Expanding Responsibilities" the minister of DFO states that his department's contribution to national security and sovereignty has become a prevalent issue in day-to-day operations. *Expanding Responsibilities,* available from http://www.tbs-sct.gc.ca/est-pre/20032004/FO-PO/FO-POr34_e.asp#planning_context; Internet; accessed 27 March 2004.

[42] CG was amalgamated into DFO in 2001 with a net decrease in budget. As a result, both DFO and CG fleets were reduced and operations reduced to meet resource constraints.

[43] Auditor General of Canada, "*Report of the Auditor General of Canada, December 2002, Fisheries and Oceans Canada: Contributing to Safe and Efficient Marine Navigation*" (Ottawa: Queen's Printer December 2002), Chapter 2.

[44] *Ibid,* Article 2.51.

contracted surveillance flights that DFO currently purchases are managed nationally with only

flying hours apportioned to the regions. Thus, while DFO could manage the influx of extra

monies for surveillance flights, it would then be contracted to a civilian company, as DFO has

already made the determination that it is the most efficient and effective means of conducting

maritime surveillance.

In conclusion, a commercial company contracted to provide surveillance of Canada's

EEZ is now a reality. However, is it the right choice? Canadians are aware of the security

threats against them: the economic security threat of foreign fishing vessels taking

unsustainable catches of migrating fish stocks, the environmental security threat of large oil

tankers dangerously close to Canada's maritime national parks, and the national security threat

of illegal migrants and criminals using maritime seaways to bypass border controls. The

Canadian government has responded with committees, working groups and resources to

improve information sharing, technology and surveillance, but governmental bureaucratic

process delays their implementation. Understanding that marine security involves a wide array

of partners, including federal departments and agencies, industry, shippers, and shipping

companies, it should be apparent that surveillance as a subset of security could be conducted

using a public-private industry contractual relationship as does Canada's airports. Business

efficiencies and effectiveness are enviable. Less red tape, faster introduction of new

technologies, and the ability to make things happen in minimum time, are hallmarks of the

entrepreneur. In Canada's perpetual quest for value, commercial surveillance becomes a very

attractive option, not in isolation from state activities, but as a collaborative and supporting

partner. With appropriate security measures in place to separate the private contractor from

analysed intelligence, legislation to ensure a reliable labour environment and understanding that reacting to threats remains a state responsibility, Canada should have a commercial surveillance company stand on guard. A contracted private company, providing aerial surveillance of Canada's EEZ, can deliver a more efficient and effective surveillance program at an affordable cost to the Canadian taxpayer.

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