

“Can’t get there from here:” An Analysis of the Risks Associated with Reliance on Non-Integral Strategic Airlift Solutions

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This aim of this paper is to summarize the methodology and findings from an analysis of the risks associated with a reliance on non-integral sources for strategic airlift. The research for

this paper was initiated in 2005 in support of the Directorate of Air Requirements (DAR) and the Airlift Modernization Project. We conclude that there are a number of areas of risk associated with a reliance on non-integral strategic lift solutions, and make several recommendations to mitigate that risk.

The Canadian Forces (CF) conducts extensive operations, both domestically and internationally, in support of Canadian national, foreign, and defence policy objectives. These include selective discretionary involvements in conflict situations around the world, from benign peacekeeping missions to active combat missions. Non-conflict responses include the provision of relief when humanitarian and natural disaster crises arise. And the CF is mandated to defend our geographically expansive homeland, and serve as an aid to civil authority when requested in any type of internal security or natural disaster situation.

Strategic lift is a key enabler across this complete mission spectrum. Sealift is the most cost-effective form of strategic lift, when time lines and geography permit. However, the Canadian Government has found itself contracting strategic airlift resources to support the CF at an increasing rate in recent years, especially for ‘oversized’ (bigger than a standard freight pallet) and ‘outsized’ (bigger than what a Hercules can carry) cargo.¹ Strategic airlift capability either can be delivered with integral Air Force assets or with aircraft from non-integral sources, such as from allies making their own integral airlift capability available to Canada or from chartered commercial airlift (CCA) providers. Canada relied heavily on United States Air Force (USAF) strategic airlift resources to deploy the Operation APOLLO battle group to Afghanistan in 2002 and has extensively employed chartered Antonov AN-124s to support many operations, including deployment of the Disaster Assistance Response Team (DART).

It is axiomatic to state that the demand for a CF strategic airlift capability depends on the shape of the future security and operating environments. Informed by an analysis of CF operations in the recent past, a strategic overview of the future security environment and its impact on strategic airlift requirements suggests that the demand for strategic airlift will remain high into the foreseeable future.

The security environment in which the Canadian Forces must operate to carry out its fundamental roles has changed dramatically since the terror attacks of September 11, 2001. It is characterized by uncertainty, a confusion that revolves around how best to combat the type of threat that those attacks represented. The 9/11 attacks were symptomatic of the type of threats that had evolved since the end of the Cold War: non-state actors, with access to a variety of weapons and a wide-range of information technologies, using unanticipated operating concepts, had developed a global reach and the ability to achieve a strategic effect. That the threats existed was less of a shock than the realization (or perception) that the threats were no longer local. Indeed, the most profound change on that day was the international community’s, and in particular the United States’, perception of the threat: the threat of non-state actors was no longer localized and distant and that there was a link between instability in general, and failed and failing states in particular, and the ability of extremists to grow and develop terror networks and tactics.

¹ *Oversized* cargo, as defined in the CF Joint Doctrine Manual B-GJ-005-404/FP-050, is any cargo item that exceeds the usable dimensions of a 463-L pallet (9 by 7.3 by 8 feet in size and weighing 8,000 lb); *Outsized* cargo, as defined in the same reference, is any cargo item which exceeds 67.5 feet in length, 9.75 feet in width, or 8.75 feet in width, and therefore cannot be carried by a C-130 or C-141 aircraft.

The consequent policies on the use of coercive force and stability operations are creating a climate in which some of the fundamental assumptions of state sovereignty, or at least rights and responsibilities are being called into question. So too are the utility of the institutions and coalitions that sprang from those assumptions and currently define international relations. This is leading to conclusions that deployments and operations abroad are a critical component of home security, and that to be effective they must be rapid, robust, sustainable over a long period, and able to produce effects on the tactical and strategic level. Similarly, the possibility of a direct attack on North American soil has prompted the decision to designate "home" as an operational theatre, placing an equally high premium on the ability of the forces to respond quickly and effectively to any domestic crisis or threat.

Whether the future security environment will be perceived in the same manner depends largely on whether some of the key trends and issues continue to drive force structure and employment decisions. There is a rough consensus on the defining issues of the current security environment - and their inter-relationship.² They are: failed and failing states (or unstable regions); the rise of non-state actors (international terrorists, paramilitaries, tribal forces, transnational criminals), with the ability to achieve strategic effect; unresolved territorial/border disputes; and the proliferation and access to both conventional weapons and weapons of mass destruction (WMD). The geopolitical trends that shape how the international community responds to these issues are primarily the continued dominance of the United States, and the rise of regional powers like the European Union, China, India, and Brazil (as well as the resurgence of Russia). While there are currently no large-scale global or regional interstate wars and most conflicts in the developing world are intrastate in nature, the potential for inter-state wars and competition cannot be completely discounted. However, the direct impact on our commitments and defence policy of any war that does not involve Canada's allies is not immediately clear.

The security environment is, and will also continue to be shaped, by what can be characterized as conditions, or bounding trends. These are not exclusively or even, in some cases, directly, related to security and defence issues, but will shape both the manner in which security issues manifest themselves as well as the response of states and the international community. That said, it remains unclear exactly how these will manifest themselves except that they will add to a general sense of uncertainty and volatility. Globalization, for example, continues to have both a unifying and fragmenting effect. The economic, cultural, communication and personal ties between nations are growing, but the same links also provide evidence of the uneven distribution of wealth, particularly between the developed and developing worlds. Other trends that could combine to create volatility and instability include: the rapid and unplanned urbanization in the developing world, which is accelerating resource depletion, water scarcity and environmental degradation, and increasing the potential for pandemic disease; population growth and demographic patterns, including increasing numbers of youth with few employment prospects in the developing world and an aging population in developed countries; climate change, the impact of which can be particularly devastating for already fragile states and have increased the pressure on the international community to participate in humanitarian assistance, disaster relief and evacuation operations; and the accelerating pace of technological change, which is perhaps the defining feature of the modern age.

² See *The DCDC Global Strategic Trends Programme, 2006-2036* (Third Edition), Development, Concepts and Doctrine Centre, UK MOD, 2007. Many of the assumptions in this analysis are shared by Canadian observers. See, for example, Peter Gizewski, "The Future Security Environment: Threats, Risks and Responses," Canadian Institute of International Affairs International Security Series, March 2007, pp.1-10.

The reality and the perception that North America is a theatre of operations as well as the link between instability and terror networks are shaping international efforts directed at addressing both the symptoms of terrorism and its root causes, often simultaneously. For instance, the US National Security Strategy (NSS) is evolving as a result of the problems with reconstructing Iraq. The US approach will be more proactive and resource-intensive to ensure that the spread of democracy and prosperity go hand in hand with regime change and pre-emptive action; in short, it appears it will focus more on the rebuilding phase.³ However, the situation is very fluid, and the outcome in Iraq is far from clear. How far the US will go to rebuild Iraq is an open question, and the possibility exists that a period of isolation could follow if the rebuilding is unsuccessful. That said, other nations and institutions concerned with international security and stability are developing similar approaches. And any vacuum created by US retrenchment might be filled by allied nations. The United Nations is also pursuing a course to make itself more relevant, evaluating the legal constructs and institutions that promote universal standards for state responsibility and the use of coercive force. The UN Charter currently dominates the current legal framework for the use of force; however, the UK Ministry of Defence (MOD) Joint Doctrine and Concepts Centre 2003 study identified four issues that will challenge the current assumptions underlying the legal framework for the use of force: “the future interpretation of the right to self-defence; future interpretation of threats to peace and security; the future balance between intervention and State Sovereignty; and the future effectiveness of the UN Security Council.”⁴ Many of these issues revolve around the emergence of the concept of the ‘responsibility to protect’ which enunciates as one of the basic principles of sovereignty an implied responsibility for the protection of its people; when the state abrogates that responsibility, “the principle of non-intervention yields to the international responsibility to protect.”⁵

Canada’s international and defence policy is evolving in conjunction with these developments. Canada has consistently recognized the link between the imperatives of domestic defence and international stability and security. Security at home is inseparable from security and stability abroad. At home, Canada has reconfigured its defence and security footprint in recognition of the link between Canada as an operational theatre and its ability to deploy abroad to promote stability. And, deployments and operations abroad are viewed as critical components of home security and defence. However, military force alone is insufficient to address symptoms and causes. Consequently, Canada has committed itself to a “comprehensive” and “whole of government” approach to international affairs - that is the integration of Canadian diplomacy, defence and development efforts, as well as other government departments and agencies, in recognition that symptoms and root causes have to be addressed simultaneously. As a result of this approach, DND is working much more closely with other departments and agencies, such as Foreign Affairs and the Canadian International Development Agency, in order to maximize the effectiveness of Canada’s involvement on the international scene. Canada is applying this policy, if imperfectly, in its approach to rebuilding Afghanistan. The success or failure here may well determine the degree to which the comprehensive concept will shape future considerations on, and the nature of, deployments abroad.

³ “Whither US Security Strategy?” *Strategic Assessment 2004*, Directorate of Strategic Analysis (DND, 2004), p.46.

⁴ *Strategic Trends: The Legal Dimension* (Joint Doctrine and Concepts Centre, UK MOD, 2003), p. 6-2.

⁵ Gareth Evans *et al.*, *The Responsibility to Protect: The Report of the International Commission on Intervention and State Sovereignty*, 2001.

The CF transformation agenda designed to make the CF relevant, responsive and effective, on a tactical, operational and strategic level, at home and abroad is being shaped by the considerations described above. The CF will reconfigure to deploy at home or abroad as an operational formation, rather than tactical units, to achieve the greatest strategic effect for Canada and Canadians. The underlying premise of transformation is the provision of a robust, rapid and joint response to any situation at home or abroad, a response that is credible, visible and able to achieve strategic effect.

The role of the Canadian Forces will continue to evolve as it transforms to remain relevant and effective in the future operating environment. Policy and security environment trends indicate that the tempo of operations will continue to be intense, even if the number of operations diminishes. In addition, whatever the frequency, both domestic and international commitments will require a more rapid and robust response. The comprehensive approach requires the capability to sustain these operations, as well as enhanced interoperability and Communications, Command & Control, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) capabilities to work with, and even provide the lead for, allies and other government agencies and departments. Similarly, the demands of full spectrum operations as described in the "4-Block" war construct will shape the nature of operations in the future.⁶ The CF may most often deploy as part of an integrated Canadian team that will be able to provide stabilization, reconstruction and governance programs. The latter will have to be sustained over a longer period of time than has traditionally been the case for what would have been defined as 'surge' operations, not least as the comprehensive approach drives public and political expectations.

The intent of the foregoing summary has been to suggest a growing demand for strategic airlift, both in Canada and amongst its allies. Although defence missions can arise that are not conflict induced (such as a response to a natural disaster), the primary driver for the purchase of strategic airlift will be in support of Canada's military response to conflict situations world-wide. Predicting where conflict is going to arise in the future is never going to be easy and the frequency of those conflicts is difficult to achieve with any degree of accuracy. Even more unpredictable is Canada's response to that conflict. Ignoring the latter, the most reliable methods will involve in-depth strategic assessments of individual nations and regions by knowledgeable, insightful analysts. Even then, of course, there remains significant uncertainty about how the future will unfold. However, an objective analysis of measurable factors that correlate with conflict can serve as a useful complement in predicting potential for future conflict in regions around the world, and demonstrate, in conjunction with an assessment of general trends and conditions, that strategic airlift provides a capability that would allow Canada to respond to a range of events across the globe.

⁶ The three-block war was a term first coined by General Charles Krulack, the Commandant of the United States Marine Corps, based on the experience in Mogadishu in Somalia. He observed that his forces were called upon to carry out, on the same day, three very different kinds of operations within an area the size of three city blocks: humanitarian assistance; stabilization; high-intensity combat. Based on the Marine Corps experiences in Iraq, analysts have added a "4th" block: psychological and information warfare. And much of the burden would fall on the "strategic corporal." The assumptions of these concepts are reflected in the full spectrum concept adopted by the Canadian Forces for the Afghanistan mission. In full spectrum operations (also called the 3-block war concept), forces could be involved concurrently in combat operations, stability operations and humanitarian assistance. General Charles C. Krulack, "The Strategic Corporal: Leadership in the Three Block War," *Marines Magazine*, (Vol. 28, No. 1, January 1999), pp. 26-33; See also Hammes, Colonel Thomas X. *The Sling and the Stone: On War in the 21st Century* (St. Paul, Minnesota: Zenith Press, 2004), pp.207-8; William Lind et al., "The Changing Face of War: Into the Fourth Generation," *Marine Corps Gazette* (October 1989), pp. 22-6.

This section summarizes the approach taken by Mason and Emond to identify a set of factors that correlate with recent conflict, generate a simple general discrimination model of conflict that fits past observations, and then project that model into the future in a predictive fashion. As an indicator of having been involved in recent conflict, this study noted whether or not each of the 200-plus nations in the world was the subject of a United Nations Security Council Resolution in the past 20 years. A summary of our findings suggests that nations with conflict problems tend to have unrepresentative forms of government, poor economies, poor national health, or populations that are relatively uneducated. There is a hypothesis that these correlates are causal; if the modern nations of the 'Functional Core' could redress the problem factors within the Non-Integrating Gap by helping those nations improve their governmental structures, medical infrastructure, education systems, and economies then the potential for conflict in these regions would be reduced. Not everyone fully subscribes to this theory of causality, but there is no doubt that some correlations do exist. At the very least, the instability of these states and their relative poverty provides fertile grounds for the growth of resentment, extremism and conflict. The Functional Core hopes to export stability; states in the non-integrating gap may also wish to export their instability.⁷

One can hypothesize a wide variety of factors that might have a plausible, explanatory relationship with conflict within a nation. And there may be several reasonable indicators for the same broad factor. For example, public health might be represented by life expectancy or infant mortality rate. The general discrimination analysis pointed to the following four key variables as the strongest correlates to conflict:

- Type of government (a discrete variable: democracy, republic, monarchy, colonial, communist, dictatorship, military, or transitional).
- Infant mortality rate (public health).
- Literacy rate (education).
- Gross Domestic Product per capita (economy).

Although a general discrimination model with four parameters (and where all four are highly correlated with each other) is admittedly a simplistic approach, the underlying statistical methodology allows a probability value to be generated, by nation, predicting the likelihood of being embroiled in conflict during the next 20 years.

These probability estimates are summarized graphically in Figure 1. It is clear from the figure that the underlying correlates of conflict associated with many African nations indicate that the African continent can expect to be a hotspot of conflict for the next several decades. Canada should anticipate having to conduct peace support and humanitarian assistance operations in Africa on a continuing basis, or provide support to those nations that do conduct them. Again, an indicator that strategic, as well as tactical, airlift capabilities would be critical to deploy and sustain those forces as required.

⁷ Mason, D.W., *The Canadian FIVE-W Database: The Who-What-Where-When-Why of CF Deployments Since 1990*, DOR(MLA) Research Note 2004/10, Operational Research Division, Department of National Defence, November 2004, Unclassified; Mason, D.W., Emond, E.J., *Analysis of the Correlates of Conflict Using a General Discrimination Model*, Draft report, Unclassified.

The results of the foregoing analysis suggest that while there could be an increase in the frequency, rapidity, intensity and duration of future CF operations, at the very least, the current tempo and intensity of operations should remain fairly constant. Similarly, the demands for rapid, robust and sustained responses will be driven by factors ranging from political considerations to security imperatives to operational concepts. From a CF perspective, the need to deploy rapidly with a robust force and for a sustained period both at home and abroad places a premium on global mobility and expeditionary capabilities, defined by their reach, speed, agility, lethality and combat readiness. Carrying capacity is also crucial to the long-term sustainment of more robust operations. Any major deployment of CF land/air forces will entail the movement of military vehicles and other oversized and outsized cargo. If this force must be moved by air, then even with the addition of the C-17 Globemaster, the current integral strategic airlift capabilities of the Canadian Forces will be challenged. But, in sum these changes require an assured strategic and tactical airlift capability to respond rapidly and robustly, particularly if the CF pursues a first responder role abroad. The new security environment already requires this at home. The comprehensive and whole of government initiatives will also likely require the airlift capacity to sustain the more robust CF deployment, and support other agencies and departments, for longer periods than has heretofore been the case.

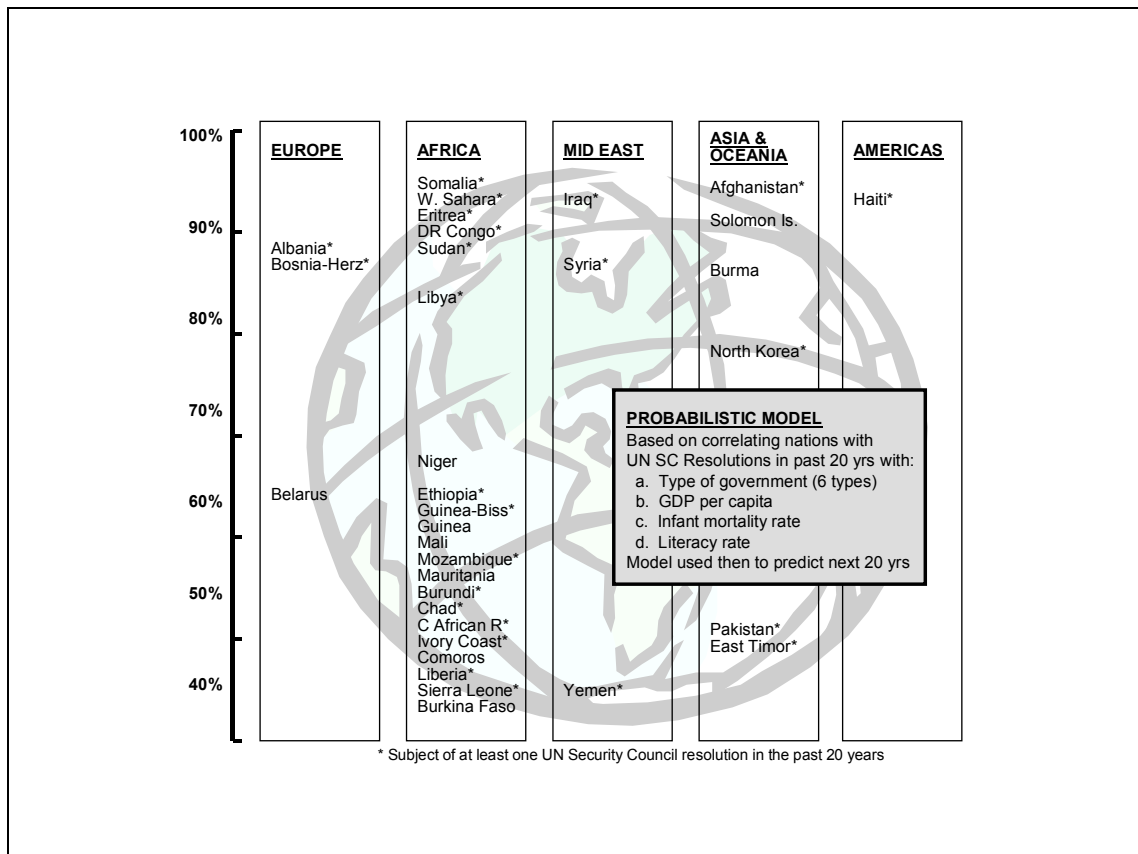


Figure 1: Probability of Being Subject to a UN Security Council Resolution in the Next 20 Years.

The CF will require other capabilities. Securing Canada and North American borders, as well as the security of expeditionary forces, requires comprehensive and sustained intelligence, surveillance and reconnaissance capabilities to achieve full-spectrum situational awareness. Canadian and North American security also requires an Air Force that is combat

effective if Canada is to maintain its commitment to the shared defence of the continent and its ability to defend its sovereign interests and citizens. The expanded range and scope of threats, and the speed with which they could materialize, also requires agile and adept aerospace capabilities. However, an expeditionary Air Force, enabling a responsive, relevant and globally mobile CF, requires assured access to strategic lift.

How the CF obtains this capability is equally important. An examination of the risks associated with levels of assured access, based on the assumption that the CF appetite for strategic airlift services is projected to continue to increase into the future, suggests that seven categories of risk can come into play:

Timeliness considerations: Are the time lines demanded so short that a non-integral airlift option would be challenged to meet them?

Threat environment: Is the in-theatre threat level sufficiently high that only appropriately outfitted military airlifters could respond?

Accessibility of air infrastructure: Is the state of the in-theatre air infrastructure sufficient to support the operations of available CCA types?

Flexibility of tasking: Can CCA contracts or alliance arrangements permit limited strategic airlift resources to be assigned where and when required?

Law factors: Are there international military laws that preclude CCA solutions from consideration in certain conflict situations?

Political considerations: Are foreign policy, defence policy, or public opinion factors influencing the choice between CCA, allied, and integral airlift solutions?

Availability considerations: Will CCA or allied airlift services be available at all when required?

A simple analysis of past strategic airlift operations provided a useful starting point and perspective for discussing risk. Analysis of past operations of the CC130 Hercules, which has often been pressed into service in a strategic role to support CF operations, showed that the factors of Timeliness, Threat, Accessibility, and Flexibility have been a 'critical factor' in 10 to 25 percent of operations since 1990, and have been at least 'a factor' in 30 to 70 percent. The CF military airliners, the Boeing 707 followed by the Airbus 310 (Polaris), are considered 'strategic' in nature. They have been heavily used in direct support to CF operations in the past, and Timeliness has been 'a factor' over 70 percent of the time. Past instances where outsized CCA have been employed showed, perhaps surprisingly, that Timeliness was a 'critical factor' in 30 percent of operations, and was 'a factor' in virtually all other instances. Also perhaps surprisingly, when outsized CCA have been contracted Accessibility was a 'critical factor' in almost 20 percent of operations, and both Threat and Accessibility were at least 'a factor' 70 to 85 percent of the time. In general, it was concluded that when the CF has turned to CCA solutions in the past these seldom have arisen in completely benign situations. Timeliness seems to always be a factor, and more often than not some level of Threat has existed or Accessibility for very large aircraft has been an issue.

The main analysis identified a total of 29 individual items of risk associated with a policy of reliance on non-integral strategic airlift for the Canadian Forces. These were aggregated under the seven categories identified above. A consistent methodology was developed and applied by the authors to identify and compare these risks, combining the classic dimensions of *likelihood* and *impact*, each assessed on a Low-Moderate-High scale, into four colour-coded categories with 'Red' being the most severe risk, followed by 'Orange', 'Yellow', and ending with the mildest risk category, 'Green'.

Figure 2 presents the simple risk assessment graphic that will be employed in this analysis – a 3-by-3 matrix showing the *likelihood/impact* assessment, together with a spotlight colour assessment of each square.

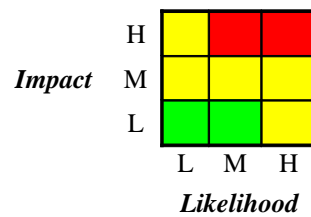


Figure 2: Risk Assessment Graphic Employed.

The colour scheme attempts to map the two dimensions of risk into a single overall dimension. Clearly, events that happen often and have a high *impact* are of maximum concern. These would be assigned the most severe colour – red in this case. Events that happen infrequently and have low *impact* would be of minimum concern, and would be assigned the least severe colour - green. Categorizing the remaining 7 cells is ultimately a subjective exercise in mapping two dimensions into one, but the authors felt comfortable with the 4-colour spotlight scheme mapping shown in Figure 4.

In all cases the risks were assessed in comparison to a baseline integral strategic airlift fleet with ideal quality and quantity. The 29 risks identified are presented in summary form in Table ES-1. The strategic analysis, supported by the historical analysis, informed the *likelihood* assessments in each instance.

The analysis identified three Red category risks: a Timeliness concern with reliance on Allies or CCA for strategic airlift when responding to a domestic natural disaster, an international Accessibility concern with AN-124 into regions struck by a natural disaster that could preclude Canadian involvement, and a Availability concern with reliance on CCA when the AN-124 fleet reaches the end of its life and there may be no replacement capability to take over. Twelve of the risks were assessed in the next most severe category: Orange. The factors of Timeliness (in supporting missions that arise quickly), Accessibility (into third world or disaster struck regions), and Availability (of a limited charter service) each accounted for at least three specific items of risk. Therefore, over half of the risks identified are in these top two severity categories. Only three items of risk were assessed in the Yellow category, with the remaining ten assessed as milder Green category risks.

Two initiatives, either already in place or expected in the near future, were assessed for their impact in mitigating these risks (see Table 1). The first is the NATO Strategic Airlift Interim Solution (SALIS) program, which Canada has recently signed onto. On 23 January 2006, sixteen NATO nations, led by Germany and including Canada, signed this renewable

three-year contract for assured strategic airlift services with Ruslan SALIS GmbH, a subsidiary of the Russian company Volga Dnepr. This agreement will deliver a minimum of 2,000 hours of AN-124 service annually to NATO using up to six Russian and Ukrainian aircraft. The first two aircraft are on full-time charter, the second two are guaranteed to be available on 6 days notice, and the final two on 9 days notice⁸. As the letter 'I' in the SALIS acronym indicates, this contract is intended as an *interim* solution until the Airbus A400M program delivers its 188 aircraft between 2009 to 2021. Five of the eight participants in the A400M program are signatories to SALIS. Under SALIS some of the Timeliness, Availability, and Flexibility risks are reduced slightly, but the remaining risk items continue at the same level.

Table 1: Risk Summary and Re-Assessments Under Two Mitigation Strategies: Joining NATO SALIS and Acquiring Four C-17 Aircraft

#	Factor	Problem/Scenario	Strat Airlift by	Risk Description	Risk Assess: Lik/Imp	Risk Assessment Under	
						SALIS	4 x C17
1	Timeliness	Domestic disaster response	CCA, Allies	Response delayed couple of days in arranging airlift	M/H Red	M/H Red	Baseline Risk
2	Timeliness	International natural disaster response	CCA, Allies	Response delayed several days in arranging airlift	H/M Orange	H/M Orange	L/L Green
3	Timeliness	PSO deployment using SCF	CCA, Allies	Lead elements delayed several days in arranging airlift	H/M Orange	H/M Orange	L/L Green
4	Timeliness	Classified mission response	CCA, Allies	Force deployment delayed day or so using Hercules or Allies	M/M Orange	M/M Orange	Baseline Risk
5	Timeliness	Int'l humanitarian crisis response	CCA, Allies	Response delayed several days in arranging airlift	M/M Orange	M/M Orange	Baseline Risk
6	Timeliness	Combat mission deployment	CCA, Allies	Lead elements delayed several days in arranging airlift	M/M Orange	L/M Yellow	L/L Green
7	Timeliness	Peace Support Ops deployment	CCA, Allies	Lead elements delayed couple of days in arranging airlift	M/L Green	L/L Green	Baseline Risk
8	Threat	Mission in high threat region	CCA	Airlift service provider refuses to provide service	L/H Orange	L/H Orange	Baseline Risk
9	Threat	Mission in high threat region	Allies	Allies reduce or terminate strategic airlift support	L/M Yellow	L/M Yellow	Baseline Risk
10	Threat	Mission in high threat region	CCA	Substantially higher costs for airlift service	M/L Green	M/L Green	Baseline Risk
11	Accessibility	International natural disaster	CCA	Unable to respond – aircraft used cannot access region	M/H Red	M/H Red	L/H Orange
12	Accessibility	International natural disaster	CCA	Delays – aircraft used unable to access closest airfields	H/M Orange	H/M Orange	M/L Green
13	Accessibility	Domestic disaster (northern Canada)	CCA	Aircraft used unable to operate near disaster location	M/M Orange	M/M Orange	M/L Green
14	Accessibility	Peace support and humanitarian assist	CCA	Aircraft access problems induce days/weeks of delay	M/M Orange	M/M Orange	L/L Green
15	Accessibility	Domestic disaster (southern Canada)	CCA	Aircraft used unable to access airfields in stricken region	L/M Yellow	L/M Yellow	L/L Green
16	Accessibility	Peace support and humanitarian assist	CCA	Aircraft access problems force change in mission	M/L Green	M/L Green	L/L Green
17	Flexibility	Responding to any urgent new mission	CCA	Renegotiating contracts on short notice induces delays	L/M Yellow	L/L Green	Baseline Risk
18	Legal	Combat zone missions	CCA	Canada accused of using mercenaries for airlift support	L/L Green	L/L Green	Baseline Risk
19	Political	Coalition combat zone airlift policy	CCA, Allies	Policy to ban CCA aircraft forces delay of weeks/months	M/M Orange	M/M Orange	Baseline Risk
20	Political	Foreign policy conflict	CCA, Allies	Canada is denied strategic airlift services due to conflict	L/M Yellow	L/M Yellow	Baseline Risk
21	Political	National airlift policy in combat zones	CC 130	Policy to use CF aircraft for troops (CC130) affects morale	M/L Green	M/L Green	Baseline Risk
22	Political	Visible Canadian ownership	CCA, Allies	Negative publicity generated using non-Canadian aircraft	M/L Green	M/L Green	Baseline Risk
23	Availability	All international missions	CCA	AN-124 fleet life-expires with no replacement capability	M/H Red	M/H Red	M/L Green
24	Availability	Concurrent demand (No service)	CCA, Allies	Decision delayed, results in no service being available	L/H Orange	L/M Yellow	Baseline Risk
25	Availability	Any international mission	CCA, Allies	Availability of strategic airlift influences go/no go decision	M/M Orange	L/M Yellow	Baseline Risk
26	Availability	AN-124 service provider risks	CCA	Legal problems force removal of AN-124 aircraft from service	M/M Orange	L/M Yellow	Baseline Risk
27	Availability	Any mission – cargo delayed	CCA	Mixups lead to impoundment of CF equipment, delays	M/L Green	L/L Green	Baseline Risk
28	Availability	Any mission – cargo	CCA	Entire load of equipment lost in	L/L Green	L/L Green	Baseline

⁸ Information from the NATO website at www.nato.int.

		lost in crash		AN-124 crash			Risk
29	Availability	Concurrent demand (funds lost)	CCA	Department reserves airlift but Government does not commit	M/L Green	No Risk	Baseline Risk

The second initiative is the announced acquisition of four Boeing C-17 strategic airlifters for the CF. The Minister of National Defence announced on 29 June 2006 that the Canadian Government intends to purchase four C-17 strategic airlifters for the Canadian Forces. Deliveries began in the summer of 2007; all four have been delivered. As discussed, the baseline standard for the risk assessments was in comparison to the Canadian Forces operating with a full, integral, strategic airlift capability that has a sufficient mix and number of assets to meet the anticipated demands. Almost by definition, therefore, having four integral C-17s should largely mitigate all these risks. However, there may be situations where a greater number of C-17s would be required or a perhaps a different strategic lift aircraft might be superior in the situation (like the A400M which is more tactically capable), and so some level of risk would remain. The authors present these risk assessments in the right-most column in Table 1. As it suggests, the purchase of the C-17s eliminates 19 of the 29 risks identified. Some residual level of risk remains on a few Timeliness (due to having only four aircraft) and Accessibility (A400M could get into more locations) items. Table 1 also summarizes the assessed effect of these two mitigation strategies considered.

In conclusion, this risk analysis suggests that Canada and the CF should anticipate an increasing appetite for strategic oversized and outsized airlift services in the future. The current security environment and Canadian perceptions of it suggest that the CF will be called upon to participate in a range of operations and reconstruction activities around the globe. The current, and probable future, approach to holistic comprehensive operations requires that the ability to sustain them over an indeterminate period of time. And even when an approach will require a sustained approach, there will political and public pressures to respond quickly and robustly. To meet the demands of the security environment, and to have the option to do so as required, the CF needs access to a robust strategic airlift capability. The demands for this capability are being mitigated by a number of initiatives and purchases, as described above. Each approach has certain risks, however. The CF should expect the SALIS program to be helpful for Canada in mitigating some Availability, Timeliness, and Flexibility risks, if lift can be made available when required. And the CF should expect a large benefit from the acquisition of an integral strategic airlift fleet based on the Boeing C-17 Globemaster as that solution will largely eliminate all of the risks identified in this report. Even these purchases cannot completely mitigate all risks, but, combined with the other initiatives, they can reduce it significantly.