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**IS CANADA PREPARED TO MANAGE A MAJOR COMPLEX EMERGENCY:
AN ASSESSMENT OF CANADA'S EMERGENCY MANAGEMENT PROGRAM**

By /par Major V.C. Tattersall

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ABSTRACT

Canada's emergency management system has proven very capable of responding to the routine emergencies of snow storms, floods and forest fires. It is only a matter of time however before Canada is faced with responding to a complex emergency in the form of major earthquake, influenza pandemic or some other national disaster. Canada is not prepared to manage a major complex emergency. There are a number of systemic issues with the emergency management program which need to be addressed in order for Canada to be ready. These issues pertain to: the role of government, functionality of the emergency management system, integration and coordination of plans and responses, integration of logistics support and funding of specialized capabilities.

The government must play a proactive role in every component of emergency management from mitigation to recovery. As well, the government must play a proactive role in maintaining one standard for emergency management across the country and develop the measures for ensuring that that standard is met. A critical review needs to be undertaken of the various versions of emergency management systems in use and one standardized system adopted by all levels of government.

Integration and coordination of plans and responses is problematic across every level of government. Plans need to be integrated and responses coordinated between various agencies to ensure effective use of the resources available as well as to identify what more is required. They must also include at every step of the process non-governmental and private sector agencies This is particularly important for the coordination of logistics support which must be responsive and transparent to requirements. The government must also ensure that there are contingency and communication plans in place in the event that emergency response personnel, facilities and equipment are irreparably damaged or destroyed.

The government must continue to fund specialized capabilities such as Heavy Urban Search and Rescue (HUSAR) and Chemical Biological Radiation Nuclear (CBRN) Response Teams. The federal government should also investigate the establishment of deployable Emergency Response Teams to assist provincial governments with preparedness measures prior to an emergency and assessment of requirements for federal assistance in the initial response phase.

If Canada is to be adequately prepared to manage a major complex disaster then the systemic issues of the Canadian emergency management framework must be addressed and the lessons learned from Hurricane Katrina implemented where applicable

INTRODUCTION

In 2005, Canadians were transfixed by the images of destruction and human misery resulting from Hurricane Katrina. It was not just the physical damage caused by the hurricane but the plight of survivors stranded in the New Orleans Stadium without adequate food, water or means of evacuation that caught viewer's attention. Despite the accusations of abandonment due to race the reality was that the emergency management system failed because of fundamental weaknesses in the command and control structure, a lack of resources and most importantly the absence of a centrally managed and coordinated logistics effort. There were too many players with insufficient situational awareness of what was needed where and too few resources to get it there. The final result was a greater loss of life and human suffering, much of which could have been prevented.

Canadians have largely been spectators to recent major complex emergencies the likes of 9/11 and Hurricane Katrina. Untouched by destruction and loss of life, they cannot truly comprehend the level of complexity involved in preparing for or mounting an emergency response in these types of situation. The Canadian frame of reference for emergency management is the more manageable routine emergencies created by snowstorms, floods and forest fires. The few multi-provincial emergencies that Canadians have experience, such as SARS, the 1998 Ice Storm or 2003 Blackout, were relatively short lived and had less of an impact on daily life with fewer deaths and minimal destruction. The tendency because of this frame of reference is to believe that Canada has an effective emergency management program. "Canada is not normally

subjected to events that cause enormous destruction and loss of life. Therefore, Canadians believe wrongly – 'It can't happen here'. This makes it tempting for Canadian governments to ignore planning and be caught short when events occur.[1] Canadians consider the emergency management program as their insurance policy against a major complex disaster happening somewhere in Canada. They know there is a program but don't give it much thought until they need it, naively assuming that what happened with the Federal Emergency Management Agency (FEMA) in the U.S. could never happen here.

A critical examination of Canada's emergency management system would determine that in many respects, Canada is no better prepared to respond to a major complex disaster than FEMA was to respond to Hurricane Katrina. Similar issues related to the role of government, integration and coordination of plans and responses, funding of resources and the functionality of the emergency management system are inherent in the Canadian system. In many ways, the Canadian system is not as robust as the American system. It lacks the resources and capabilities that permitted FEMA to pre-position foodstuffs and personnel, the Coast Guard to carry out rescues in New Orleans and the National Guard to aide in the emergency response. Further, the focus since 9/11 has been more on securing Canadian borders than on improving the country's emergency management framework in light of the lessons learned from Hurricane Katrina. Although new legislation (*Emergencies Management Act*) has been introduced and both a National Disaster Mitigation Strategy and National Emergency Management Framework are being

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[1] Joe Scanlon, *Lessons Learned Or Lessons Forgotten; the Canadian Disaster Experience* (Ottawa: Institute for Catastrophic Loss Reduction), 3.

developed they may not result in significant changes to the emergency management system. Thus, history could very well repeat itself with a Canadian equivalent of the FEMA-debacle were a major emergency to occur in Canada. As this paper will prove, Canada is not-prepared to manage a major complex emergency.[2]

In general, most of the literature available on the topic of emergency management is American. Much of it pertains to the Incident Command System (ICS) and how the American system functions overall. Recent publications are more focused on homeland security and less on emergency management as a separate subject. The recent experiences of Hurricane Katrina are well documented not only in the official White House report but also in various articles on FEMA and the private sector response in general. The White House report gives a very balanced accounting of what was well done and what went wrong, focusing on the shortcomings of the ICS, FEMA organization and issues of logistics coordination and communication. There is very little written from a Canadian perspective that either explains the system or that critically examines the shortfalls of the system and compares the effectiveness of the Canadian system to the American system. Specific reports on lessons learned from Canadian emergencies are largely government or military documents and do not provide a lot of detail on how well the system functioned or how it could be improved. Equally, the lack of information on the organization and functioning of emergency management at the federal level within the Department of Public Safety and at the provincial level in

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[2] Royal Roads University, "Frequently Asked Questions: MA in Disaster and Emergency Management," Royal Roads University, http://www.royalroads.ca/RoyalRoads (accessed 13 March, 2007). The inspiration for the wording of this thesis statement was found in the frequently asked questions section explaining why an MA in Disaster and Emergency Management was necessary: "Recent studies indicate that Canada is not adequately prepared to manage complex or future disasters and emergencies."

Emergency Management Ontario made it difficult to understand how emergency management works at each level. What material was available on their website was very general in nature and led to the perception that neither organization felt they needed to communicate to the public what their role was, how they worked or how prepared they were for an emergency. The exception was the province of British Columbia website which contained a wealth of information on how emergency management functioned as well as key emergency response plans. The disparity between the three sites and indeed with other provincial websites reviewed reinforces the view that there is no single standard in Canada for emergency management and as a result different levels of organization and preparedness exist across the country. The few government publications available in print are woefully outdated and do not reflect new legislation, organizational changes or the current security environment. On the whole, the literature available spoke to what the current system is with very little critique of what it could be.

The discussion of why Canada is not prepared to manage a major complex emergencies will focus on a critique of the current system, a review of applicable lessons learned from Hurricane Katrina and explore the vulnerabilities that could arise through three notional emergency management scenarios. The conclusions reached will form the basis by which the Canadian system will be assessed and a final determination made as to whether Canada is adequately prepared or not. Chapter 1 will provide an overview and critique of the current system, concluding that the major shortcomings of the system are the lack of strong central leadership, a national standard for emergency management, and coordination and integration of plans and responses. Chapter 2 will review the lessons

learned from Hurricane Katrina and compare them to the Canadian system. It will be shown that the lessons learned from Hurricane Katrina highlighted similar issues concerning the role of government, logistics coordination, and communication and the need for contingency plans for command and control. In Chapter 3, a number of notional emergency management scenarios will be developed and common themes identified pertaining to the role of government, the necessity of coordination and integration (particularly for logistics support), importance of communication and requirement to plan for contingencies for command and control. Finally, in Chapter 4, the general issues raised in the previous chapters will be used to assess Canada's emergency management framework. The general conclusion reached is that Canada is not-prepared to manage a major complex disaster.

Definitions

Key emergency management terminology, as utilized in the Canadian context and throughout this paper, is defined below:

> Crisis – a crisis need not pose a serious threat to human life or property, but it must somehow challenge the public's sense of appropriateness, tradition, values, safety, security or the integrity of the government. Some emergencies may be, or become, crises if, for example, it is perceived that the government is not in control of the situation. [3]
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> Critical Infrastructure – critical infrastructure consists of physical and information technology facilities, networks, services and assets that are vital to the health, safety, security or economic well-being of Canadians or the effective functioning

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[3] Canada, Minister Responsible for Emergency Preparedness, *Government Emergency Book* (Ottawa: Public Works and Government Services, 1996), 11.

of governments in Canada. Critical infrastructure protection is one of the emerging challenges of modern emergency management. [4]

Disaster – a sudden and calamitous event producing great material damage, loss and distress. A calamitous event resulting in loss of life, great human suffering and distress, and large scale material damage. A disaster generally results in an emergency.[5]

Disaster Management - an applied science, which seeks, by the systematic observation and analysis of disasters, to improve measures relating to prevention, mitigation, preparedness, emergency response and recover. Disaster and its management is a continuum of inter-linked activities.[6]

Emergency - an abnormal situation which, to limit damage to persons, property the environment, requires prompt action beyond normal procedures. [7]

Emergency Management –is the establishment of a framework (overall plan of action) through which the effects of a disaster are mitigated and a return to normality is achieved. [8]

Emergency Plan – an emergency plan is a co-ordinated set of protocols for managing an adverse event, whether expected or untoward in the future. It seeks the most efficient way to use essential resources to satisfy urgent or chronic needs under conditions of extreme duress.[9]

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[4] Public Safety Canada, "Critical Infrastructure Protection," Government of Canada, http://www.ps-sp.gc.ca/prg/em/cip-en.asp (accessed March 13, 2007).

[5] LFAA, *Domestic Operations Handbook* (Ottawa: Government of Canada, 2004), 165.

[6] S. J. Pettit and A. K. C. Beresford, "Emergency Relief Logistics: An Evaluation of Military, Non-Military and Composite Response models," *International Journal of Logistics: Research and Applications* 8, no. 4 (December, 2005), 316..

[7] Canada, Minister Responsible for Emergency Preparedness, *Government Emergency Book*, 11.

[8] Emergency Management New Brunswick, "A Concept of Operations for Emergency Site Management," Province of New Brunswick,5, http://www.gnb.ca/cnb/emo-omu/sitemanag-e.pdf (accessed March 13, 2007).

[9] David Alexander, "Towards the development of a standard in emergency planning", *Disaster Prevention and Management* (Bradford:2005,Vol 14,Issue 2), p159

First Responder – The first official responders to a disaster. They are often members of the Fire, Police and Emergency Medical Services.[10]

Incident Management System – The combination of facilities, equipment, staff, operating procedures and communications operating within a common organization structure with responsibility for the management of assigned resources to effectively respond to an incident or emerging disaster.[11]

Logistics – the science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, those aspects of military operations that deal with: design and development, acquisition, storage, movement, distribution, maintenance, evacuation and disposition of materiel, movement, evacuation and hospitalization of personnel, acquisition or construction, maintenance, operation, and disposition of facilities, acquisition and furnishing of services.

National Emergencies – an urgent and critical situation of a temporary nature that:
a.   seriously endangers the lives, health or safety of Canadians and is of such proportions or nature as to exceed the capacity or authority of a province to deal with it, or
b.   seriously threatens the ability of the Govt of Canada to preserve the sovereignty, security and territorial integrity of Canada and that cannot be effectively dealt with under any other law of Canada.[12]

Unified command - An application of the Incident Command System used when there is more than one agency with incident jurisdiction or when incidents cross political jurisdictions. Agencies work together through the designated members of the Unified Command, often the senior person from agencies and/or disciplines participating in the Unified Command, to establish a common set of objectives and strategies and a single incident action plan.[13]

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[10]   R. Kuban, *The Emergency Site Management (ESM) System: A Doctrine Paper* (Ottawa: Emergency Preparedness Canada, 1998), 38, http://www.pegasusemc.com.

[11]   Emergency Management Ontario, *Guidelines for Provincial Emergency Management Programs in Ontario - Essential Level* (Toronto: Government of Ontario, 2004), 111, http://www.oaem.ca/doc/EMOGuidelines.pdf.

[12]   Canada, Minister Responsible for Emergency Preparedness, *Government Emergency Book*, 15.

[13]   Department of Homeland Security, *The Federal Response to Hurricane Katrina Lessons Learned* (Washington: Government of the United States,[2006]),13.

CHAPTER 1 – THE CANADIAN FRAMEWORK

Although disasters (either manmade or natural) in Canada have never been on the scale of

a 9/11, Hurricane Katrina or South East Asia Earthquake, it is only a matter of time before a

major disaster befalls the country. While it is understood that Canadians best be prepared,

emergency management is seen as largely a government responsibility even though the

underlying premise of the system is that citizens must be prepared to look after themselves until

authorities can respond to the situation:

> Canadians enjoy a peaceful and safe society, underpinned by security and freedom -- the
> cornerstones of our open, democratic and diverse society. However, in the post-9/11
> world, the complexity of safety and security challenges facing Canada has rarely been
> greater -- be it the integrity of our borders, the emergence of new infectious diseases or
> the interdependence of the electrical grid and other critical infrastructures. Canadians
> rightly expect their Government to have a plan of action for dealing with these challenges
> and to judiciously allocate resources in order to maximize the outcomes of strategically
> chosen priorities and efficiently executed activities.[14]

Emergency management in Canada is however not a fully mature government capability.

Originally considered a minor element of civil defence, the concept and system of emergency

management has evolved as the scale, frequency and impact of disasters has grown and the threat

of nuclear war diminished. Emergency management is largely taken for granted until pushed to

the forefront of government and public conscious during times of crisis. There remains however

fundamental problems with the emergency management program in Canada that undermines the

country's level of preparedness to manage complex or future disasters and emergencies.

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[14]   Public Safety and Emergency Preparedness Canada, *Report on Plans and Priorities 2005* (Ottawa:
Government of Canada,[2005]), http://www.tbs-sct.gc.ca.

Canada's emergency management program is predicated on a framework of three interdependent elements: the governance structure, legislative framework, and emergency management doctrine. There are serious shortcoming with each element which of the framework. Broadly speaking these shortcomings are related to issues of the role of government, command and control, coordination of plans and responses (particularly logistics), and a lack of resources. These shortcomings are further exacerbated by the lack of standardization and focus on specific components of emergency management to the detriment of others. Each element of the Canadian emergency management framework will be discussed in detail in order to provide an understanding of the emergency management program in Canada and the origin of these shortcomings. In order to provide a general overview of emergency management at the provincial level, the Emergency Management Organizations (EMOs) for British Columbia and Ontario have been selected for discussion as they represent the greatest challenges to the emergency management system. In British Columbia the spectre of a massive earthquake has driven a first rate emergency management system while Ontario, as the most populous province presents unique challenges, not the least of which is the large urban area centred around the Golden Horseshoe stretching from Oshawa to the U.S. border at Niagara.

Emergency management in Canada continues to evolve from its origins as primarily a civil defence function into a government plan of action for responding to an emergency, either manmade or natural. It is in some ways a Canadian imitation of the American emergency management system and in other ways uniquely Canadian due to the socio-political structure of the country. Above all, it is a starting point for a plan of action in the event of an emergency.

Emergency Management Doctrine

Emergency management doctrine in Canada is largely a product of the doctrine

developed in the United States and subsequently adapted to incorporate uniquely Canadian

considerations such as the role and legislated powers of government. The doctrine defines both

the general principles upon which emergency management is based and how it is organized and

conducted. Emergency management is based on four universally accepted components;

mitigation, preparedness, response and recovery (see Figure 1).
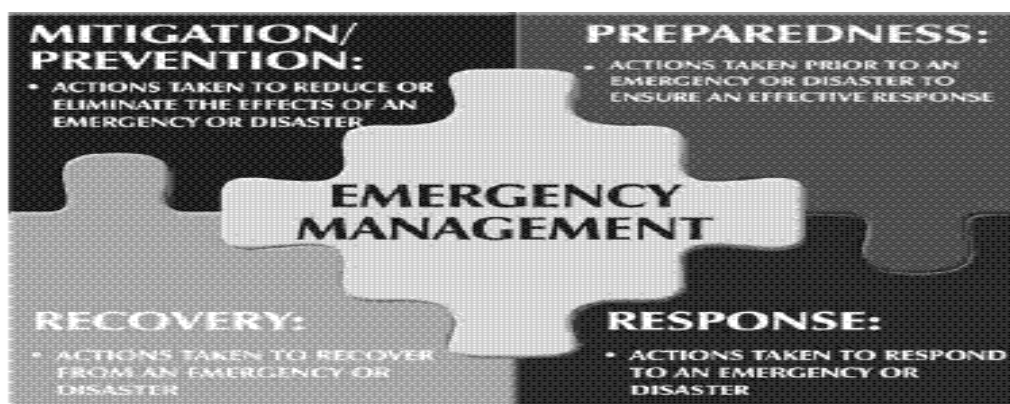
Figure 1 Components of Emergency Management

Mitigation is the upfront investment in measures to prevent disasters and/or minimize the

damage and loss that results from them. The best example of this is the construction of the Red

River Floodway. "It is estimated that the Red River Floodway which was built in the 1960s at a

cost of about $60 million, prevented approximately $6 billion in potential flood damage during

devastating floods in 1997."[15] Mitigation is largely overlooked in the Canadian system and

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[15]   Government of Canada, *National Report: Canada Prepared for the International Strategy for Disaster Reduction, World Conference on Disaster Reduction Kobe, Hyogo, Japan January 18-22, 2005* (Ottawa: Government of Canada,[2004]),6, http://www.unisdr.org/eng/country-inform/reports/Canada-report.pdf.

poorly funded. "Canadian federal legislation is focused almost exclusively on preparedness and response to emergencies and does not contain any reference to hazard mitigation as a priority."[16] As shall be discussed in Chapter 4 the government is working to change this with the development of a National Disaster Mitigation Strategy.

Preparedness encompasses the measures taken to anticipate a disaster including the planning, training and resourcing of capabilities at all levels. The Federation of Canadian Municipalities has identified three key concerns with respect to preparedness: the shortfalls in funding of emergency response capabilities, lack of personnel resources and lack of national standards for planning and training.[17] The development of the National Emergency Management Framework, to be discussed in Chapter 4, will help to address some of these concerns. Post 9/11 there has been a growing acknowledgement of the need for specialized capabilities such as a Chemical Biological, Radiological and Nuclear response and Heavy Urban Search and Rescue (HUSAR).[18] Funding is limited however and actual capabilities are still being developed, trained and equipped. It is difficult to actually measure Canada's level of preparedness because there is no national standard or mechanism for verifying that plans and training are effective.

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[16] Dan Henstra, Federal Emergency management in Canada and the United States after 11 September 2001, *Canadian Public Administration* (Toronto: Institute of Public Administration of Canada,[2003]),www. http://www.ipac.ca, 109.

[17] Global Change Strategies International Company, *Municipal Emergency Preparedness and Management Costs* (Ottawa: The Federation of Canadian Municipalities,[2004]), www.gcsi., 19.

[18] Hestra, Federal Emergency management in Canada and the United States after 11 September 2001, *Canadian Public Administration*, 109.

The focus of the response and recovery components is self-explanatory. Nowhere in the research conducted did plans discuss recovery as a separate component giving the impression that it is either viewed as part of the response component or that no consolidated plan exists. Three key concepts are at the centre of emergency response in Canada: "individual citizens bear a responsibility in preparing themselves for emergencies, sustained disaster response is the purview of larger entities and disaster response is ordinarily the responsibility of local authorities (i.e. municipalities)."[19] From these concepts delineation is made of the types of emergencies and who is the lead in responding to them:

- Provincial emergencies – are an emergency within a province or for which a province has the lead in dealing with the emergency; and
- Federal emergencies – an emergency outside the jurisdiction of a province (i.e. international or in Canadian territorial waters) or for which the government is the lead (i.e. occurs on federal property). [20]

These concepts also underpin the general principles of emergency management planning.

There are four general principles of emergency management planning which impact response capabilities and how well integrated and coordinated planning is. An all hazards approach is taken to planning for emergencies under the belief that "the causes of disasters are diverse but the response capabilities to deal with them have many commonalities."[21] This is seen as greatly simplifying the planning process, enabling a general level of preparedness for any emergency and facilitates a level of comfort in the how to respond to emergencies:

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[19] Kuban, *The Emergency Site Management (ESM) System: A Doctrine Paper*, 5.

[20] Canada, Minister Responsible for Emergency Preparedness, *Government Emergency Book* ,1.4

[21] Ibid., 13.

This generic approach encourages emergency management organizations to plan for, and reduce vulnerability from, potential adverse consequences regardless of the source thus avoiding the duplication planning efforts across the range of hazards. Finally, a comprehensive approach integrates four interrelated, but not necessarily sequential, pillars of emergency management: mitigation, preparedness, response, and recovery.[22]

There is however an inherent degree of risk to this approach in that governments may not be able to adapt a generic response to a particular emergency or find that they have not developed a specific capability needed to respond to the emergency. The second principle of planning is decentralization to departments. Decentralization permits planning to be conducted "to take advantage of the SME, resources and regulatory tools."[23] The problem with this approach is that planning becomes stove piped within the lead department. As a result, plans may not be comprehensive or integrated between departments. The third principle of planning is interdepartmental coordination on plans. This assumes a level of cooperation between departments that may not exist, particularly where funding and resource are involved or where jurisdictional conflicts arise because two departments have divergent roles to play. The final principle of planning is federal-provincial coordination: "planning must be integrated to avoid duplication of effort, clarify respective intents and role, eliminate faulty assumptions, take best advantage of different capabilities and assure the timely flow of essential information and advice.".[24] Public Safety Canada regional offices exist in each province for the purposes of

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[22] Valeriah Hwacha, "*Canada's Experience in Developing a National Disaster Mitigation Strategy: A Deliberative Dialogue Approach*" in National Report on Disaster Reduction (Ottawa: Government of Canada,[2004]),36, http://www.unisdr.org.

[23] Canada, Minister Responsible for Emergency Preparedness, *Government Emergency Book*, 13.

[24] Ibid., 13.

better coordinating an inter-government response. These Regional Offices may not be well integrated with the provincial Emergency Management Organization or support a large area of operations, i.e. the regional office in Alberta supports the three territories as well. Translating a plan into action is the function of the emergency management system.

It has been estimated that 95% of disasters are managed by either the local or provincial government.[25] As such, first responders, municipalities and provincial/territorial governments play a significant role in emergency management across the country. Doctrinally, there are three major emergency management systems in use within Canada; the Incident Command System (ICS), the British Columbia Emergency Response Management System (BCERMS) and the Emergency Site Management (ESM) system. First responders (police, fire, paramedics) in Canada all use the ICS in their management of emergencies. ICS is the American standard for emergency management and evolved out of the experiences of the California Fire services in combating a series of catastrophic fires in the 1970s.[26] The ICS is a method of organization, command and control based on the collaborative effort of first responders to combat an incident. ICS is "a standardized at scene emergency management concept specifically designed to allow its users(s) to adopt an integrated organizational structure equal to the complexity and demands of a single or multiple incidents without being hindered by jurisdictional boundaries."[27] The ICS

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[25] National Security Group, *Emergency: Municipalities Missing from Disaster Planning* (Ottawa: Federation of Canadian Municipalities,[2006]), 5

[26] R. Kuban, H. MacKenzie-Carey and A. P. Gagnon, *Disaster Response Systems in Canada* (London: Institute for Catastrophic Loss Reduction,[2001]),2, http://www.iclr.org..

[27] Provincial Emergency Program, *BC Emergency Response Management System Overview* (Victoria: Province of British Columbia, 2000),9.

is structured on five primary functions; command, operations, planning and intelligence, logistics, finance and administration.
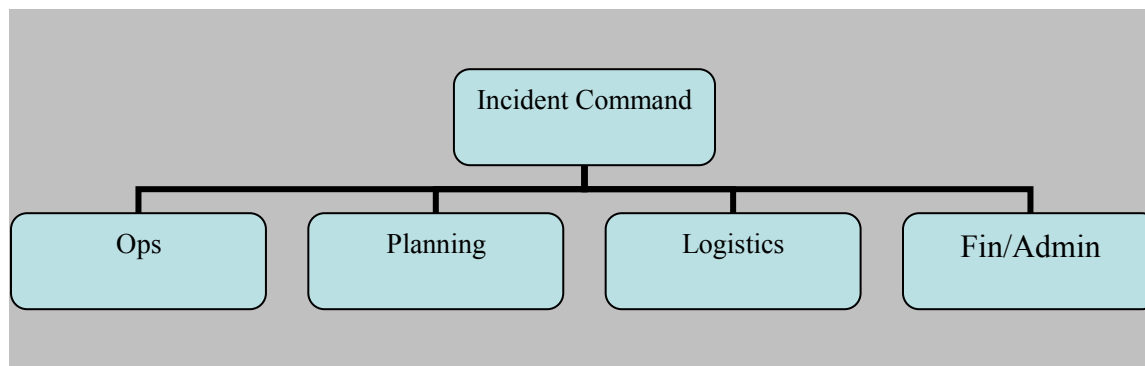
Figure 2 Incident Command System

The Incident Commander is the on scene commander for the incident. He directs the response (ops) , manages information and resources (plans), coordinates resources required to combat the incident (logistics) and manages the administrative issues (fin/admin).[28] As more than one agency becomes involved agreement will be reached on who retains authority as the single operational commander while joint input and agreement determines the objectives and strategy implemented by the operational commander.[29] As the response is elevated to the next higher level the structure of ICS remains the same, subordinating all the numerous lower level ICS organizations to the higher level one. A key advantage of the ICS is that it is universally practiced by first responders. It provides for a "standardized terminology and communication

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[28] Ibid.,4-14 to 4-20.

[29] Ibid.,3-4.

systems, consolidated action plans, pre-designated facilities, and an all-hazards approach

appropriate for all types of emergencies."[30] However, a major weakness of the ICS is that it

relies on agencies to coordinate their response with one another and to achieve a consensus based

decision on how to manage the incident. This works well on the site of a routine incident where

there might only be one or two major players, i.e. fire and police. However, as the scope and

scale of the incident grows and involves a greater number of other agencies, such as Social

Services, and the Red Cross, this become more difficult to manage and can preclude effective

coordination of all elements. It would be more advantageous to have all agencies, both

government and non-governmental subordinated to a single commander who ensures the

coordination of resources through either the operations cell for all aspects related to the incident

response or the logistics cell for all support matters. One element that was thought missing from

the ICS and unique to the Canadian structure was the responsibility of the locally elected

authorities for planning and response. To address this, PSEPC developed the Emergency Site

Management System (ESM) based on the ICS.

The federal government has played a major role in developing the Emergency Site

Management System utilized by many provinces for municipal emergency management.

Emergency Preparedness Canada initially formulated the Emergency Site Management (ESM)

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[30] Toronto Public Health, *Toronto Pandemic Influenza Plan* (Toronto: City of Toronto,[2005]),42. The Incident Management System (IMS) is a model for emergency response that provides a way of co-coordinating the efforts of agencies and resources by using a common organizational structure that can expand or contract based on the scope of response. The more complex the situation becomes, the more critical it is for every agency involved to co-ordinate their own efforts as well as integrate their activities with those of other responding agencies.

system in the early 1980s.[31] The ESM reflects many of the general principles and concepts upon

which Canadian emergency management is based. Specifically: cooperation across

organizations and jurisdictions, accountability of elected officials, escalation to provincial and

federal government support, coordination of the planning and response effort and availability of

a functional Emergency Operations Centre [32] The ESM is unique in that it incorporates

municipal officials in to the hierarchy of emergency management:

> The ESM unique approach is based on the Canadian system of emergency management.
> More often than not that approach places the focus of emergency planning and disaster
> response squarely on the shoulders of municipal elected officials. They, and NOT their
> representatives at the various agencies, are ultimately responsible for the effectiveness of
> their municipal plans and response effort. [33]

The Canadian ESM system does not replace the ICS on site however it does provide a single

structure for the coordination of activities and resources and unified decision making by the

responsible authorities.[34] The ESM incorporates the primary functions of the ICS but has also

evolved beyond the ICS to establish that single point of control and coordination via the

Municipal and Provincial authorities. "At the heart of the ESM is a structure which is managed

at both its ends by a specific individual whose primary role is to focus on the process not the

outcome."[35] The ESM ensure that political accountability is present in any emergency response.

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[31] Kuban, MacKenzie-Carey and Gagonon, *Disaster Response Systems in Canada* ,7.

[32] Kuban, *The Emergency Site Management (ESM) System: A Doctrine Paper*, 8.

[33] Kuban, MacKenzie-Carey and Gagnon, *Disaster Response Systems in Canada*, 7.

[34] Kuban, *The Emergency Site Management (ESM) System: A Doctrine*, 14.

[35] Ibid., 16.

At the municipal level the ESM provides the basis for how a municipality responds to a disaster. Once an incident is deemed beyond the capability and jurisdiction of the first responders the next level of emergency management becomes involved. Designated municipal authorities form a Community Control Group (CCG) and are responsible for the planning and response to an emergency, (thus the linkage between the ICS and ESM).[36] The CCG will assess the situation, determine if implementation of the Municipal Emergency Plan is warranted and stand up the Emergency Operations Centre (EOC).

Functionary	Responsibilities
EOC	• Centralized coordination and control • Planning (e.g., recovery) • Operations • Information gathering and dispersal of emergency information • Continuity of community services
EOC Manager	• Manages the EOC – not the incident • Makes sure everything is working • Maintains safe environment • Facilitates and coordinates • Solves problems

Figure 3 EOC Responsibilities[37]

The function of the EOC is to provide support to the incident site. The EOC will appoint a Site Manager for the disaster site, who with the agencies on site will form an Emergency Site Team.

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36 Kuban, *The Emergency Site Management (ESM) System: A Doctrine Paper*), 16. The CCG is responsible for providing direction, coordination, communications and support during emergency operations. Among the members of local authority forming the EOC are; the City Manager (or equivalent) who is in charge of the EOC's operations, the Municipal Emergency Measures Coordinator, heads of key municipal departments and the Chief Financial Officer

37 Ibid., 11.

The Emergency Site Team focuses on the immediate response on site, while the Site Team

Manager coordinates the overall management of the site and requests for support from the EOC:

> Each response agency and organization on site is managed/commanded by its own senior
> representative (i.e. the Agency Site Control Officer). For example, the senior Fire
> Officer at the Site is a member of the Site Team and is also the Fireground Commander.
> This individual's role is to 'fight the fire' and neither the Site Manager nor the Team
> should interfere with that function. However, they must be able to provide input when it
> comes to coordinating their activities and resources with those of the Fire Services at the
> site. [38]

Once municipal resources and jurisdiction are exceeded and a state of emergency declared, the

EOC may request provincial assistance. The ESM provides for centralized coordination and

control of the emergency at the municipal level. Although the EOC structure is normally

replicated at the provincial level, the degree to which the provincial EOC actually takes on

managing the emergency and not simply supporting the lower levels continued lead varies by

province. Similarly the federal level is not structured on the ESM and again plays more of a

supporting role to the provinces than a strong central management role for the emergency. To be

truly effective, as the scale and scope grows, management of the response should be passed off to

the next higher level. Coordination remains an issue as there are still numerous agencies

involved in the response, the lead agency may not be the EMO, and outside agencies (i.e. NGOs)

are not necessarily any better incorporated in to the structure of an EOC. A strong central lead

would ensure that there is one point of responsibility for planning and response with the other

agencies feeding in to that and/or being directed by that strong central agency as to what support

is required. Finally, the ESM is not standardized across the country, thus emergency planning

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[38]   Kuban, *The Emergency Site Management (ESM) System: A Doctrine Paper*, 16.

and response can be conducted in a slightly different manner in each province leading to

interoperability problems between provinces and with the federal government. This makes it

difficult to measure how effective the emergency management program is across the country.

This is the case for British Columbia which has developed its own system the British Columbia

Emergency Response Management System (BCERMS).

British Columbia faces the most imminent threat of disaster, an expected major

earthquake, and has developed a comprehensive emergency management programme. B.C

Solicitor General John Les states: "British Columbia has one of the best-trained emergency

management programs in Canada."[39] The BCERMS incorporates the common framework of the

ICS and a strong provincial lead in responding to emergencies (see Figure 4 below). "The

British Columbia Emergency Response Management System is a comprehensive management

scheme that ensures a coordinated and organized provincial response and recovery to any and all

emergency incidents."[40] It is modular with four levels of operation: site, site support, Provincial

Regional Coordination and Provincial Central Coordination. These four levels can be activated

and expanded as resources are required.[41] At the Site Level the emergency response is managed

in accordance with the ICS. Once additional resources are required an EOC is activated.

Concurrently the province will monitor the situation to ensure that resources are ready for

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[39] Ministry of Public Safety and Solicitor General, "New B.C. Disaster Response Centre Opens," Government of British Columbia, http://www.gov.bc.ca/pssg/popt/gallery/ (accessed March 14, 2007).

[40] Provincial Emergency Program, *BC Emergency Response Management System Overview* ,i.

[41] Kuban, MacKenzie-Carey and Gagonon, *Disaster Response Systems in Canada* ,6.

mobilization if required. At the point where provincial resources are required, a Regional EOC

may be established by the province to manage resources and support. Should an escalation in

occur the Provincial Emergency Coordination Centre will become engaged. The key strengths of

this system are the hierarchy of control, linkages between all levels and the proactive role of the

government.
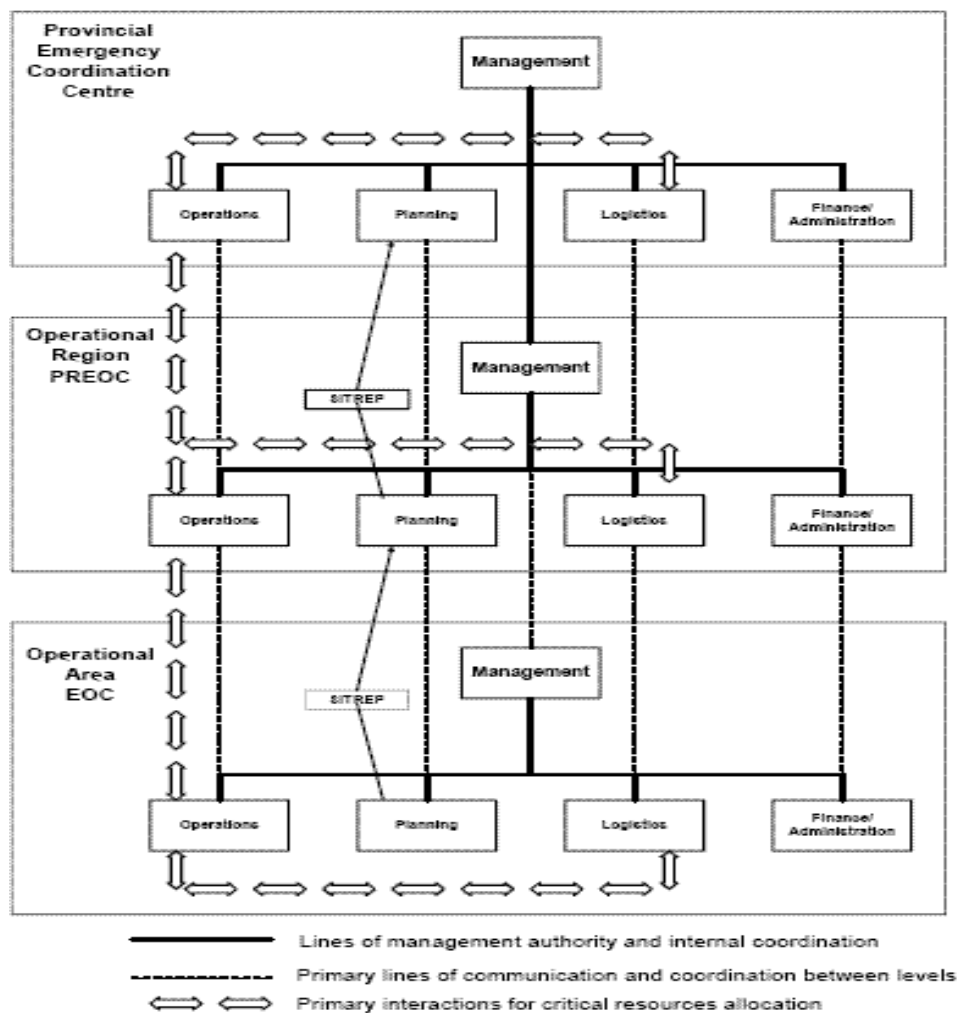
Figure 4 BC Emergency Management System[42]

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[42]   Provincial Emergency Program, *BC Emergency Response Management System Overview*, 2-12.

Governance Structure

The governance structure for emergency management in Canada is the federal system of government within which power and responsibility for emergency management are divided between the federal and provincial/territorial governments. This division provides for a graduated response to an emergency, in proportion to the severity and scope of the emergency. As the scale and capacity of an emergency exceeds the resources, capabilities and geographical boundaries of a lower level of government it is augmented by the resources of the next higher level. As with anything under the federal system, any intervention by the next higher level of government occurs only when formally requested or when the emergency situation is clearly within federal jurisdiction. At the federal level, a formalized but rudimentary emergency management organization was first established in Canada in 1957 under the auspices of civil defence to "ensure continuity of government in nuclear wars." [43] As the spectre of a nuclear war faded the focus on civil defence transitioned to civil emergencies with the Emergency Management Office appointed the lead federal agency for national emergencies. [44] In 1986, federal legislation resulted in the creation of Emergency Preparedness Canada (EPC) under the umbrella of the Department of National Defence. The terrorist attacks on September 11, 2001 heralded a new era for the importance of both civil defence and civil emergency management. In December 2003, driven by the events of 9/11, federal responsibility for emergency management

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[43] Major P. Howe, "Disaster Response - Towards an Expanded Role for the Canadian Forces and a Better Response" (Canadian Forces College Command and Staff Course New Horizons Paper, Canadian Forces College), 8.

[44] Ibid., 8.

migrated to the Department of Public Safety and Emergency Preparedness Canada (PSEPC), the

Canadian equivalent of Homeland Security in the United States. Unlike Homeland Security

however, PSEPC fulfilled more of a coordinating role for public safety and security between

government departments, in keeping with emergency management planning principles. The

creation of PSEPC was a major pillar of the 2004 National Security Policy which recognized that

a "whole of government response framework was required to address complex threats and

emergencies."[45] In early 2006, PSEPC was renamed Public Safety Canada (PSC).

Public Safety Canada's mandate is "to keep Canadians safe from a range of risks such as

natural disasters, crime and terrorism."[46] The department delivers programs as well as policy at

the federal level and works closely with other levels of government, the private sector and other

nations.[47] Organizationally, the department integrates all federal functions relating to national

security, emergency management, law enforcement, corrections, crime prevention and borders.

Within the department, the Emergency Management and National Security Branch (see Figure

5[48] below) is responsible for: emergency preparedness, response and recovery with a particular

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[45] Public Safety Canada, "Introduction to the Emergency Management Act," Canada, http://www.publicsafety.gc.ca/media/bk/2005/bk20051117-en.asp (accessed January 13, 2007).

[46] Public Safety Canada, "What we do," Government of Canada, http://www.ps-sp.gc.ca/abt/wwd/index-en.asp (accessed March 13, 2007).

[47] Ibid.

[48] Diane MacLaren, Devin McNaughton and Lisanne Lacroix, "PSECP Presentation to Canadian Association of Police Boards 17th Annual Meeting and Conference" (Edmonton Alberta, CAPB, 2006), http://www.capb.ca

focus on policy and training.[49] It works closely with Emergency Management Organizations at

the provincial and territorial level. This is facilitated by regional offices across the country, one

for each province with the territories covered under the Alberta Regional Office. The regional

offices provide a more immediate and provincially specific point of contact in the event of an

emergency. The focal point for any federal response however is the Government Operations
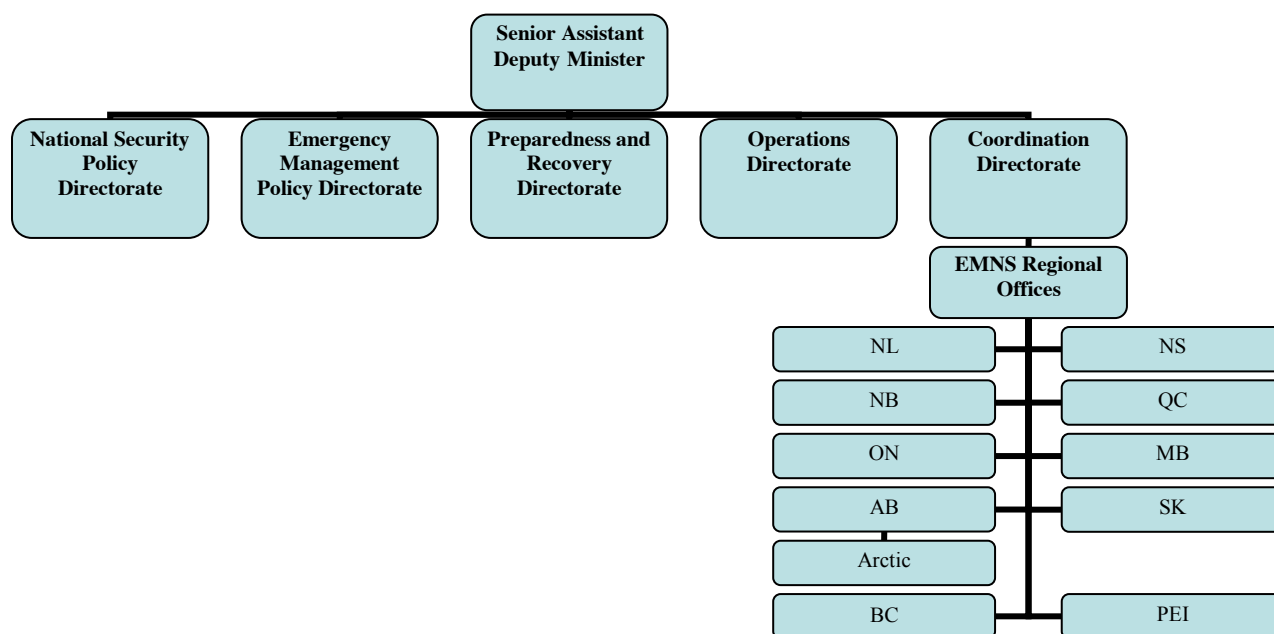
Centre.

Figure 5 Emergency Management and National Security Branch

The Government Operations Centre (GOC) constitutes Canada's strategic level

operations centre. It deals "with anything -- real or perceived, imminent or actual, natural

disaster or terrorist activity -- that threatens the safety and security of Canadians or the integrity

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[49] Public Safety Canada, "What we do,".

of Canada's critical infrastructure."[50] It is the central link between other existing operations centres such as the RCMP, DND, and CSIS and brings together key federal players to provide round the clock coordination and support in the event of a national emergency."[51] The GOC also coordinates federal government support to a province in time of a declared emergency. Should a province or territory require federal assistance, it must be formally requested by the province as set out in the Emergency Management Act unless prior arrangements have been made or the emergency occurs on areas of federal jurisdiction, such as on federal land. The request is normally, but not always submitted through the regional offices of Public Safety Canada.[52] Once federal support has been approved, the province/territory remains responsible for coordinating the application of that support to the emergency.[53] The governance structure at the federal level provides more of a coordination function, relying on other federal agencies for resources and materiel with no integral assets of its own to deploy in support of a national or provincial emergency. Further, it may not play a lead role in coordinating resources depending on the nature of the emergency; the lead response may in fact rest with another federal department. Notwithstanding who has the lead, the focus is on supporting the provincial government with those assets and resources requested by them and not on taking charge of the disaster.

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[50]   Public Safety Canada, "Critical Infrastructure Protection,".

[51]   Public Safety and Emergency Preparedness Canada, *Report on Plans and Priorities 2005-2006*,22.

[52]   J3 Continental, *DCDS Direction for Domestic Operations* (Ottawa: Department of National Defence, 2005), 10-2/12.

[53]   Ibid., 10-3/12.

Provincial governments are the primary authorities dealing with most national emergencies. Organizationally, every province and territory has an Emergency Management Organization (EMO) responsible for provincial emergency management (see Figure 6 below).

Province/Territory	Ministry of
Alberta	Municipal Affairs and Housing
British Columbia	Public Safety and Solicitor General
Manitoba	Intergovernmental Affairs
New Brunswick	Public Safety and Solicitor General
Newfoundland	Municipal Affairs
Nova Scotia	Emergency Management
Ontario	Community Safety and Correctional Services
Prince Edward Island	Community and Cultural Affairs
Quebec	Public Safety
Saskatchewan	Corrections and Public Safety
Northwest Territories	Municipal and Community Affairs
Nunavut	Community and Government Services
Yukon	Community Services

Figure 6 Provincial/Territorial Departments Responsible for Public Safety[54]

In keeping with the general principles governing emergency management in Canada, the Provincial EMO only manages large scale provincial emergencies. As was the case for a province requesting assistance from a federal agency, a provincial EMO will not become involved in a local emergency unless requested by the municipality. "If the municipality is unable to deal effectively with the emergency, support from the provincial government will be requested. Provinces may also declare emergencies and exercise extraordinary powers as provided of under the provincial legislation."[55] Once a request for assistance has been received

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[54] Public Safety Canada, "Emergency Management Organizations," Canada, http://getprepared.ca/who/emo_e.asp (accessed January 13, 2007).

[55] J3 Continental, *DCDS Direction for Domestic Operations*, 10-2/12.

from a municipality, the provincial EMO establishes an Emergency Operations Centre, with

representatives from the regional offices of PSC. Much like at the federal level all departments

at the provincial level contribute to the emergency response and may have the lead on the

response. The challenge in such a situation is to ensure that the planning and response process is

not stovepiped and that there is close coordination between all agencies and the EMO to provide

the provincial response. This is more of an issue in some provinces than others. It is notable that

provincial EMOs assume a different role depending on the Emergency Management System.

This disparity is evident in the role played by the EMOs in Ontario and British Columbia.

Ontario

Organizationally, Emergency Management Ontario (EMO (Ont)) is a branch of the

Ministry of Community Safety and Correctional Services. The mandate of EMO (Ont) includes

responsibilities for an emergency management program, coordinating the provincial response to

an emergency and training. [56] Despite its mandate, EMO (Ont) has been criticized for its lack of

involvement in responding to provincial emergencies such as Walkerton and the 2003

Blackout.[57] This underscores the issue of the role of government in emergency management.

Clearly a proactive government is better than one that sites back and does nothing.. EMO (Ont)

is also responsible for the Ontario Emergency Response Plan, which details the provincial

response to an emergency:

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[56] "Emergency Information Warning System Will Benefit Ontario Communities," *Canada Newswire* October 6, 2006, 1

[57] Mackenzie Institute for the Study of Terrorism, Revolution and Propaganda., *Shortfalls: A Review of Emergency Planning in Canada* (Toronto: Mackenzie Institute,[2000]), 2.

The plan sets out the basic processes, organizational structures, responsibilities and procedures to guide the ministry in responding to emergencies. It also provides for the coordination of emergencies with other provincial ministries and municipalities, and the Government of Canada and its agencies.[58]

Lead ministries are designated depending on the specific knowledge and capabilities required to plan and respond to a particular emergency. The challenge of coordinating and integrating those plans is significant. Given Ontario's view that they play more of supporting role than a lead role during provincial emergencies this brings in to question how coordinated and integrated the plans are. In both planning and during a response there needs to be a strong central emergency management organization to bring together all the elements of a response. This is particularly important in coordinating logistics support, such as that required to evacuate a major urban centre, where various agencies both government and NGO will have a contribution to make. The specific areas of responsibility assigned to departments are as per Figure 7.

Ministry	Special Responsibility Area
Agriculture and Food	Agriculture and food emergencies
Community and Social Services	Emergency shelter, clothing and food, victim registration and inquiry services and personal services required in support of all emergencies
Community Safety and Correctional Services	Coordination of provincial emergency management. All other Peacetime emergencies not listed here. War emergencies
Energy	Energy supply matters.
Environment	Spills of pollutants to the natural environment.
Health and Long-Term Care	Large-scale human health emergencies and epidemics.
Labour	Emergency worker health and safety.
Management Board Secretariat	Continuity of government services
Municipal Affairs	Coordination of extraordinary provincial expenditures for emergencies.
Natural Resources	Forest fires, floods and droughts
Northern Development and Mines	Abandoned mines hazards. Support for emergency management in N Ont.
Transportation.	Highway and other transportation services

Figure 7 Table of Lead Ministries [59]

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[58] Emergency Management Ontario, "Fact Sheet: Provincial Emergency Response Plan," Ministry of Community Safety and Correctional Services, http://www.mcscs.jus.gov.on.ca (accessed January 13, 2007).

[59] Ibid.

Ontario uses the ICS or Incident Management System as Ontario refers to the system as its method of emergency management. [60] The structure of the system is based on the standard ICS model as presented below at Figure 9. Although the structure and flow of responsibility appears to represent a strong element of coordination and control between all levels Ontario does not follow its own doctrine. The Mackenzie Institute criticized Emergency Management Ontario for its lack of leadership during recent provincial emergencies. "Ontario's EMO appears to take a very narrow view of its responsibilities. According to some government workers, the EMO feels its proper role is to provide advice and assistance to the Province's Solicitor General during an emergency."[61] This underscores the issue of the role of government in emergency management. The fact that Ontario has been criticized in this fashion (criticisms backed up by their own studies) only reinforces the issue or the role of government. This is in direct contract with the British Columbia EMO who has a more comprehensive management role as delineated in the BCERMS doctrine.

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[60]   Emergency Management Ontario, "Guidelines for Provincial Emergency Management Programs in Ontario - Essential Level," Government of Ontario,17, (accessed January 13, 2007). The system modeled after North American emergency management standards and recommended best practices that draw heavily from the National Fire Protection Agency (NFPA) 1561 and the National Incident Management System (NIMS)

[61]   Mackenzie Institute for the Study of Terrorism, Revolution and Propaganda, *Shortfalls: A Review of Emergency Planning in Canada* ,2.
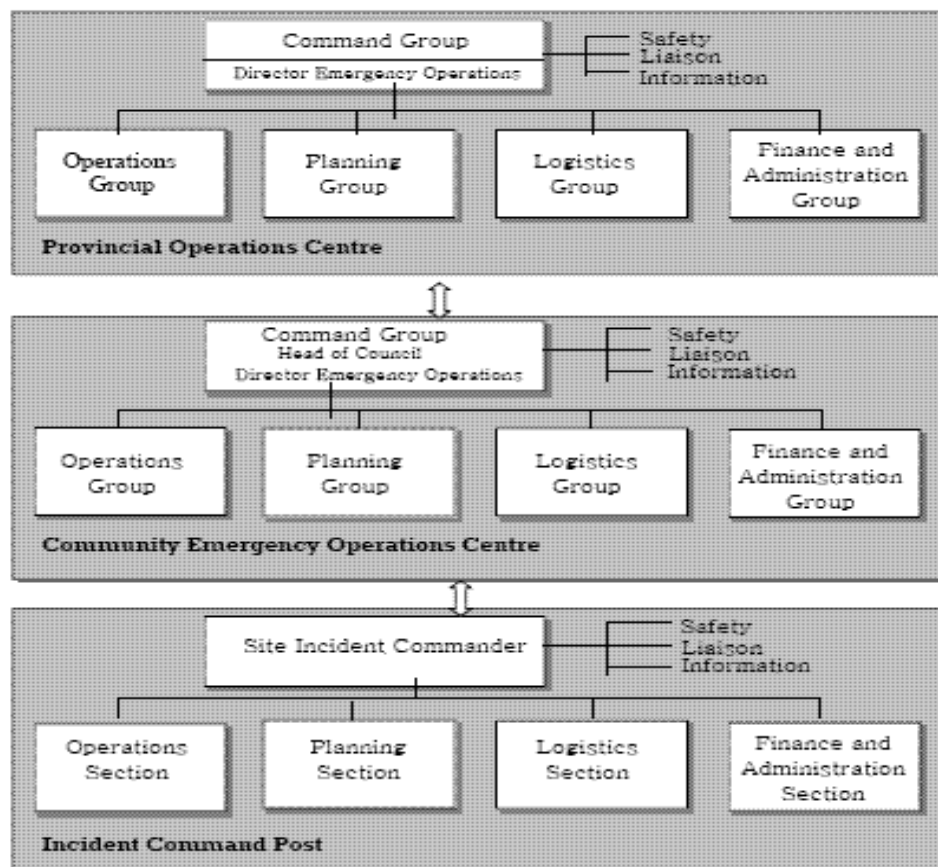
Figure 8 Ontario Incident Management System[62]

British Columbia

Organizationally, Emergency Management B.C. is a branch of the Ministry of Public

Safety and Solicitor General. Emergency Management B.C. "is mandated to enhance all levels

of government and first responder agencies' ability to assist British Columbians during

emergencies, as well as to coordinate planning and mitigation activities to minimize the impact

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[62]   Emergency Management Ontario, "Guidelines for Provincial Emergency Management Programs in Ontario - Essential Level,"18.

of natural and other disasters."[63] There is a very clear intent in this mandate that all levels of

government will play strong central role and not a supporting role like in Ontario. There is no

confusion by the provincial government as to what the role of the EMO is either. This is evident

in the stated mission of the Provincial Emergency Program (PEP) "to enhance public safety and

reduce property and economic loss from actual or imminent emergencies or disasters." Further,

the government realizes that this is achieved cumulatively across all four components of

emergency management. The government will: "mitigate effects through education and

awareness, promote preparedness through planning, training and exercises, coordinate and assist

in response activities and develop and implement recovery measures." [64] Under the Emergency

Program Act, municipalities and regional districts are all mandated to establish emergency

management programs. A key strength of the BCERMS is the strong central role that the

provincial government plays, and states, in emergency management, across all components of

emergency management. Due to the strong linkages between the various levels of operations

centre (see discussion on BCERMS in previous section) it would appear that the B.C. system is

better coordinated and integrated, at least during a response. Although the B.C. system appears

to have better linkages the challenge of coordinating logistics support from various government

departments and NGOs remains. The shortcomings with respect to planning are also unchanged.

There are a number of provincial agencies assigned responsibilities for planning under the

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[63] Ministry of Public Safety and Solicitor General, *2007/08 - 2009/10 Service Plan* (Victoria: Province of British Columbia, 2007), www.bcbudget.gov.bc.ca (accessed 14 March 2007).

[64] Provincial Emergency Program, "Emergency Management B.C.: Vision, Mission, Values," http://www.pep.bc.ca/Emerg_Mgmt_BC/Emerg_Mgmt_BC.html (accessed January 13, 2007.

various provincial emergency plans. It is safe to assume that this leads to a certain amount of

stove piping which compromises the comprehensiveness of the planning.

Legislative

The role and responsibilities of government are laid out in the various pieces of

emergency management legislation at each level of government. The first major piece of

legislation to govern the powers of government in emergencies at the federal level was the *War

Measures Act*.[65] The act gave broad power to the federal government in the event of a national

crisis that was more geared to dealing with civil defence than emergency response. In 1985, the

government passed the *Emergencies Act*, federal legislation that resulted in the creation of

Emergency Preparedness Canada (EPC) in 1986 under the umbrella of the Department of

National Defence. With the passage of the *Emergencies Act*, EPC was given specific powers and

responsibilities to respond to national emergencies. [66] The act defined four types of emergencies

which determined which level of government would get involved in a response. Public welfare

emergencies were defined as "severe natural disasters or major accidents affecting public

welfare, which are beyond the capacity or authority of a province or territory to handle."[67] The

federal government would be required to get involved but only once the province or territory

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[65]   Howe, "Disaster Response - Towards an Expanded Role for the Canadian Forces and a Better Response" ,8.

[66]   Standing Senate Committee on National Finance, *Report on the Committee's Examination of Canada's Emergency and Disaster Preparedness'* (Ottawa: Canada,[2000]), 5. The *Emergencies Act* is an instrument of last resort…to deal with an urgent and critical situation that threatens the ability of the Government of Canada to preserve the sovereignty, security and territorial integrity of Canada.

[67]   Public Safety and Emergency Preparedness Canada, "*Emergencies Act*," Canada, http://www.psepc-sppcc.gc.ca/pol/em/em_act-en.asp (accessed January 12, 2007).

could no longer effectively respond. Public order emergencies were "security threats that are beyond the capacity or authority of a province or territory to handle." [68] Again, the federal government would play a supporting role once the resources of the province had been surpassed. The final two types of emergencies were seen as solely the purview of the federal government, international and war emergencies. [69] The *Emergencies Act* replaced the War Measures Act and marked a shift from the civil defence mindset of the Cold War to greater responsibilities for civil emergencies.

Concurrent with the creation of the *Emergencies Act* was the passage of the *Emergency Preparedness Act*. The act laid out the roles and responsibilities of the federal government for emergency management. It established "the Government of Canada's responsibilities in emergency situations and mandated all federal departments and agencies to develop programs to deal with unforeseen and potentially disastrous events."[70] There are an number of key elements to the act, mostly laying out the federal/provincial jurisdiction for emergency management and providing mechanisms for the federal government to provide assistance, either resources or funding, to the provinces.

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[68] Ibid.

[69] Ibid. International emergencies - Intimidation, coercion or the use of serious force or violence that threatens the sovereignty, security or territorial integrity of Canada or any of its allies. War emergencies - War or other armed conflict, real or imminent, involving Canada or any of its allies.

[70] Ibid. It also established the responsibilities and functions of the minister responsible for PSEPC, the emergency preparedness responsibilities of other federal ministers, the interests of the provinces/territories in relation to federal assistance and that certain provincial emergencies could be of federal concern

The terrorist attacks on September 11, 2001 heralded a wake-up call for the importance of both civil defence and civil emergency management. The existing *Emergency Preparedness Act* was deemed inadequate in its provision of authorities for dealing with emergencies as well as lacking an accountability framework for emergency management planning.[71] The Act was repealed and replaced by the *Emergency Management Act*. The purpose of the *Emergency Management Act* is:

> To strengthen the readiness of the Government of Canada to prepare for, mitigate the impact of, and respond to all hazards in Canada. It recognizes that emergency management in an evolving risk environment requires a collective and concerted approach between all jurisdictions including the private sector and non-governmental organizations.[72]

Under the *Emergency Management Act*, as with the previous act, every federal department is responsible for an emergency management plan specific to their area of responsibility and for which, during a national disaster, or upon request from a province they could be designated the lead agency (see Fig 9 below):

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[71]   Ibid.

[72]   Public Safety Canada, "Introduction to the Emergency Management Act," Canada, http://www.publicsafety.gc.ca/media/bk/2005/bk20051117-en.asp (accessed January 13, 2007).

Department/Agency	Primary Responsibility Area
Agriculture Canada	• impact on plants and animals of pests, diseases, or hazardous agents • agricultural impacts of droughts, floods and other natural disasters • impacts on food production processing and distribution
Citizen&Immigration	• facilitating entry of persons rendering emergency services
CMHC	• supporting establishment of emergency shelters for refuges, evacuees or homeless victims of disaster in collaboration with Dept of Health
Environment Canada	• identification of natural hazards and risk • assessment and mitigation of conditions or incidents causing pollution
Finance/TBS	• financing of Emergency Preparations/Actions
Fisheries and Oceans	• impact of emergencies upon fish populations or fish habitats • marine spills, emergencies in or on marine vessels
Foreign Affairs	• advice and recommendations on international implications of civil emergency measures taken in Canada
Health Canada	• large-scale human health emergencies and epidemics. • maintaining national stockpiles of medical supplies • health standards for food, water, drugs, pharmaceuticals, exposure to hazardous environments
HRDC	• human resources
Industry Canada	• ensuring availability of urgently needed goods and services
Justice	• continuity of government
NRC	• mine disasters, forest fires, energy shortages or major power failures
PWGSC	• emergency supply activities • Construction and engineering resources
Transport	• civil aircraft, federally regulated civil airports • emergencies in or upon federally regulated ports and harbors • coordinating provision of civil transportation resources and services

Figure 9 Departmental Responsibilities for Emergency Management[73]

In the absence of a lead department or until a lead department is appointed, PSEPC would take the lead. The creation of the *Emergency Management Act* had no impact on the *Emergencies Act*. Nowhere in the current federal legislation is mitigation mentioned nor is there any requirement to ensure standardization of emergency management or any process for

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[73] Canada, Minister Responsible for Emergency Preparedness, *Departmental Planning Responsibilities for Emergency Preparedness* (Ottawa: Public Works and Government Services, 1995), 35.

validating that plans are being maintained to that standard. Specific legislation also exists at the

provincial level that defines the roles and responsibilities of the provinces with respect to

emergency management.

At the provincial level legislative authority for emergency management is derived from

provincial legislation. Under provincial legislation municipalities are mandated to have an

emergency plan. In Ontario it is the Emergency Management Act and a supplemental Order in

Council that delineates government responsibilities and requires municipal emergency plans. [74]

In B.C. the *B.C*. *Emergency Program Act* sets out the roles and authorities of the provincial

government and mandates municipal emergency plans.[75] In both cases there no mention is made

of mitigation or any requirement for standardized plans at the municipal level.

Conclusion

It is only a matter of time before Canada experiences a major disaster (manmade or

natural) on the scale of Hurricane Katrina. Canada's insurance policy against such an

eventuality is a sound emergency management framework. The emergency management

framework in Canada is shaped by three elements; doctrine, a governance structure and

legislation. Shortcomings in these elements impede Canada's ability to manage major complex

emergencies. The shortcoming notes herein were related to the role of government, lack of

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[74]   Ministry of Community Safety and Correctional Webpage, "Emergency Management Program," Province of Ontario, http://www.mcscs.jus.gov.on.ca/english/about_min/emergency_program.html (accessed 13 January, 2007).

[75]   Provincial Emergency Program, *Introduction to Emergency Management in British Columbia* (Victoria: Province of British Columbia, 2006), 2.2. The Act addresses the following areas: "the roles and responsibilities of a local authority and the provincial government, provides extraordinary power if required, requires the creation of an EMO, enables provision of Disaster Financial Assistance, and provides exemption from civil liability to all emergency service workers

standardization, coordination of support, lack of resources and focus on the preparedness and response components. Doctrinally these can be attributed to several factors: the lack of focus on mitigation, shortfalls in capabilities as a preparedness and response measure and lack of national standards to ensure a uniform level of preparedness across the country. It is further complicated by the existence of numerous emergency management systems, BCERMS, ICS (IMS) and ESM each with fundamental challenges in how resources are coordinated and planning/responses integrated not only between levels of government but between the various players that may have a role to play in planning and preparedness. While the framework is logically structured on the federal system of government with its attendant division of responsibilities for emergency management there is a wide disparity between the significant management role that provincial governments such as B. C. take and the absentee role shown by Ontario. The lack of strong central management exacerbates the challenges of coordinating an effective response between the numerous agencies and non-governmental players that may have a lead or supporting role to play. Lastly, although Canadian emergency management legislation codifies the governance structure and specifies the roles, responsibilities and powers of each level of government it does not establish any measures of effectiveness or standardization in the system that could mitigate some of the weaknesses identified with the governance structure and emergency management doctrine. Canada's emergency management framework must continue to evolve by addressing these shortcomings if it is to be prepared to manage a major complex emergency.

CHAPTER 2 – LESSONS LEARNED

Canadians have been spared civil disasters on the scale of Hurricane Katrina in 2005. The last major disaster of an equivalent magnitude in Canada was the Halifax explosion in December 1917. Although the emergencies experienced in the past decade, such as the Ice Storm of '98, the B.C. forest fires in 2003 and the Ontario blackout were significant in Canadian terms they in no way matched the scale of human misery and destruction that Hurricane Katrina wrought. Most Canadian disasters, manmade or natural make the six o'clock news nationally for a short time then quickly fade away from public concern supplanted by events elsewhere in the world. This has fostered a false sense of security in Canada because the county's emergency management capabilities are seen as relatively capable. If never put to the test, it is assumed that the degree and level of planning and resources invested in emergency management in Canada are mature enough to deal with the complexity and challenges of responding to a major disaster, particularly in large urban areas. As Norman Bell, Director of the Centre for Society, Technology and Values at the University of Waterloo, states in his article on the experiences of Niagara area residents in the great snowstorm of 1978:

> Emergency planning has emerged as a central concern of every level of government. The trouble with it however is that when we are not immediately faced with an emergency, it is easy to forget what we know about responding to a crisis.[76]

It is only a matter of time before this perception is shattered. Incidents of sever weather events continue to increase both abroad and at home, outbreaks of infectious diseases are on the rise and

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[76] Norman Ball, "EMERGENCY PLANNING: A Lesson from the Niagara Frontier," *Municipal World* 116, no. 12 (Dec, 2006), 25, http://proquest.umi.com

a major earthquake in British Columbia or along the St Lawrence river is long overdue.[77] As the

United Nations report Global Environmental Outlook 2000' noted: "natural disasters appear to

be becoming more frequent and their effect more severe…rising global temperatures are likely to

raise the incidence of extreme weather events."[78] Coupled with the post 9/11 security

environment it is only a matter of what and how soon a major emergency will occur in Canada.

In lieu of learning first hand from a made in Canada major emergency whether the

emergency management system is up to the challenge, the next best thing is to apply those

lessons learned from major disasters such as Hurricane Katrina. Given that elements of the

Canadian and American systems are quite similar, i.e. use of ICS, there is much that can be

learned from the experiences of the United States. By examining the lessons learned and

applying them to the Canadian emergency management program it is hoped that many issues can

be addressed before lives are put on the line. Hurricane Katrina in particular was significant for

the scale and scope of the disaster and the complexity that was thus inherent in the response

efforts. The main lessons learned from the disaster pertained to issues of: the role of

government, command and control, logistics coordination, and the need for both contingency and

communication plans. As was identified in the previous chapter, many of these are

vulnerabilities that already exist within the Canadian system. It is beneficial then to look at what

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[77] Standing Senate Committee on National Finance, *Report on the Committee's Examination of Canada's Emergency and Disaster Preparedness*, 4.

[78] Ibid.,4.

the issues were, why they were issues, the lessons learned and how they are applicable to the
Canadian program.

Background

In the aftermath of the most destructive hurricane in recent memory, the President of the
United States ordered a complete review of the federal response to Hurricane Katrina. The
lessons learned that resulted are having significant impact on the organization and preparedness
of emergency management in the United States. The after action review of the disaster resulted
in two immediate priorities and a number of major lessons learned. The two immediate priorities
identified were "institutionalize a comprehensive National Preparedness System and
concurrently foster a new, robust culture of preparedness."[79] The major lessons learned focused
primarily on issues of communication, coordination and the complex challenges of logistics
support during a major disaster. To understand the context of these lessons learned it is first
important to understand in general terms what happened and what went wrong within the context
of the American emergency management system.

Few residents of the Gulf Coast in the United States will forget August 2005 when
Hurricane Katrina, a category five hurricane ravaged the Gulf Coast. It would become the worst
natural disaster in the history of the United States for the scale and scope of damage that it
wreaked. "The overall destruction wrought by Hurricane Katrina vastly exceeded that of any
other major disaster, such as the Chicago Fire of 1871, the San Francisco Earthquake and Fire of

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[79] Department of Homeland Security, *The Federal Response to Hurricane Katrina Lessons Learned* ,2.

1906, and Hurricane Andrew in 1992." [80] The immense geographical area impacted presented a

significant challenge both in terms of the human dimension and the sheer physical destruction

caused. "Even beyond New Orleans, Katrina's span of destruction was widespread. Indeed, one

of the gravest challenges presented by this particular disaster was the vast geographic

distribution of the damage."[81] The hurricane wreaked havoc across the states of Mississippi,

Louisiana and Alabama, and to a certain degree impacted many other states and even Canada as

they sheltered evacuees or rushed to provide assistance, either physical or materiel, in response

to the crisis. In the end, over 1,300 people died and some 770,000 people were displaced.[82]

What when wrong?

      To understand what went wrong and the lessons learned from that experience it is

perhaps useful to first provide a brief overview of how the American emergency management

system works. After 9/11, the American system underwent major changes in an effort to achieve

greater coordination and integration between and within levels of government. The most

significant change was the creation of the Department of Homeland Security in 2002 which

resulted in the consolidation of most security and emergency response agencies under one

department. Homeland Security Presidential Directive 5 in 2003 led to the creation of a National

Incident Management System which in turn led to the adoption of a National Response Plan in

2004. The National Incident Management System (NIMS) established a standardized system of

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[80] Ibid.,5.

[81] Ibid.,6. Hurricane Katrina impacted nearly 93,000 square miles, roughly the size of Great Britain.

[82] Ibid.,8. As of February 17, 2006, there were still 2,096 people form the Gulf Coast area reported missing.

emergency response, based on the Incident Command System. "It set forth a core set of

doctrine, concepts, principles, terminology and organizational processes to enable effective,

efficient, and collaborative incident management at all levels of government."[83] The

development of a National Response Plan was driven by the recognition that in some

emergencies a more proactive federal response is required and provided the structure and

mechanisms by which that could occur:

> The NRP is an all-hazards plan that establishes a single, comprehensive framework for
> managing domestic incidents across all levels of government and across a spectrum of
> activities that includes prevention, preparedness, response, and recovery. It provides the
> structure and mechanisms for coordinating Federal support to State and local incident
> managers and for exercising Federal authorities and responsibilities incorporating the
> NIMS structure.[84]

Under the NRP, federal response to an emergency is triggered by the declaration of an 'Incident

of National Significance' (INS).[85] Once an INS is declared, under the NIMS structure, it is the

National Response Coordination Center (NRCC) that coordinates and integrates the activities of

the Homeland Security Operations Center (HSOC) and the Federal Emergency Management

Agency (FEMA) in providing the federal response to an emergency.[86] FEMA, like its

counterpart, the Emergency Management and National Security Branch in PSC, is responsible

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[83] Ibid. ,13.

[84] Ibid.,13. The *National Response Plan* requires senior officials from multiple levels of government to come together at a single location to establish a common set of objectives and a single incident plan. This group, referred to as the "Unified Command," provides for and enables joint decisions on objectives, strategies, plans, priorities, and public communications.

[85] Ibid.,14.

[86] Ibid.,15.

for coordinating the federal response to an emergency. "Under the NRP, FEMA has primary responsibility for emergency response and recovery coordination. FEMA also continuously monitors for potential disasters and mobilizes resources when it anticipates Federal assistance will be requested."[87] FEMA does not possess integral resources but tasks other departments and agencies to provide the required support as per Figure 10 below.[88] This is similar to how the Canadian system works in that PSC must coordinate with other department for resources. While it was FEMA that drew most of the fire for ineffectiveness during Hurricane Katrina this was more media hype than reality. Many of the problems experienced had more to do with the scale and scope of destruction and how they impacted the preparedness and response measures.

Emergency Support Function	Primary Department or Agency
Transportation	DOT
Communications	DHS (IAIP/NCS)
Public Works and Engineering	DOD (USACE) and DHS (FEMA)
Firefighting	USDA (Forest Service)
Emergency Management	DHS (FEMA)
Mass Care, Housing, and Human Services	DHS (FEMA) and American Red Cross
Resource Support	GSA
Public Health and Medical Services	HHS
Urban Search and Rescue	DHS (FEMA)
Oil and Hazardous Materials Response	EPA and DHS (U.S. Coast Guard)
Agriculture and Natural Resources	USDA and DOI
Energy	DOE
Public Safety and Security	DHS and DOJ
Long-Term Community Recovery and Mitigation	USDA, DOC, DHS (FEMA), HUD, Treas, and SBA
External Affairs	DHS (FEMA)

Figure 10 Emergency Support Functions

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[87] Ibid.,16. It is a small organization that primarily manages the operational response, relief, and recovery efforts of the rest of the Federal government. Generally, State and local officials and first responders identify necessary missions and required commodities which FEMA—through its organizational structure, coordination practices, and administrative support—will assign to a Federal department or secure from the private sector.

[88] Ibid.,15.

Preparedness

Hurricane Katrina was not an unexpected event. Officials had been planning for such an

occurrence for years. Moreover, the Gulf States had almost a week's notice of the hurricane

although they could not have predicted its development in to a Category 5 hurricane, the worst

case scenario. Many preparations were taken prior to the hurricane hitting landfall in Florida and

subsequently in the other Gulf States. At the federal level these actions included pre-positioning

ice, water and food at logistics bases. [89] FEMA also placed its Rapid Needs Assessment and

Emergency Response Teams – Advance Elements (ERT-As) on alert, anticipating the worst.[90]

Conferences were conducted with state and local officials to identify requirements and

coordinate assistance and federal departments with National Response Emergency Support

Functions were alerted. (See table above). "These video teleconferences helped synchronize

Federal, State, and local responders and were a means of defining and coordinating assistance

and support needs."[91] Concurrent with the preparations of the federal government, state and

local officials were initiating evacuations, opening up shelters and conducting their own

preparations. Although this is but a concise overview of the many actions taken it can certainly

be concluded that a great number of preparations were taken by every level of government and

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[89] Ibid.,23. In preparation for Florida landfall, FEMA delivered 100 truckloads of ice to staging areas in Georgia, and thirty-five truckloads of food and seventy trucks of water to Palmetto, Georgia. Also, anticipating a potential second Gulf Coast landfall, FEMA pre-staged over 400 truckloads of ice, more than 500 truckloads of water, and nearly 200 truckloads of food at logistics centers in Alabama, Louisiana, Georgia, Texas, and South Carolina.

[90] Ibid.,23. An ERT-A is "the portion of the Emergency Response Team (ERT) that is the first group deployed to the field to respond to a disaster incident."

[91] Ibid.,23.

therefore what results after the storm has more to with the scope and scale of the devastation than any lack of preparedness on the part of government. As stated in the Whitehouse report; "state and local governments, supported by the Federal government and FEMA, had carried out unprecedented preparations in comparison to those made for previous, "average" hurricanes."[92] In contrast to the Canadian system, the federal government was highly proactive in its preparations for Hurricane Katrina; pre-positioning food and water, deploying support personnel (such as the ERTs) and coordinating with state and local officials to anticipate their requirements. Unfortunately, what was not anticipated was the havoc that Hurricane Katrina would wreak nor the impact this would have on the emergency management system.

Impact

Hurricane Katrina had an unexpected impact on the capabilities and resources of local and state responders that seriously hampered the response effort in affected areas. This resulted in a loss of command and control, significant logistics challenges in trying to rescue, sustain and evacuate citizens and a breakdown in communications. One factor overlooked in the planning and preparations for a major disaster was the fact that emergency management agencies would themselves be impacted by a disaster. The damage and destruction to infrastructure, equipment and communications systems impaired both situational awareness and the ability of officials to respond, if resources existed and had not been destroyed in the hurricane. Many local and state response capabilities were lost:

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[92] Ibid., 37.

Flooding in New Orleans on August 30 forced the closure of the Orleans Parish Emergency Operations Center (EOC). In fact, the New Orleans Mayor's Office operated out of a Hyatt Hotel for several days after Hurricane Katrina's landfall, unable to establish reliable communications with anyone outside the hotel for nearly forty-eight hours. This meant that the Mayor was neither able to effectively command the local efforts, nor was he able to guide the State and Federal support for two days following the storm.[93]

The loss of communication systems, including all back up systems impaired not only situational awareness but also the ability to coordinate any response:

The complete devastation of the communications infrastructure left responders without a reliable network to use for coordinating emergency response operations. Flooding blocked access to the police and fire dispatch centers in New Orleans; neither 911 service nor public safety radio communications functioned sufficiently. In addition, the State of Louisiana's 800 MHz radio system, designed to be the backbone of mutual aid communications, ceased functioning, and repairs were delayed for several days.[94]

This combined to prevent state and local officials from forming functioning operations centres which resulted in a breakdown of the command structure for response. Without a functioning operation centres, officials were unable to "direct operations, manage assets, obtain situational awareness, and generate requests for assistance to State authorities."[95] The lack of command and control became critical seriously impacted efforts to rescue and evacuate large numbers of citizens.

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[93]   Ibid.,37. Many State and local public safety agencies suffered extensive damage to their facilities and equipment. The Grand Isle (Louisiana) Fire Department suffered "total destruction. Fire departments in the Mississippi cities of Biloxi and Gulfport experienced similar fates, while Slidell, Louisiana, had to close over half its stations.

[94]   Ibid.,37.

[95]   Ibid.,37.

The scenes of New Orleans poor and largely black citizens stranded at the Superdome without food, water and a means of evacuation has been called one of the most shameful incidents in the nation's history. "The Superdome presented the most immediate concern to officials. The high floodwaters cut off access to the Superdome, which made re-supply, evacuations, and other operations extremely difficult."[96] One of the main issues in trying to evacuate them was that a plan did not exist for evacuation post landfall of a hurricane. This is a key planning issue for any major urban centre, how to evacuate citizens, care and house them once relocated. "From Los Angeles to Boston, from Seattle to Miami, plans to relocate, house and feed potentially thousands of displaced persons are embryonic at best and non-existent at worst."[97] Another key plan that was overlooked was the public information/communications plan both to advise people where official shelters were located as well as what measures were being taken to evacuate citizens.[98] If there are one positive impact to come from Hurricane Katrina it is the lessons learned and the changes being made to the system to provide a better response to the next disasters.

Lessons Learned

The major lessons learned from Hurricane Katrina, as detailed in the Whitehouse Report, focus primarily on issues of communication, coordination and the complex challenges of

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[96] Ibid.,38.

[97] John M. Broder and Reporting for this article was contributed by Matt Wald , Terry Aguayo in Miami,Gretchen Reuthling and Katie Zezima ., "In Plans to Evacuate U.S. Cities, Chance for Havoc," *New York Times*, Sep 25, 2005, http://proquest.umi.com.

[98] Department of Homeland Security, *The Federal Response to Hurricane Katrina Lessons Learned*, 39.

logistics support during a major disaster. For simplicities sake, the critical lessons have been

summarized in the table below, taken directly from the report. .

Critical Challenge	Lesson Learned
National Preparedness	- The current system for Homeland Security does not provide the necessary framework to manage a catastrophic disaster. - Unified Management of the National Response. Effective incident management requires coordination of a wide range of organization and activities, public and private. - Command and Control within the Federal Government. Command and control mechanism as well as our existing structure of plans did not serve us well .Knowledge and Practice in the Plans. Key decision makers need to be familiar with the plans. - Inefficient Regional Planning and Coordination. Guidance to governments at all levels is key to ensure adequate preparedness.
Working with NGOs	The Federal response should better integrate the contributions of volunteers and non-governmental organizations into the broader national effort. This integration would be best achieved at the State and local levels, prior to future incidents. In particular, State and local governments must engage NGOs in the planning process, credential their personnel, and provide them the necessary resource support for their involvement in a joint response.
Public Communication	DHS should develop an integrated public communications plan to better inform, guide and reassure the American public before, during and after a catastrophe.
Logistics and Evacuation	- DHS, in coordination with State and local governments and the private sector, should develop a modern, flexible, and transparent logistics system - DHS should establish a Chief Logistics Officer to oversee all logistics operations across multiple support functions - Must also be prepared to conduct mass evacuation operations when disasters overwhelm or incapacitate State and local governments
Public Health and Medical Support	The Department of Health and Human Services should strengthen the federal capability to provide public health and medical support during a crisis.
Human Services	The Department of Health and Human Services should coordinate with other departments, State governments and non-governmental organizations, to develop a robust, comprehensive, and integrated system to deliver human services during disasters. .
Mass Care and Housing	Using established Federal core competencies and all available resources, the Department of Housing and Urban Development, should develop integrated plans and bolstered capabilities for the temporary and long-term housing of evacuees. The American Red Cross and the Department of Homeland Security should retain responsibility and improve the process of mass care and sheltering during disasters.

Figure 11 Lessons Learned [99]

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99 Ibid., 51-60.

An analysis of the conclusions to be drawn with respect to Canadian emergency management will be undertaken in the following paragraphs.

One of the most critical issues identified in the lessons learned was that the National Incident Management System, in particular the ICS and the concept of unified management did not result in a well coordinated and integrated management of resources between levels of government/NGOs as was anticipated. This is significant from a Canadian perspective because the Canadian EMS and BCERMS are based on the ICS and concept of unified command. It suggests that as much as emergency management may be perceived as chaotic and therefore necessitates a more flexible, consensus driven approach to management in fact there needs to be high degree of control in order to be able to better coordinate a response. Further, with respect to an adequate level of preparedness by the federal government, the U.S. federal government played a much more proactive role in the general preparations made before the hurricane than one could perceive the Canadian federal government making. PSC should take both a proactive approach to preparedness and a stronger lead in the response than they are wont to do currently. PSC should investigate the establishment of deployable Emergency Response Teams to assist provincial governments with preparedness measures prior to an emergency and assessment of requirements for federal assistance in the initial response phase. The requirement for effective and integrated coordination of plans and resources with respect to the logistics issues of rescuing, evacuating and sustaining a large number of people, particularly from a major urban centres is another key area in which there is much for Canadians to take away. In the U.S. case it was recommended that "the Federal government must develop the

capacity to conduct large-scale logistical operations that supplement and, if necessary, replace State and local logistical systems by leveraging resources within both the public sector and the private sector."[100] It is doubtful that detailed planning and resourcing of assets to transport, shelter and feed a large number of people has been any better thought out that in Canada than it was with Hurricane Katrina. Within the Canadian context, this would likely be provided by the military however this presents issues in terms of how long it takes to deploy the military, where shelters can be set up, how food will be procured and the myriad of other issues such as water, medical care, and clothing addressed. Certainly it should be a detailed part of the B.C. Earthquake response. Hand in hand with the coordination of logistics support is better integration of NGOs into the preparedness and response efforts. In the Hurricane Katrina case, "FEMA could neither efficiently accept nor manage the deluge of charitable donations. Private sector companies also encountered problems when attempting to donate their goods and services to FEMA."[101] In line with the issue of coordination and integration of plans raised in Chapter 1, the Canadian system would have the same difficulty. There was little to no mention of how NGOs would be integrated in to the planning and response capability at either the provincial or federal level in plans reviewed for this paper (BC Earthquake, Influenza Pandemic, and Ontario Emergency Response Plan). This may be a function of Canada never having needed the large scale assistance of NGOs however it is an issue that should be considered by the provincial and federal governments. Lastly, the issue of public communication contributed to the general

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[100] Ibid., 44.

[101] Ibid., 45.

confusion of the populace and created additional work for the evacuation efforts as people did not know what to do or where to go to be evacuated. Canada is developing a national emergency communication system however it will not be functional until 2010. Ontario has invested in its own public communication initiative which will be functional much sooner. Although citizens are expected to 'be prepared for 72 hours' it is doubtful that many are. Nor would they know where to go in the event of an emergency. Canada may be developing the means to communicate with its citizens in an emergency, which may or may not function after a disaster, however there also needs to be a coherent plan at each level of government as to what they need to tell citizens in a time of crisis.

Conclusion

Hurricane Katrina is an excellent case study on emergency response for a major, complex disaster. Given the similarities in the emergency management systems and socio-economic situation between Canada and the U.S. there are many conclusions that can be drawn from the disaster that have significance for the Canadian emergency management system. Canada should undertake critical examination of its emergency management systems to ensure that the issues identified with the ICS are resolved in the Canadian system. The role of the federal government needs to be reviewed. The government should be expected to take a proactive lead in the event of major disasters, particularly in preparedness measures as was demonstrated by FEMA. The government also needs to play a lead role in logistics coordination, particularly at the federal level. Logistics coordination was not only a key element in preparing for the hurricane but a major enabler to response operations, particularly those involving evacuation of major urban

areas. Contingency plans are essential to ensure the continuity of command and control.

Notable in Hurricane Katrina was the loss of infrastructure and resources and communications

systems which had a major impact on: command and control of the response, situational

awareness, and ability to coordinate logistics support (particularly the rescue, evacuation and

sustainment of the populace). Finally, the public needs to know what is going on so that more

lives are not endangered by their ignorance of the situation and to facilitate rescue and

evacuation. These lessons learned all have important implications for Canada's emergency

management program. Many of the problems experienced by the U.S. system during Hurricane

Katrina already exist to a degree in the Canadian program. If Canada is to be prepared to

respond to a major complex emergency it needs to address these issues and implement

improvements as the U.S. is currently in the progress of doing as a result of Hurricane Katrina.

CHAPTER 3 - FUTURE EMERGENCIES

The Canadian emergency management system has always performed well in responding to the minor disasters of forest fires, snow storms and floods that routinely occur every year. Most recent Canadian disasters such as the Ice Storm of 98, Hurricane Juan, SARS outbreak and Ontario blackout were of relatively short duration and minor in scale and scope. The Canadian system thus has no experience in managing a complex major emergency. As previously discussed, much can be learned from major disasters outside Canada. Aside from lessons learned second hand from disasters elsewhere, much can be learned by war gaming likely major complex emergency scenarios. Three likely future threats to Canada are: a major earthquake on the west coast, a flu pandemic in central Canada, and a terrorist attack in the nation's capital. In examining the scenario for each disaster the discussion will centre on identifying the factors that make it a major threat (scale, scope and duration) and from there assessing the impact of each disaster. The major conclusions reached pertain to: the role of government, logistics coordination, requirement for specialized capabilities and communication considerations. All represent obstacles to the management of a major complex emergency by the Canadian system.

The Urban Factor

One of the factors that add to the complexity of emergency management is operations in an urban environment. The 2006 census estimates that almost 80.2% of Canadians live in an urban area.[102] That poses a significant challenge to planners when you start to calculate the increased number of potential casualties, displaced persons, infrastructure that can be damaged

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[102] Statistics Canada, "Portrait of the Canadian Population in 2006: Sub provincial Population Dynamics," http://www12.statcan.ca/english/census06/analysis/popdwell/Subprov1.cfm (accessed March 13, 2007).

or destroyed and resources required to respond to an emergency. As was seen in Hurricane Katrina, the greatest challenge, and some would say failure, after the storm was in trying to rescue, sustain and evacuate the population of New Orleans. Most cities do not have an adequate plan to evacuate their citizens, or at least not in a timely manner. In a recent article in the *Kanata Kourier* the City of Ottawa admitted that at best it could shelter 30,000; this is a city of 809,000 people.[103] Although the scenarios explored below will only touch on some of the issue there are a whole range of considerations to be made when dealing with urban areas that are not present to the same degree in rural areas. Among these considerations are: the obstacle that damaged infrastructure can present to response efforts, the increased injuries and death that result from the damage to infrastructure, degree of difficulty in restoring essential services, ease with which diseases can be spread, increased crime, loss of major medical/fire/police services to provide a response effort etc. This is not to ignore the fact that there are challenges in a rural setting as well wherein there may be fewer resources to respond to an emergency, greater distances to cover to render assistance and physical obstacles in providing that assistance and fewer people to assist. However, given the magnitude of the problem presented in an urban setting the scenarios below will focus on issues related an urban setting vice a rural setting.

Assessment Factors

The scenarios presented herein are notional only in the context of what happens. They are however, real time hazards facing Canadians and are but three examples of many possible disaster scenarios that occur in Canada. Public Safety Canada "maintains a database of over 700

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[103] City of Ottawa Webpage," City of Ottawa, http://www.ottawa.ca/ (accessed March 16, 2007).

natural, technological and conflict events (excluding war) that have directly affected Canadians

over the past century."[104] For the purposes of this paper, the scenarios will be described using a

framework of scale, scope and duration of the emergency. Scale will consider the factors of area

impacted in particular urban areas, disruption to daily life and the major and secondary effects of

the event. Under scope consideration will be given to response required in terms of provincial,

federal, non-governmental and international assistance and types of initial response required.

Finally, duration will consider the immediacy of the response required and the estimated length

of time for recovery to a normal state of daily life. The scenarios will be assessed from an

emergency management perspective with respect to the perceived challenges relating to the role

of government, logistics coordination, communications and specialized capabilities required.

Major Earthquake

Jack Granatstein's most recent book '*Whose War is it? How Canada Can Survive in the*

Post-9/11 World' opens with the bleak scenario of a major earthquake in British Columbia.[105]

Although the fictional earthquake scenario serves as a springboard for the real focus of his book,

Canadian foreign and defence policy, he nevertheless paints a vivid picture of the devastation

that might result. The Government of Canada identified that:

> Earthquakes are perhaps the most dangerous of all natural hazards. They resulted in the
> loss of more than a million lives worldwide during the 20th century. Though they are not
> widely recognized here as a major hazard, each year more than 50 earthquakes occur that
> are strong enough to be felt by Canadians. A further 1,400 smaller earthquakes are

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[104] Public Safety Canada, "Canadian Disaster Database," http://www.publicsafety.gc.ca/res/em/cdd/index-en.asp (accessed January 13, 2007).

[105] J. L. Granatstien, *Whose War is it? How Canada can Survive in the Post-9/11 World*, Harper Collins Publisher Ltd ed.Toronto, 2007).

recorded each year by sensitive monitoring equipment. Both the West Coast and St. Lawrence Valley are at significant risk of a major earthquake.[106]

Canadians have all seen the devastation caused by earthquakes in far away places such as Pakistan, Indonesia or Turkey. Far fewer have experienced that devastation first hand.

Residents of British Columbia, like those of California, live with the threat of a major earthquake every day. Seismologists estimate that a major earthquake could occur along the coast of British Columbia at any time. Although they cannot predict where the earthquake will occur it is safe to assume that it will impact the densely inhabited areas around Victoria and Vancouver. "Since about 70 % of the British Columbia population lives in earthquake prone south-western B.C., there is an obvious need for emergency planning."[107] The most densely populated area in B.C. is Vancouver with a population of about 600,000 people within a larger region of over 2 million people. [108] A major earthquake in the region of Vancouver Island would not only have an effect on the island but also the city of Vancouver and much of the heavily populated region surrounding it. Unlike in the case of hurricanes, snow storms or many weather related phenomena, it is unlikely that sufficient warning could be given of a major earthquake to enable any measure of preparation such as evacuation, propositioning of response capabilities by the provincial government or standby to the federal government. It is not just the earthquake

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[106]   Public Safety Canada, "Earthquakes," http://www.publicsafety.gc.ca/res/em/nh/eq/index-en.asp (accessed January 13, 2007).

[107]   "Ministry of Energy, Mines and Petroleum Industries Webpage," Government of British Columbia, http://www.em.gov.bc.ca (accessed April 6, 2007).

[108]   "City of Vancouver Webpage," City of Vancouver, http://www.city.vancouver.bc.ca/aboutvan.htm# (accessed March 6, 2007).

itself that would cause damage and loss of life but the additional secondary effects such as

tsunamis, flooding, aftershocks, avalanches, and fires. Having survived the earthquake, the

population would also face environmental hazards from sewage, oil and gas line ruptures,

contaminated water and diseases such as such a cholera and typhoid due to large numbers of

corpses. The province of B.C. has modelled the impact of a catastrophic earthquake as part of

their emergency planning for such an event.[109] In their provincial Earthquake Response Plan it is

estimated that a catastrophic earthquake would cause:

- Severe damage and a large numbers of casualties. The principal cause of deaths and injury will be the collapse of buildings and other manmade structures.
- Landslides and avalanches.
- Seismic sea waves (tsunamis) will likely be generated.
- Smaller fires may be numerous, however; and a combination of dry weather conditions, failure of water supply or pressure, and the inability of firefighters to respond due to casualties or transportation system breakdown could lead to an urban wildfire. [110]

The disruption to daily life, as alluded to in Jack Granatstein's book would be significant.

Conceivably every aspect of daily life from the availability of potable water and fresh food to

having a roof over ones head and clothes to wear would be impacted. Tertiary effects to civilian

life from a catastrophic earthquake would include the loss of: industry, critical infrastructure

such as roads/hospitals/schools, government and police/fire services. The scope of involvement

would be significant with provincial, federal and non-governmental agencies all playing a role in

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[109] Ministry of Public Safety and Solicitor General, *BC Earthquake Response Plan* (Victoria: Province of British Columbia, 1999), 3. Catastrophic Earthquake: This term is commonly used to describe an earthquake which has or would likely cause severe damage over a large area, such as a subduction zone event near south-western British Columbia. It is generally accepted that such an earthquake could exceed Richter magnitude 8.5, and once again the damage that would be caused is dependent upon the distance from the epicentre.

[110] Ibid., 3.

the response. The response itself would initially draw heavily on traditional first responders such as police, fire and medical but would also require the resources of Heavy Urban Search and Rescue from across the country to locate and recover the injured and dead. Potentially, a Chemical, Biological, Radiation and Nuclear capability would also be required as well as trauma specialists to deal with the survivors. Although the duration of an earthquake could be framed in days, the longer term response and recovery could extend to days and years.

The Province of British Columbia is well aware that the threat of a catastrophic earthquake is a measure of when not if and has drafted a detailed Earthquake Response Plan. The plan details the concept for response and attendant responsibilities for a response at all levels:

> The plan describes the responsibilities, organization and concept of operations necessary for emergency response to a major earthquake in British Columbia. It is designed to react to the most serious subduction earthquake which has been forecast, and which would affect the south-western region of the province where more than half of the population lives.[111]

In keeping with the doctrine of BCERMS, the provincial government plays a proactive role in emergency response within the province. A strong provincial government will be crucial to the coordination of the response and recovery efforts. However, as was seen in the case of Hurricane Katrina, there may not be a municipal or provincial government able or left to coordinate such a response. While the emergency management program is organized in to regions and thus presumably one of the regions could take the lead they may not have sufficient capabilities to lead the response. Further, much of the first response capacity within the area

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[111] Ibid., i.

may be lost or rendered ineffective due to damage to facilities, loss of equipment and death/loss of personnel. It is not apparent whether this has been factored in to the B.C. plans but it should be. The provincial plan acknowledges that the emergency situation may well exceed provincial capabilities and that federal and international assistance will be required however at all times the province will coordinate the response. [112] This may not be feasible if there is no provincial government left. As such, the federal government must be prepared to take a strong lead role in the event of a catastrophic earthquake, perhaps before an official request has been made. The Department of National Defence has developed robust plans for a federal response however there will be many other departments and agencies at the federal government level that will have a significant contribution to make. Irrespective of the level of government providing the response, the coordination and integration of resources will be crucial to the response. The response will obviously be very complicated to coordinate. The B.C. plan assigns planning responsibilities for various components of the response to a number of departments, including Transportation, Engineering and Construction, Human Resources, Coroner/Mortuary. The table below (see Figure 12) outlines some of the other key departments and the tasks assigned to them to coordinate planning and response. Note that each department is charged with coordinating their plan with the secondary supporting agencies.

Ministry Responsible For	Task

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[112] Ibid., 2.

Health	Supervise the acceptance and implementation of response requirements by the components of the health services delivery system: the BC Ambulance Service, regional health boards, and Secondary Supporting Agencies.
Social Services	Supervise the acceptance and implementation of response requirements by Secondary Supporting Agencies and other components of the provincial emergency social services delivery system
Police Services	supervise the acceptance and implementation of response requirements by Secondary Supporting Agencies
Heavy Urban Search and Rescue	will adapt their plans to reflect the possible need for search and light rescue from damaged buildings, and for a heavy urban search and rescue capability.
Communications	Local authorities, ministries and agencies will prepare plans and acquire some initial capability to communicate in the expected absence or degradation of the telephone system.
Firefighting/Rescue	Plans for a fire disaster resulting from an earthquake scenario, and be prepared to provide a liaison officer to a Provincial Field Response Centre to coordinate provincial major fire response with secondary supporting agencies.
Utilities	Utilities companies (eg., BC Hydro, BC Gas, BC Tel) and regional/local authority utilities providers (water/sewage) will develop plans to deal with the effects of an earthquake.

Figure 12 Ministry Planning Responsibilities[113]

Notably missing from the plan is any mention of NGOs and how their assistance will be

coordinated into the provincial response. Similarly, there does not appear to be any detailed

consideration given to an evacuation, either before or after an earthquake.

The coordination of the logistics effort will be a major challenge to any and all levels of

government providing a response, particularly because logistics support tasks are dispersed

across a number of departments and agencies. "The most important thing in a sudden disaster is

logistics, say Adrian van der Knapp, who coordinated emergency relief operations for the UN

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[113] Ibid., 18-22.

and helps DHL get quick government authorization to go into disaster zones."[114] Logistics

support will come not only from the government but also from non-governmental organizations,

the private sector and individual donations. It is likely that there will not be enough stockpiled

material to meet requirements and if there is that it is in the wrong location and needed

yesterday. One of the major challenges that FEMA faced in Hurricane Katrina was not having

the ability to know what they had, where it was or if they did know the means to get it where it

was needed. "Those in the field of 'humanitarian logistics' understand that with the number and

complexity of disasters… the need to ship food, water, tents and first-aid supplies quickly and

efficiently is becoming ever-more critical."[115] In the case of an earthquake in B.C. there may not

be passable roads through the mountains, operational runways or port facilities left to enable

logistics operations. A strong central coordination of the logistics effort will be essential not

only to integrate what the various agencies are providing or capable of providing but also to

ensure that the government operations centre in charge (be it federal or provincial) is aware of

what is needed and where and then to coordinate the means to deliver it and ensure it is

distributed. Further, should the decision be made to evacuate there needs to be a great deal of

planning and coordination as to where the evacuees will go, how they will get there, and how

they will be sustained once they get there. During Hurricane Katrina, not only a lack of transport

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[114]   Glenn R. Simpson, "Just in Time: In Year of Disasters, Experts Bring Order to Chaos of Relief; Logistics Pros Lend Know-how to Volunteer Operations; Leasing a Fleet of Forklifts; Bottlenecks on the Tarmac," *Wall Street Journal*, Nov 22, 2005,A1, http://proquest.umi.com.

[115]   Silvia Spring, "Relief when You Need it; can FedEx, DHL and TNT Bring the Delivery of Emergency Aid into the 21st Century?" *Newsweek* (Sep 11, 2006), 0, http://proquest.umi.com.

resources held up the evacuation of New Orleans but also the search for evacuee shelters as the capacity of evacuation centres in places like Houston were exceeded and other locations needed to be found . It was a major challenge to look after the daily needs of those evacuated let alone to provide the services to deal with the trauma they suffered, and to provide the assistance to re-establish their lives. In a city the size of Vancouver, it will take a while to evacuate up to 600,000 people and a significant effort to sustain them. Key to the coordination of logistics support effort will be communications.

Communications will be challenging from two aspects. As was experienced during Hurricane Katrina and which the B.C. Earthquake Response Plan addresses is the potential loss of communications. Although there were hardened communications networks in place in Louisiana and Mississippi they too were affected by the storm. Communications will be key not only to coordinate the response effort but to communicate to the populace critical information such as where to go for assistance and to be evacuated. At present, only Ontario has a province wide communication system to communicate with the public while the Canada wide system will not be operational until 2010. The B.C. Earthquake Response Plan has tasked local authorities, ministries and agencies to "acquire some initial capability to communicate in the expected absence or degradation of the telephone system."[116] Although this is very generic, they have at least considered that there will be an impact on communications. The B.C. Earthquake Plan has also identified the need for Heavy Urban Search and Rescue (HUSAR). Canada's capability for HUSAR is relatively new, federal government funding of the capability only began in 2001.

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[116] Ibid., 19.

Currently there are five teams, deployable where needed, located in Vancouver, Calgary, Toronto and Halifax and Winnipeg.[117] One of the takeaways from Hurricane Katrina was that there needed to be a mixture of HUSAR and light search and rescue capabilities. It appears that Canada has already addressed this issue. "PSEPC also supports a complementary range of local capacities for Light and Medium USAR, currently in 41 other urban centres across the country."[118] Although British Columbia purports to be well prepared for a catastrophic earthquake, there are still key vulnerabilities in their plan; the impact of the earthquake on the government and the role that the federal government should take, the complexity of the task to coordinated logistics support, the importance of communications and the need for specialized capabilities.

Pandemic

The threat that poses the most imminent and widespread danger to all Canadians is that of a pandemic. Although world attention has recently focused on H5N1 (avian influenza), a pandemic could result from any number of mutated strains of influenza, Ebola or some other highly contagious virus such as SARs. As the BC Pandemic Influenza Preparedness Plan states, medical authorities have warned for years that the world is overdue for a flu pandemic:

> Pandemics have been documented every ten to forty years dating back to the 1600s, and likely long before that. There were three during the last century alone. The worst was

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[117] Public Safety Canada, "Urban Search and Rescue Program," http://www.publicsafety.gc.ca/prg/em/usar/index-en.asp (accessed March 13, 2007). Urban Search and Rescue (USAR) is the capacity to rescue victims from major structural collapse or other entrapments. It can range from lightly equipped teams to self-contained, fully mobile Heavy USAR teams.

[118] Ibid.

1918 to 1919 when over 20 million people died worldwide. The last pandemic occurred in 1968. Experts agree – we are overdue for another. [119]

The challenge for the medical community is to predict the type of pandemic, devise treatment (both preventative and cure) and to do so before it can spread around the globe. Experts have predicted that we may have as little as one to six months notice between identification of a strain of influenza and outbreak in Canada[120] An example of this was the SARS outbreak in Toronto and Vancouver. Authorities were caught off guard by the SARS virus, in part because of China's failure to report the outbreak. "In the span of fifteen weeks, SARS would touch 24 countries, affect the health of more than 8,000 people and kill 774."[121] Toronto in particular was ill prepared to deal with how quickly it spread or the deadly consequences.

The impact of SARS was far greater than expected. In Canada the virus killed 44 and maimed more than 330 others with serious lung disease with the greatest impact felt in Toronto. [122] The scale of a pandemic will thus be immense, not only worldwide but national as well. An

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[119] Ministry of Public Safety and Solicitor General, *BC Pandemic Influenza Preparedness Plan* (Victoria: Province of British Columbia, 2004), ii, http://www.pep.bc.ca/hazard_plans.

[120] Ibid. Most experts believe we will have between one and six months between the time an influenza pandemic strain is first identified globally and the time that outbreaks begin in BC. Within three months from arrival in BC, we expect that most communities in the province will be affected, and that the impact will continue for six months or more.

[121] Lloyd Dr Axworthy, Arthur Dr Fallick and Kelly Ross, "The Secure City, Vancouver Working Group Discussion Paper" (Vancouver, The Liu Institute for Global Issues at the University of British Columbia, 2006, 2006), 6.

[122] Archie Commissioner Campbell, T*he Final Report of the Independent SARS Commission* (Toronto: Ontario Minister of Health and Long Term Care,[2007]),1, http://www.sarscommission.ca/.. It caused untold suffering to its victims and their families, forced thousands into quarantine, brought the health system in the Greater Toronto Area and other parts of the province to its knees and seriously impacted health systems in other parts of the country

urban area presents a particular danger in the spread of contagions because of the exponential number of opportunities that mass transit, tight living quarters, and the daily interaction between millions of people represent. "Influenza pandemics represent global emergencies with catastrophic impact. During a pandemic, worldwide epidemics of influenza due to a new viral subtype can occur simultaneously and with high death rates."[123] In the case of SARS, authorities were slow to grasp how contagious the virus was which resulted in the initial spread of SARS to another Toronto hospital as well as a second wave of SARS. Severe measures were taken across the country at hospitals, medical clinics and airports to limit the spread and placed a significant drain on medical resources as well as police/ airport and border security to screen the public. An influenza pandemic would present a similar, if not greater challenge to authorities to contain the spread of the virus because influenza can so closely resemble a common cold in the public perception and thus lead to a disregard for greater caution with significant consequences.

An influenza pandemic will have significant consequences in terms of death, illness and impact on daily life. The potential impact in terms of death and illness of an influenza pandemic is staggering; "B.C. has estimated that more than three million people will be infected with the virus, as many as 18,500 will need hospital care."[124] Multiply this by the number infected across the remainder of the country and the deduction that a pandemic could have a major impact on civilian life is an understatement. The impact will be felt in all aspects of society, threatening the closure of borders, restriction on all forms of travel, quarantine of the infected resulting in the

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[123]   Ministry of Public Safety and Solicitor General, *BC Pandemic Influenza Preparedness Plan*, ii.

[124]   Ibid., 77.

closure of schools, shops and businesses, and minimum manning of critical services such as the police and fire. As more people become ill, the health system will be overloaded trying to cope with the illness both because of the sheer numbers of ill as well as the fact that medical staff themselves will also fall ill and further reduce the capacity of an already overstretched system. "Clearly, such a widespread outbreak of illness has enormous implications for every sector of society, from front-line health care workers to business and industry; from social support agencies to funeral service providers." [125] The impact on the economy alone could be billions. It is estimated that the SARS outbreak cost Toronto millions economically.[126] In terms of scope, a pandemic will primarily involve the medical community at every level as well as the international community, most notably the World Health Organization. It will also involve civilian authorities, police, border patrols, airport security etc, to try and contain the spread, enforce quarantines or to organize evacuations. Most significantly, although there could be advance warning of a pandemic, it may spread more quickly than cures and vaccinations can be derived or measures put in place to halt its spread. Further, a pandemic could potentially last months, and recovery take years. Ontario has identified the following estimates on the impact and duration of an influenza pandemic in their Provincial Coordination Plan for Influenza Pandemic, published July 2006 (see Figure 13 [127]).

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[125] Ibid., 3.

[126] "The Economic Impact of SARS," CBC Online, http://www.cbc.cal (accessed April 11, 2007).

[127] Ontario Ministry of Health, Ontario Provincial Coordination Plan for Influenza Pandemic (Toronto: Province of Ontario, 2006), 3, (accessed http://www.health.gov.on.ca).

Table 2: Potential Impacts of a Pandemic Influenza Outbreak

Casualties	The attack rate may be as high as 35%, referring to the percentage of the population that will have a clinical case of influenza at some stage during the projected eighteen (18) months of the influenza pandemic. Fatalities may be about 2% of those affected. See Table 2 of the Ontario Health Plan for an Influenza Pandemic for more detail. The attack rate can be used for planning purposes and will be dependent on the virus epidemiology once it emerges and on the response measures applied (antivirals, public health measures and, once available, vaccine.)
Pandemic Timeline	The pandemic is likely to occur in two or more waves. Each wave is expected to be about 8 weeks in duration and may occur three to nine months apart.
Response Timeline	Response activities will take place during each pandemic wave and during the inter-wave period as well. The response timeline could be over a period of one or more years.
Recovery Timeline	One to three years (but could be longer). Recovery activities could commence in some areas while response activities are continuing in other areas.

Figure 13 Ontario Potential Impacts of a Pandemic

What then are the main vulnerabilities of the current system to respond to an influenza pandemic?

The key vulnerabilities in an influenza pandemic would not differ greatly from those experienced during the SARS outbreak, namely; the role of government and preparedness for a pandemic, coordination between authorities and of logistics support.   The difficult challenge in a pandemic with respect to the role of government and preparedness is that it must be driven at the provincial and federal level.   Given the nature of an outbreak it might be some time before an outbreak actually has such an impact at a municipal level that it would be declared an emergency and then much of the coordination would rest with the health sector. As such, preparedness for a pandemic must be driven by the provincial and federal governments.   Currently, the lead agency at both levels for pandemics is the Ministry of Health. Each department needs to have clearly

defined roles and responsibilities and an integrated response plan that best utilizes the medical

resources (personnel, facilities and supplies) available.   This was determined not to have been

present during the SARS outbreak and exacerbated the challenges of coordinating a response:

> According to one submission "there was ongoing confusion and lack of clarity as to the respective roles and responsibilities of the Premier, the Minister of Health, and especially the Commissioners of Public Health and Public Safety. Given the likelihood of widespread emerging infectious disease outbreaks in the future, such as pandemic influenza or bioterrorism, these issues need urgent clarification and specification."[128]

Further, along with clearly defined roles and responsibilities, there needs to be detailed plan that

integrate medical resources (personnel, facilities and supplies) so that as capacity is reached at

one facility another can be used to offset the problem. This was another critical issue during the

SARS crisis:

> It is to suggest that for the Ministry and for the health sector in general, improved coordination, planning, and capacity within the sector are a pre-requisite for effective participation in either a health-specific emergency or a more general emergency with diverse health impacts.[129]

This lack of coordination and integration presents a serious challenge for logistics support. With

respect to the pandemic itself logistics support will be crucial to ensuring that the medical

supplies needed to treat the patients and keep the hospital functioning are available. During the

SARS crisis the hospitals in Toronto utilized a recently centralized supply system to the best

advantage to prioritize and source supplies however there were still shortfalls of critical items

such as protective masks: The SARS Commission Report heard that:

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[128]   Ontario Ministry of Health, Initial Report of the Ontario Expert Panel on SARS and Infectious Disease Control (Toronto: Province of Ontario,[2003]),109, http://www.health.gov.on.ca (accessed 7 April 2007).

[129]   Ibid.,110.

SARS had a profound effect on the traditional supply and distribution of the protective equipment needed by healthcare providers, particularly at the onset of the outbreak. The Panel heard of the significant challenges experienced at the facility and provider level in accessing basic supplies, as well as at the provincial level. The threat of SARS resulted in healthcare organizations across North America attempting to secure the same supplies at the same time. With no ready access to a domestic supplier of certain forms of protective gear, simply obtaining a basic supply was a huge challenge. [130]

In the event of a national pandemic, or even a province wide pandemic such a system will not exist. The lead agency will need to ensure that a system is put in place particularly as some items may be in short supply not only within the province but across the nation and continent as well.

As one respondent explains "inter-agency planning and coordination could be improved. This is particularly important in respect to the availability of infection control supplies and equipment. More specifically, we need to develop plans respecting the purchasing and distribution of these resources to ensure this is achieved in the most cost-effective and efficient matter possible. Though we do not all need to stockpile enormous quantities of supplies and equipment for every eventuality, we all require minimum number of resources that are available for primary response and a system that can be facilitated quickly to acquire the rest on demand."[131]

The issue of logistics coordination becomes an even larger challenge than just the medical aspects should an evacuation be required or a quarantine put in effect that restricts what the public can and cannot do. Were a pandemic severe enough one could foresee stores being closed or operating on reduced hours to limit the contact and potential spread of diseases. There would need to be a detailed and coordinated plan to look after those placed on quarantine, those evacuated and those whose primary caretakers (i.e. children and pets) have fallen ill or died until

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[130] Ibid.,112.

[131] Ibid.,,123.

arrangements can be made for other care. Although each level of government has detailed plans, they were not sufficient to deal with the SARS crisis. "SARS has, however, taught the healthcare system a great deal about vulnerability, preparedness, and the need for far greater emergency planning within the sector if future risks of greater magnitude are to be effectively managed."[132] The government will need to ensure that there are clearly defined roles and responsibilities for each level of government, coordination between the levels of government and health organizations/facilities for planning and response, integrated and coordinated response plans and a logistics support plan that not only addresses the issues of medical supplies and equipment but also the practical issues related to the impact the pandemic will have on normal life.

Terrorist Attack

The events of 9/11 shook many Canadians complacency about the security of the country for a few short months. For many, the spectre of a terrorist attack on Canadian soil seemed more the plot of a prime-time CBC Sunday movie than a reality. However, "the absence to date of terrorist violence on Canadian territory does not preclude the possibility of a terrorist attack."[133] CSIS has identified that there are many terrorist groups active in Canada, raising funds, recruiting, lobbying and furthering their cause.[134] The possibility of an attack remains very real.

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[132] Ibid.,105.

[133] Canadian Security Intelligence Service, "Examples of the Terrorist Threat in Canada," Canada, http://www.csis-scrs.gc.ca/en/priorities/terrorism/examples.asp (accessed March 16, 2007).

[134] Ibid. Many Canadians may be surprised to learn that, with the exception of the United States, there are more terrorist groups active in Canada today than in any other country in the world. With so many terrorist groups in Canada, people might wonder why the media are not reporting the occurrence of serious violence in

Osama bin Laden, the leader of Al Qaeda, has mentioned Canada as a "designated target for terrorist action because of Canada's role in Afghanistan following September 11, 2001."[135] To date although there have been several threats of an attack no actual attack has been carried out on Canadian soil.

Any attack, particularly a terrorist attack on Canada would likely follow the pattern of attacks seen in Madrid, London or Bali. These attacks achieved the largest number of casualties with the greatest mass effect because they occurred in large urban areas, were indiscriminate in who they targeted, and caused numerous fatalities:

> The events of September 11, 2001 and the subsequent anthrax incidents of fall 2001 brought growing attention to terrorist threats. Continuing terrorist attacks around the world demonstrate that no country is immune from the threat of terrorism and there is ongoing concern over the threat of chemical, biological, radiological and nuclear (CBRN) terrorism. [136]

An attractive target for such an attack in Canada would be Ottawa. As the seat of government for the country, location of National Defence Headquarters and home to numerous embassies it presents a target rich environment. Although any scenario for a terrorist attack could be used, such as a suicide bomber, IED or hostage taking incident, it would be a chemical, biological or dirty bomb (radioactive) that would present the worst case scenario. "There are a number of likely scenarios against government facilities. For example: a truck loaded with drums or

Canada on a regular basis.—Canada, as a country, has not often been targeted specifically for attack. For this reason, many people have come to equate terrorism with the violence and tragic events that occur in foreign countries.

[135] Ibid. Canada's solidarity with the United States and other Western democracies in the fight against terrorism has rendered Canada a potential target.

[136] Public Safety Canada, "The Chemical, Biological, Radiological and Nuclear Strategy of the Government of Canada," Canada, http://www.publicsafety.gc.ca/pol/em/cbrnstr-en.asp (accessed March 16, 2007).

canisters containing a nerve agent like VX or Sarin could be crashed into an embassy and exploded, turning the deadly substance into a fine mist which would envelop the entire facility."[137] The most obvious place for an attack would be in the downtown core either against the parliament buildings, an embassy or one of the busiest thoroughfares in Ottawa, the Rideau Centre. Depending on the location, such an attack could disrupt the government, incapacitate National Defence Headquarters or victimize a large number of civilians. Any CBRN attack would pose a serious challenge to first responders, first to identify the nature of the attack, to contain the area and stop the spread of a contagion in the case of a biological attack and to render the necessary medical assistance to victims. A biological attack in particular could be spread relatively quickly; particularly if people were unaware they had been infected and continued on to their place of business, shopping or home, increasing the contamination before the pathogen could be identified and contained. In the event of a CRBN attack the degree of disruption to civilian life would depend on the nature of the attack, how long it took to contain it and treat it. For a short time at least there would be an impact on government and civilian businesses in the downtown core as steps were taken to first contain the attack, evacuate victims and residents in the downtown area and then to decontaminate the area. The longer term disruption would arise from the lingering medical effects on the victims, heightened security measures in Ottawa, and most of all the loss of innocence of Canadians as to the safety and security of Canada from terrorist attacks. The scope of response would involve municipal, provincial and federal

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[137] Purver, "Chemical and Biological Terrorism: The Threat According to the Open Literature".

resources. It is likely in fact that it would be municipal resources such as the Ottawa Fire

Department Hazardous Materiels Response Team (HRMT) and depending on the location of the

attack, federal resources such as the RCMP for security, the Department of National Defence

NBCD Company to conduct decontamination and Health Canada to determine the pathogen

used. The duration of the attack would likely be hours or days, until containment, treatment and

decontamination of the site has been completed. A terrorist attack in Ottawa would highlight

several vulnerabilities in the role of government, coordination of a response and availability of

specialized resources to deal with the attack.

The role of government in any type of CBRN attack, but particularly one in Ottawa

would raise immediate issues of whose jurisdiction the attack fell in to, who had the lead and

who had the actual resources to respond to the attack. An attack on federal property becomes the

immediate purview of the department of PSC. PSC has few actual resources with which to

actually respond to the disaster. The Province of Ontario views its role as largely providing

advice and having the lead on responding solely to nuclear accidents.[138] It is the City of Ottawa

who provide the actual resources to respond to the disaster and whose populace would be

affected by the disasters. Effectively, the municipality would find itself dealing directly with the

federal government in such as case. One of the most immediate challenges arising from this

would be the coordination of a response. It is not apparent how the Government Operations

Centre would interface with a municipality. Aside from some key resources and issues of

national security which are clearly the priority of the federal government the response could

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[138]   Mackenzie Institute for the Study of Terrorism, Revolution and Propaganda, *Shortfalls: A Review of Emergency Planning in Canada*,3.

potentially be handled by the City with assistance from the City of Gatineau and other first

responders and hospitals within the province. Were the attack to be biological, issues already

identified under the discussion of a pandemic would arise with the role of government,

coordination of medical resources (personnel, facilities, equipment and supplies) and availability

of supplies. If the City of Gatineau was also threatened there would be additional challenges of

coordination between not only two municipalities but also two provinces, and the federal

government. If the attack required an evacuation of the city to either minimize the spread of the

contagion or until the area could be rendered safe for human habitation then challenges of

coordinating the evacuation of a major urban centre as identified with the earthquake scenario

and pandemic would be present. Lastly, a CBRN in Ottawa would raise the issue of specialized

capabilities to deal with a CBRN. In the case of a chemical or biological attack, it would likely

be the Ottawa Fire Department that would provide the first response.[139] It would be critical for

them to be able to identify as soon as possible what type of agent they were dealing with,

particularly a biological agent.

> Detection of biological agents and subsequent (or, frequently, concurrent) diagnosis of
> the agent causing the symptoms is relatively undeveloped. In 1976, it took the full
> resources of the United States Government seven months to isolate the Legionnaires'
> disease Legionella pneumophila bacterium when it was discovered. [140]

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[139]   Ottawa Fire Services, "Hazardous Materials," City of Ottawa,
http://www.ottawa.ca/residents/fire/services/hazard_en.shtml (accessed March 16, 2007). Ottawa Fire Services:
Hazardous Materials Response Team (HMRT) has a wide array of specialized equipment to identify, monitor,
contain and stabilize a spill or leak. It can also decontaminate personnel and equipment after the conclusion of the
incident.

[140]   Purver, "Chemical and Biological Terrorism: The Threat According to the Open Literature".

The Fire Department would likely need additional assistance to deal with the situation either from Hull, Toronto or the military NBCD Company based in Trenton. It would take time to deploy resources from anywhere outside of Ottawa leaving the Ottawa Fire Department in a critical situation. Additional resources and capabilities would be required to contain the site and decontaminate, particularly a biological agent.

> What makes plague such a frightening weapon is that once a human chain of victims is started, the disease might continue to spread, unchecked, in secondary and tertiary outbreaks, for years to come, especially if an antibiotic-resistant strain were employed.[141]

There are a host of other challenges spanning the spectrum of immediate action in response to the agent to rendering medical aid in a contaminated environment, evacuating the injured outside of the Ottawa area if necessary or treating a biological agent without know what the agent is or having the right medicines on hand to treat it in time. Although Ottawa has a Hazmat Team they may not be qualified to deal with a biological hazard, nor is every Fire Department or Police Force across the country equipped to respond to a CRBN attack. The government has announced a national strategy to develop a more robust capability in Canada however it will take time to build that capacity. A CBRN attack in the nation's capital would prove a serious challenge for the emergency management system to respond. It would highlight vulnerabilities in the role of government, the coordination between agencies and the requirement for specialized capabilities such as CBRN Teams. Further, a host of issues already identified with evacuating a major urban centre and dealing with a pandemic would also be an issue in a CBRN attack.

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[141] Ibid.

Conclusion

The three scenarios presented above represent the most dangerous (earthquake, terrorist attack) and the most likely (influenza pandemic) hazards facing Canada. Although presented as notional scenarios, they in fact represent real hazards facing Canadians. Canada's emergency management system is relatively accustomed to responding to routine disasters such as forest fires, snow storms and floods that occur every year. The three future disaster scenarios discussed, an earthquake on the west coast, a pandemic outbreak in Toronto and a terrorist CBRN attack in Ottawa, represent major, complex disasters which Canada's emergency management system is not be capable of handling. Several key vulnerabilities were identified in each scenario. Common to all was the role of government. The government needs to take a proactive lead at all levels in order to ensure that emergency preparedness and response are coordinated, integrated and resourced. The coordination and integration of plans and responses is a challenge given the stovepipe nature of how responses are planned and the jurisdictional issues of who controls what resources, when those resources are engaged and who has the lead (i.e. hospitals in a pandemic). Coordination and integration is also exacerbated by the fact that there is no standardized emergency management system in Canada. One common operating system needs to be instituted to ensure there is no confusion as to how an emergency will be managed. One critical lesson learned that must be addressed in all emergency plans with respect to the issue of coordination is an alternate plan for command and control if the municipal/provincial authorities and first responders themselves are non-effective or killed in a major disasters and a backup plan for communications systems that even though considered

hardened may not be sufficiently robust to survive a major disasters. In both instances, alternate command and control systems and liaison capabilities to provide communication must be considered. Concurrent with general coordination of preparedness and planning is the coordination of logistics support. From the acquisition of medical supplies to sustaining and evacuating victims of an earthquake, logistics coordination will be important to any emergency response. In order to affect logistics support there needs to be a central point of coordination and control that integrates the efforts of governmental, non-governmental and private agencies. Lastly, there are key capabilities that although not utilized in every disaster may prove critical in a major complex disaster such as HUSAR and CBRN Teams. These need to be resourced, integrated in to the response plan and capable of deploying to another location as soon as possible. All of these represent vulnerabilities in Canada's emergency management system and challenge the notion that Canada is prepared to manage a major complex emergency.

CHAPTER 4 – IS CANADA PREPARED?

Canadian's watched from the sidelines the devastation and loss of life resulting from

9/11, Hurricane Katrina and the South East Asia earthquake. Closer to home, incidents such as

the SARS outbreak and B.C. forest fires touched only a small percentage of the population.

However, all have contributed to a raised public consciousness over issues of public safety and

security. This in turn has spurred a greater government interest in Canada's state of preparedness

and response capabilities. One of the most significant initiatives in this regard has been the

publication of *Securing an Open Society: Canada's National Security Policy* in 2004. In it the

government identified the requirement to "transform our national emergency management

system to meet the challenges of protecting modern Canadian society from the effects of

increasingly complex emergencies."[142] Among the key initiatives promised were the

establishment of a Government Operations Centre and modernization of the Emergency

Preparedness Act. The government acknowledged the requirement for a stronger federal

government leadership role, better coordination and communication at both the federal and

provincial/municipal level and investment in all components of emergency management.[143]

Although there has been progress with respect to the transformation of Canada's national

emergency management system much remains much to be done. Previous chapters have

highlighted a number of issues with respect to emergency management in Canada. These issues

have spanned the spectrum from the institutional (related to doctrine, governance structure and

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[142] Privy Council Office, *Securing an Open Society: Canada's National Security Policy* (Canada: Canada,[2004]),21,http://www.pco-bcp.gc.ca/docs/Publications/NatSecurnat/natsecurnat_e.pdf.

[143] *Ibid.*,21.

legislative) to the operational (capabilities, coordination and resources). The aim of this chapter is to assess the problems identified with the emergency management system in the context of whether Canada is prepared to manage complex emergencies. To that end, the key deductions from Chapters 1 to 3 will be reviewed and further validated in terms of the issues that the government and other agencies have assessed exist in the system. This will then enable a general conclusion as to how this impacts Canada's state of preparedness to manage a complex emergency. Finally, an overview will be provided of some of the ongoing transformation initiatives being pursued.

Summary of Deductions

As discussed in Chapter 1, there are several problems with Canada's emergency management framework. The overarching issue is the lack of a national emergency management framework. As a result emergency management is focused largely on preparedness, response and recovery at the expense of any mitigation efforts. There is neither a uniform approach to preparedness and response nor a standardized measure of effectiveness for how well programs are delivering emergency management across the country. While at the municipal and provincial levels emergency response is largely predicated on the Incident Command System, or an adapted Canadian version of ICS, there is no definable federal system for emergency management. Thus, inherent in the Canadian system at the municipal and provincial levels are the command, control and coordination issues derived from the ICS concept of unified command, action by consensus and stovepipe tasking of resources. Another area in which the lack of a national framework has an impact is the role that provincial and federal governments should play in emergency

management. In contrast to the proactive role taken by the government of B.C., Ontario and the

federal government view their roles as largely supporting. This further exacerbates issues of

coordination not only within levels of government but between different levels of governments

and non-governmental organizations. Underscoring every issue is the lack of resources for first

responders, the backbone of the emergency management framework. [144]   Of particular concern

is the shortfall in capabilities such as HUSAR and CBRN, which would likely be critical aspects

of a response in the event of an earthquake or terrorist attack.

The lessons learned from Hurricane Katrina are equally significant for Canadian

emergency management. They provide Canadian emergency management officials with a

unique opportunity to validate whether the Canadian system and response would have achieved

different results given a disaster of similar scope and scale. In contrast to the Canadian system,

the U.S. federal government played a proactive role in the preparedness and response stages.

The federal government should be expected to take the lead in the event of major disasters and

manage the overall response, not just support the efforts of provinces and municipalities. One

unanticipated impact of the hurricane was the loss of emergency management infrastructure and

communications systems. This impaired situational awareness, compromised command and

control functions and resulted in a diminished capacity to coordinate the response (particularly

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[144]   Global Change Strategies International Company, *Municipal Emergency Preparedness and Management Costs*,9. Costs are increasing for municipalities faster than their traditional tax base can handle. For example, for six western cities, spending for Protection Services (police, fire, EMS) rose 53% from 1990 - 2002, taking an increasing share of overall operating budgets, which declined per capita (constant dollars) in half of the cities. Only Calgary and Edmonton, which received a share of provincial fuel taxes, showed significant per capita overall budget growth, while Vancouver held steady." This budget squeeze makes it increasingly difficult for municipalities to fund effective first line emergency response forces let alone find additional resources for prevention or mitigation actions even though they are highly desirable.

the rescue, evacuation and sustainment of the populace). The other main lessons learned concerned the effectiveness of the ICS, necessity for logistics coordination both in terms of integration of NGOs in the response and to affect the evacuation of large urban centres. The Incident Command System, the foundation of all emergency management in the U.S., proved problematic in terms of: the coherency of the command structure using unified command and the effective coordination of a response between multiple levels of government and non-governmental agencies. As much of the Canadian system is based upon the ICS this should be looked at to ensure that it is not just the linkages between elected municipal officials that are incorporated in to the Canadian system but a mechanism for a single point of coordination and control of both the response and resources. This is particularly important for logistics coordination in support of either the evacuation of a large urban centre or the sustainment of victims trapped in a devastated area. It was determined that the U.S. needed to develop a "modern, flexible and transparent logistics system. This system should be based on established contracts for stockpiling commodities at the local level for emergencies and the provision of goods and services during emergencies."[145] Canada must develop an effective logistics system as well. Lastly, a detailed communications plan for keeping the public informed of the situation is crucial. The plan needs to incorporate contingencies for getting that message out when normal means of communication are not available.

Canada's emergency management system is relatively accustomed to responding to the routine disasters of forest fires, snow storms and floods that occur every year. Hypothesizing the

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[145]   Department of Homeland Security, *The Federal Response to Hurricane Katrina Lessons Learned*, 44.

impact that a major complex disaster such as an earthquake, influenza pandemic or CBRN terrorist attack would have allows issues to be identified that the current emergency management system may not be capable of handling. Several key vulnerabilities were identified in each scenario. Firstly, the government needs to take a proactive lead at all levels in order to ensure that emergency preparedness and response are coordinated, integrated and resourced. The coordination and integration of plans and responses is a challenge given the stovepipe nature of how responses are planned and the jurisdictional issues of who controls what resources, when those resources are engaged and who has the lead. Coordination and integration is also exacerbated by the fact that slight variations exist between the ICS, ESM and BCERMS. Canada requires one common emergency management operating system and standard organizational structure for EMOs. This will facilitate better linkages between levels of government, allow for a performance measurement of how provinces and municipalities are performing and ensure that there is no confusion as to how an emergency will be managed. A critical lesson learned that must be addressed in all emergency plans is alternate command and control systems in the event that facilities, personnel and communications systems are rendered ineffective. This will ensure that a response is mounted as soon as possible despite the destruction of municipal/provincial response capabilities and eliminate confusion as to who is in charge. Concurrent with general coordination of preparedness and planning is the coordination of logistics support. From the acquisition of medical supplies to sustaining and evacuating victims of an earthquake, logistics coordination will be important to any emergency response. In order to affect logistics support there needs to be a central point of coordination and control that integrates the efforts of

governmental, non-governmental and private agencies in meeting the needs of those affected by an emergency. Lastly, there are key capabilities that although not utilized in every disaster may prove critical in a major complex disaster such as HUSAR and CBRN Teams. These need to be resourced and integrated in to the response plan of every municipal plan, particularly in major urban area.

Validating the Deductions

A number of government studies and independent review have made critiques of the Canadian emergency management program. These reports highlight similar issues regarding the role of government, the need for standardization, resourcing of capabilities and the criticality of coordination to any emergency management plan and response. These reports further reinforce the general conclusions and lessons learned drawn from examination of Canada's emergency management framework, lessons learned from Hurricane Katrina and the future disaster scenarios. Chief among those critiquing the government's emergency management program has been the Standing Senate Committee on National Security and Defence.

In 2000, the Standing Senate Committee on National Security and Defence conducted a review of Canada's capacity to manage large scale natural disasters.[146] The stated purpose of the review was "to determine where federal government leadership was most needed and to ensure that the nation provide[d] its citizens with the best protection possible at a reasonable cost." Among the key issues raised were concerns with respect to the role of the federal government in

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[146] Standing Senate Committee on National Finance, *Report on the Committee's Examination of Canada's Emergency and Disaster Preparedness'* (Ottawa: Canada,[2000]),1.

emergency management, the coordination of emergence responses and the lack of funding of

specialized capabilities. As a result, the Senate Committee made a number of recommendations

aimed at addressing these issues. These included national standards for preparedness, training,

risk management techniques and critical infrastructure protection. To better facilitate

coordination it was suggested that joint emergency operations centres be instituted and that

funding for programs such as the Joint Emergency Preparedness Program (JEPP) be improve to

better meets the needs of municipalities. As reported in the *Securing an Open Society: Canada's*

National Security Policy in 2004 some progress was made in addressing some of these

recommendations. [147] The government established PSEPC, to better coordinate security and

safety issues and placed renewed emphasis on funding of CBRN and National Urban Search and

Rescue capabilities. However, it was acknowledged that a coordination and standardization

problem remained:

> Major emergencies require extremely close co-operation between the federal
> government, provinces and territories, communities, first line responders and the private
> sector. National emergency co-ordination currently suffers from the absence of both an
> effective federal-provincial governance regime, and from the absence of commonly
> agreed standards and priorities for the national emergency management system.[148]

A subsequent report, *Canadian Security Guide Book 2005: An Update of Security Problems in*

Search of Solutions underscored a number of continuing issues related to roles, coordination,

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[147] Privy Council Office, *Securing an Open Society: Canada's National Security Policy,* 21. .

[148] Ibid.,25.

auditing of preparedness plans, funding of first responders and with communication.[149] Similar

issues of the role of government, requirement for standardization, necessity for coordination and

funding of capabilities have been made by other agencies.

The Federation of Canadian Municipalities (FCM) conducted an assessment of Canada's

emergency management system on the premise that due to the lack of involvement of

municipalities in federal and provincial preparedness and the shortfalls in funding for new

capabilities or requirements, particularly for security requirements after 9/11, that municipalities

were ill-prepared to deal with a major disasters. "In short, we conclude that many municipalities

are not yet able to cope with significant emergencies, to the detriment of Canadians. Current

federal emergency planning does not effectively address this major shortfall."[150] The FCM

advocated a greater role for municipalities at the planning table with federal and provincial

governments. They also proposed that government should have a key leadership role in all

aspects of emergency management. This was reinforced in a subsequent FCM report that

identified the requirement for a strong government role particularly in "setting standards and

mandatory requirements for emergency plans and their format, risk management and risk

assessment and critical infrastructure protection or assurance." [151] Another common theme of the

FCM assessment was the lack of funding for mitigation, preparedness and specialized

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[149] Standing Senate Committee on National Security and Defence, *Canadian Security Guide Book: An Update of Security Problems in Search of Solutions* (Ottawa: Government of Canada,[2005]),199-233, http://www.parl.gc.ca.

[150] National Security Group, *Emergency: Municipalities Missing from Disaster Planning* (Ottawa: Federation of Canadian Municipalities,[2006]), 5.{{152 Global Change Strategies International Company 2004; }}

[151] Global Change Strategies International Company, *Municipal Emergency Preparedness and Management Costs*,11-12.

capabilities. They noted that most small towns and cities lacked resources and the ability to fund

new emergency management capabilities. The FCM called for increased funding of the Joint

Emergency Preparedness Program, stating that "the federal JEPP funding programs should be

changed to improve the eligibility rules, increase municipal access and shorten payment

times."[152] Finally, the FCM report called for national standards for training, plans and risk

management to ensure a uniform level of preparedness across the country.

Many of the findings of the Senate Committee and FCM had been earlier identified in a

report made by the Mackenzie Institute in 2000. The Mackenzie Institute believed that a key

issue with Canada's emergency management framework was the lack of standardization. "It is

the responsibility of those tasked with preparation for emergencies to be as ready as possible – to

have the resources, organization, communications and training to react to any contingency.

However, Canadian standards are mixed; leaving lives and property exposed to higher risk."[153]

The Mackenzie Institute was particularly critical of Ontario's EMO. In their overall assessment

Ontario overall was ill-prepared to deal with emergencies. A critical aspect of their assessment

was the role, or rather lack of proactive role taken by the EMO for emergency management

response. "Unfortunately for the citizens of Ontario, it's EMO- which should be the most

efficient in the country considering the number of natural and technological crises that occur in

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[152]   Ibid., 11-12.

[153]   Mackenzie Institute for the Study of Terrorism, Revolution and Propaganda., *Shortfalls: A Review of Emergency Planning in Canada*,1.

the province seem to be the most out of touch with reality."[154] These criticisms were supported

by a study conducted by the Government of Ontario itself.   An Ontario Government analysis in

2000-2001 compared the level of preparedness in Ontario to those of other provinces, states and

countries. It found Ontario's "state of readiness to manage major emergencies woefully

inadequate."[155] A plan to remediate the shortfalls became mired in politics and little was done to

improve the situation:

> However, as often happens in large public and private sector organizations everywhere,
> the proposed comprehensive plan was second-guessed., cherry-picked and watered down.
> The action that was approved and initiated still had the potential to move Ontario closer
> to where it needed to be. Unfortunately, rivalries, short-sightedness and process
> roadblock in the bureaucracy, as well as complacency, shifting priorities and political
> tinkering eventually brought progress to a grinding halt. [156]

A letter in the Toronto Star by Neil T. McKerrell, Chief (retired), Emergency Management

Ontario, concluded that "Ontario is vulnerable to major emergencies cause by natural events,

technological failure and/or human consequences."[157] His comments were made in response to

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[154]   Ibid.,2. The EMO was conspicuous in its virtual absence, while the Ministries of Transport,
Agriculture and Food, Community and Social Services, and the Environment did sterling work on their own. The
EMO was likewise staying clear of the E-Coli outbreak in Walkerton in June and July – a crisis that would have
drawn in an EMO in any other Province to assist with Emergency Services. EMO insists that its proper role is to
hold itself back for disasters involving nuclear accidents.

[155]   Archie Campbell, "Ontario Vulnerable to Natural Disasters," *Toronto Star*, sec. Letter, January 11,
2007, A25,http://proquest.umi.com. Within the Ontario government between 2000 and 2001, an analysis was done
of this province's state of readiness to effectively manage major emergencies. It compared to nine other provinces
to the state and commonwealth levels of government of Australia, to New Zealand, to the United Kingston and the
10 largest American states that were most comparable to he complexity of life in Ontario. The results were
unfavourable to Ontario and a comprehensive plan of remediation was developed that would bring Ontario up to a
level of emergency management capability at least equal to international best practices.

[156]   Campbell, "Ontario Vulnerable to Natural Disasters," *Toronto Star*, A25.

[157]   Ibid., A25.

the SARS Commission which found that there was more that Ontario could do to

prevent/respond to another health emergency. Although British Columbia's level of

preparedness and handling of the SARS crisis was commended had the crisis required greater

inter-provincial coordination there may have been issues. A critique of the BCERMS identifies

that the system is unique to B.C. leading to issues of coordination with other provinces and that it

requires a high degree of training to function properly:

> Although the system should provide effective emergency management practices within
> the province in which is was designed, it may cause significant conflicts in cross-border
> disaster situations when other provinces or states respond by using other systems. The BC
> system also requires fairly extensive training by all those who would perform a role in the
> various levels of activation.[158]

This is a key issue to be considered in designing a national standard for emergency preparedness

and in assessing response capabilities.

General Assessment of Preparedness

Is Canada prepared to manage a complex emergency? On the surface, Canada's

emergency management framework would appear to have the necessary elements to manage a

complex emergency. The framework is structured around the federal system of governance,

supported by a well-developed doctrine and grounded in detailed emergency management

legislation at all levels. The system has effectively managed emergency responses to everything

from floods in the Sagenuay to ice storms in Eastern Canada. Why should the same system not

permit the capable management of a complex emergency? The answer in part lies in the scale,

scope and duration of the disaster. To date, Canada has been spared a truly national disaster of

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[158]   Kuban, MacKenzie-Carey and Gagonon, *Disaster Response Systems in Canada*,9.

the scale, scope and duration necessitating a complex emergency response. To assess Canada's preparedness to manage a complex emergency the general idea of a checklist as presented in David Alexander's paper 'Towards the development of a standard in emergency planning' has been used.[159] Using the elements of an emergency management framework (doctrine, structure and legislative) and the general conclusions reached in previous chapters, a checklist has been compiled by which Canada's emergency management framework will be assessed. The criteria have been assessed using the lessons learned where possible and colour coded as to whether they are present and effective (green), present but need work or are being developed (yellow) or not present at all (red). See table on next page.

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[159] Alexander, "Towards the Development of a Standard in Emergency Planning,", 158. Among his axioms of emergency management he lists: First objective of the plan is to ensure that lives are not lost unnecessarily. Second objective is to match urgent needs with appropriate resources in the most efficient and timely manner. Plan should seek to be fully compatible with plans and planning requirements at other levels of government. Plan should be based on careful and, as far as possible exhaustive assessment of what is likely to happen when an emergency occurs in its geographical area of jurisdiction. Emergency plan should take in to account urban and regional planning provisions. Plan should adequately specify the roles and activities of each and every participant in the risk management and emergency operations activities it covers. It should account in an integrated manner of all the phases of the disaster cycle. Should include or at least facilitate sustainable measure for disaster prevention.

Category	Assessment Factor	Canadian System.
Doctrine	All four components of emergency management emphasized	• Not Mitigation • Govt developing NDMS
	National Framework provides standards for training, risk assessments and plans.	• No, various versions of ICS being used. • Govt developing a framework • Need to develop way to audit that standards are maintained
	Common emergency management system in use at every level	• No, 3 systems in use • All based on ICS • Inherent C2 problems with ICS
	Emergency management system establishes an effective command and control of operations and resources	• No - unified command proven not to work in complex disasters • Need single point of control to command response
	Fed/prov co-ordination facilitated by system	• Weak, see FCM report
	Are plans and responses integrated under the system	• No, too many plans, no strong lead • Lead many not force coordination or integration but be focused on their own stovepipe
Governance Structure	Clearly defined roles and responsibilities	• For gov't defined in legislation • Each level of gov't interprets role differently • Role not defined for NGOs or private sector
	All levels of government play a proactive role in planning, preparedness and response	• B.C. is proactive • Federal, Ont govt are not proactive
	Clearly defined organizational structure at each level	• Federal structure unclear under ESM (ICS) system
Legislative	Legislative instrument … provisions fully respected?	• Yes - plans required at every level
	Legal and jurisdictional responsibilities of plan participants fully specified?	• Yes, but each interprets role differently
Operational	Plans are integrated to ensure all aspects are coordinated and response synchronized	• No – too many contributors, no strong central lead to ensure integration
	Contingency plans exist in event emergency management personnel/facilities/equipment and communication systems are damaged or destroyed	• Not seen. Key lesson learned from Katrina.
	Public communications plan and capability exists	• In BC plans yes
	Specialized capabilities exist for CBRN and HUSAR	• Yes, but not well funded
Logistics	Single point of coordination for logistics requirements	• No, federal govt does not have • Multiple players
	Capability exists to pre-position materiel and to procure and transport materiel where required during an emergency	• Only if military called out • Minimal stores loc across country.
	Warning, evacuation and other pre-disaster preparations worked out?	• Not seen • CANALERT not online until 2010
	NGOs and private sector agencies included in the planning and response	• No but they should be
Recovery	Recovery plans exist	• Not seen

Figure 14 Assessment of Capability

The general conclusion reached is that it would be a challenge for Canada's emergency

management framework to manage a complex emergency of any significant scale, scope and

duration. The challenges of a responding to an emergency in any major urban environment

would only further exacerbate the system's capabilities. As stated in the Secure City, a

discussion paper for the World Urban Forum 2006:

> Canada is not exempt. Our cities are at the forefront of the impact of threats and attacks,
> but they are ill equipped to respond effectively. There is limited redundancy in the
> infrastructure, support systems are too centralized, and risk assessment and prevention
> strategies are fragmented. The delicate balance between individual self-reliance and
> dependency is threatened when the power goes out, the water quality gets tainted, or the
> transportation system becomes paralyzed. [160]

The government is taking measures to address these issues which will greatly increase the

country's ability to manage complex emergencies.

Addressing the Shortcomings

There is much that can be done to improve Canada's emergency management framework.

The federal government, in consultation with the provincial governments has initiated four key

initiatives that will address some of the systemic issues addressed in this paper. These initiatives

are the development of a National Emergency Management Framework, a National Disaster

Mitigation Strategy, a National Critical Infrastructure Assurance Program and an emergency

warning capability. The National Emergency Management Framework describes the

fundamentals of emergency management. "It aims to support the design, implementation and

on-going improvements of emergency management in Canada, and the harmonization of the

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[160]   Axworthy, Fallick and Ross, "The Secure City, Vancouver Working Group Discussion Paper", 9.

federal approach to complement each provincial and territorial system."[161] This framework will

address issues ranging from the importance of mitigation, the requirement to alert the public of

an emergency to funding of recovery efforts. A draft framework was approved by the ministers

responsible for emergency management at the federal, provincial and territorial level on 10

January 2007.[162] A National Disaster Mitigation Strategy has been in the works since 1998. The

strategy is an investment in measures aimed at reducing the risks, impacts and reoccurrence of

disasters which will pay off in terms of lives saved and property damage minimized.

Specifically, the strategy:

> Through collaboration with other federal government departments and levels of
> government, and with stakeholders representing the non-governmental and private sector,
> it would support systematic coordination of national policy frameworks/initiatives in the
> areas of infrastructure development and protection, early warning systems, adaptation to
> climate change and urban communities among other initiatives. [163]

The National Critical Infrastructure Assurance Program (NCIAP) will complement the NMDS.

In broad terms it is a collaborative effort between the private and public sector to protect

Canada's critical infrastructure by identifying risks, vulnerabilities and threats.[164] Lastly, the

Government has committed to the development of CANALERT, a national emergency warning

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[161] "PSEPC:Federal, Provincial and Territorial Ministers Discuss Emergency Management Priorities," *CCNMatthews Newswire*, January 10,2007, 2007, http://proquest.umi.com/pqdweb?.

[162] Ibid.

[163] Hwacha, *"Canada's Experience in Developing a National Disaster Mitigation Strategy: A Deliberative Dialogue Approach"*,55-56.

[164] Public Safety Canada, "Critical Infrastructure Protection". Critical infrastructure consists of those physical and information technology facilities, networks, services and assets which, if disrupted or destroyed, would have a serious impact on the health, safety, security or economic well-being of Canadians or the effective functioning of governments in Canada

system which will become operational in 2010. [165] Although only a small part of the many

improvements and investments in emergency management in Canada they will result in

improvements and address some of the many shortfalls addressed in this paper.

Conclusion

Although Canadians have been relatively fortunate in escaping the death and destruction

of a major disaster they have not been oblivious to the implications for Canadian preparedness.

The government's policy statement on national security *'Securing an Open Society: Canada's*

National Security Policy', acknowledged both the increased threat environment and the need to

transform the national emergency management system to meet the demands of increasingly

complex emergencies.[166] Previous chapters have highlighted a number of issues with respect to

the emergency management framework in Canada that would impede an effective emergency

response. These issues have spanned the spectrum from the institutional (related to doctrine,

governance structure and legislative) to the operational (capabilities, coordination and resources).

By and large, the government itself has acknowledged these same shortcomings its own

assessments of the emergency management system, focusing on the role of government, the need

for standardization, resourcing of capabilities and the criticality of coordination to any

emergency management plan and response. In assessing these general shortcomings against the

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[165] Peter Knaack, "CANALERT," *Hazardous Materials Management*Winter, 2007, 40, http://proquest.umi.com. Through CANALERT, Canadians will finally have access to an integrated system that will be able to deliver predetermined prescriptive emergency messages through a variety of media to every region, province, and territory in the country. In addition, the system will maintain a direct interface with homeland security officials in the United States. CANALERT will issue highly targeted emergency warnings to aucctcd groups anywhere and at any time simultaneously through a variety of existing media including television, radio, cell phone and telephone networks, as well as text messaging and the internet.

[166] Privy Council Office, *Securing an Open Society: Canada's National Security Policy*,21.

emergency management framework the general conclusion is reached that it would be a challenge for Canada's emergency management framework to manage a complex emergency of any significant scale, scope or duration, particularly in an urban environment. The government has initiated a number of key programs such as the National Emergency Management Framework, National Disaster Mitigation Strategy, National Critical Infrastructure Assurance Program and CANALERT to address some of these critical vulnerabilities. It is only a matter of time before Canada's emergency management system is tested. It can only be hoped that the vulnerabilities identified will be addressed in time by the various government initiatives.

CONCLUSION

Canada's emergency management system has proven very capable of responding to the routine emergencies of snow storms, floods and forest fires. On the few occasions where an event had a cross-border or multi-provincial impact, the scale, scope and duration of the emergency did not necessitate a national response. It is only a matter of time however before Canada is faced with responding to a complex emergency in the form of major earthquake, influenza pandemic or some other national disaster. There are a number of problems with the current emergency management framework which if not addressed will impeded an adequate response to a major complex emergency. Unless these issues are addressed Canada will prove no more capable of managing a major complex emergency than the American system was during Hurricane Katrina. The problems identified with the emergency management framework are not unique to just the current framework. Similar issues were addressed in the lessons learned from Hurricane Katrina and identified in the three notional emergency scenarios presented in this paper. The common issues identified were: the role of government, functionality of the emergency management system, integration and coordination of plans and responses, integration of logistics support and funding of specialized capabilities.

The role of government is crucial to any emergency response. Canada's emergency management framework is based on the federal system of government within which power and responsibility are divided between the federal, provincial/territorial and municipal governments. This ensures a graduated response to an emergency, in proportion to the severity and scope of the emergency. There is however a wide disparity between the supporting role that the federal and

Ontario governments see themselves having in emergency management and the proactive role taken by the government of British Columbia. The government must play a proactive role in every component of emergency management from mitigation to recovery. Currently the focus of emergency management in Canada is on the components of preparedness and response. The government must ensure that all components of emergency management are given equal attention and funding. A National Disaster Mitigation Strategy is being developed however it needs to be enshrined in legislation to ensure a binding commitment to mitigation as well as dedicated funding by all levels of government. With respect to preparedness, every level of government must be prepared to play a proactive role in preparedness before an emergency and not wait until aide is requested. To do this they must maintain effective linkages with each subordinate level of government and over watch as an emergency develops. Finally, the government must play a proactive role in maintaining one standard for emergency management across the country. A National Emergency Management Framework has been approved by provincial/territorial and federal governments but it needs to go further in terms of implementing a standardized approach to emergency management. This includes not only a uniform Canadian emergency management system but also a method of validating that all levels of government are meeting the standard expected.

Currently the basis of all emergency management systems utilized in Canada is the Incident Command System. A critical review needs to be undertaken of the various systems in use and one standardized system adopted by all levels of government. The system should be based on the ICS as it is widely utilized by first responders across North America. However,

what is required is a system that incorporates multiple agencies responding under a single chain of command, not a unified command. There needs to be a single authority to decide what shall be done, who shall do it and supported by a single entity to coordinate the logistics support to that authority. The system needs to incorporate each successive level of government into a hierarchy under the federal government when required to respond to a national emergency. The linkage between governments needs to be clearly defined and the system needs to provide a mechanism for integration and coordination of plans and responses at all levels.

Integration and coordination of plans and responses is problematic across every level of government. In large part this is because there are a multitude of agencies involved in both planning for and responding to an emergency. The provincial Emergency Management Organization or Public Safety Canada may not be the lead agency for a particular response, i.e. health emergencies are generally led by the Department of Health. Plans need to be integrated to ensure they are synchronized and that nothing is overlooked. Responses need to be coordinated between various agencies to ensure effective use of the resources available as well as to identify what more is required. The only mechanism by which integration and coordination can be achieved is thru a single point of command and control. This is particularly important for the coordination of logistics support. Logistics support in urban operations is complicated because of the number of people that require support and to coordinate the response of numerous players providing that support. As learned after Hurricane Katrina, the logistics system needs to be responsive, flexible and transparent. It was recommended that a Chief Logistics Officer coordinate logistics operations across the multiple support functions. In all cases, integration and

coordination must facilitate the inclusion of non-governmental and private sector agencies in to the planning and response cycle. Non-governmental and private sector agencies may be able to bring more resources to bear sooner in an emergency than the government can. Finally, in every aspect of coordination and integration of plans and responses, governments must ensure that there contingency and communication plans in place. In the event that emergency response personnel, facilities and equipment are irreparably damaged or destroyed alternate means of command and control must be designated and resources sourced to compensate for those lost. The communications plan must not only address how the pubic will be kept informed but also how situational awareness will be maintained and command and control exercised via alternate communications means. The CANALERT project will go a long way to addressing the requirement of keeping the public informed once it is brought online in the year 2010.

Lastly the government must continue to fund specialized capabilities such as Heavy Urban Search and Rescue (HUSAR) and Chemical Biological Radiation Nuclear (CBRN) Response Teams. HUSAR is an essential capability given the growing percentage of the population living in urban centres and the potential for a major earthquake in two very populous regions of Canada. Canada does not possess the military or civilian capabilities of the U.S. Coast Guard that proved so effective during the Hurricane Katrina response. Nor does it appear to have the capabilities of Emergency Response Teams that both the U.S. Coastguard and FEMA fielded to coordinate the initial response. A critical assessment should be made as to whether these capabilities are required, either as a provincial or federal resource. The CBRN capability reflects the current security environment. Although teams exist in major centres and the CF

possesses a deployable capability it may prove insufficient in time and space to respond to an attack. In either case, municipalities and provinces do not have the tax base to fund these capabilities to the extent needed. The federal government should also consider a permanent funding mechanism for these capabilities. The federal government should also investigate the establishment of deployable Emergency Response Teams to assist provincial governments with preparedness measures prior to an emergency and assessment of requirements for federal assistance in the initial response phase.

Canadians have been relatively fortunate that they have only been spectators to the major disasters of this century. They should be under no illusions that it is only a matter of time before Canada is faced with a major, complex disaster. To date, the Canadian program has always proven effective in managing minor routine emergencies. It is not a foregone conclusion however that it will also prove effective in managing a major complex emergency as the various issues identified in this paper have concluded. If Canada is to be adequately prepared to manage a major complex disaster then the systemic issues of the Canadian emergency management framework must be addressed and the lessons learned from Hurricane Katrina implemented where applicable. Canada must be prepared to manage a major complex emergency, Canadian lives depend on it!

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