

Air India Flight 182
A Canadian Tragedy

VOLUME FOUR
Aviation Security

©Her Majesty the Queen in Right of Canada, represented by the
Minister of Public Works and Government Services, 2010

Cat. No: CP32-89/2-2010E
ISBN: 978-0-660-19926-9

Available through your local bookseller or through
Publishing and Depository Services
Public Works and Government Services Canada
Ottawa, Ontario
K1A 0S5

Telephone: (613) 941-5995 or 1 800 635-7943
Fax: (613) 954-5779 or 1 800 565-7757
Publications@pwgsc.gc.ca
Internet: www.publications.gc.ca

VOLUME FOUR AVIATION SECURITY

TABLE OF CONTENTS

CHAPTER I: INTRODUCTION

CHAPTER II: RESPONSES TO THE BOMBING OF AIR INDIA FLIGHT 182

2.1	International Response	15
2.1.1	International Air Transport Association	15
2.1.2	International Civil Aviation Organization	18
2.1.3	United States: Federal Aviation Administration	21
2.1.4	Ireland: Coroner's Inquest	22
2.1.5	India: Kirpal Commission	23
2.2	Canadian Response	26
2.2.1	Introduction	26
2.2.2	1985 Airport Security Audit	30
2.2.3	Seaborn Report	32
2.2.4	Canadian Aviation Safety Board Investigation	36
2.2.5	Changes to Legislative and Regulatory Framework	37
2.2.6	Changes in Oversight	39
	2.2.6.1 <i>Roles and Responsibilities</i>	39
	2.2.6.2 <i>Inspection and Enforcement</i>	39
2.2.7	Changes in Training	41
2.2.8	Enhancements in Security Systems and Equipment	42
2.2.9	Conclusion	42
2.3	Failure to Learn: The Bombing of Pan Am Flight 103	44
2.3.1	Failure to Address the Known Threat of a Bomb in Interlined, Unaccompanied Baggage	45
2.3.2	Air India and Pan Am: Parallel Systemic Failures	51
2.3.3	Responses to the Bombing of Pan Am Flight 103	54
2.3.4	Failure to Appreciate Significance of Air India Flight 182 Bombing	58
2.3.5	Conclusion	61

CHAPTER III: CIVIL AVIATION SECURITY IN THE PRESENT DAY

3.1	Responses to the Terrorist Attacks of September 11, 2001	63
3.1.1	Historical Context	63

3.1.2	International Response	65
3.1.2.1	<i>International Civil Aviation Organization: Annex 17 Amendments</i>	66
3.1.2.2	<i>International Civil Aviation Organization: Universal Security Audit Program</i>	68
3.1.2.3	<i>North America</i>	76
3.1.2.4	<i>Europe</i>	77
3.1.3	Canadian Response	77
3.1.3.1	<i>Introduction</i>	77
3.1.3.2	<i>Canadian Air Carrier Protective Program</i>	82
3.1.3.2.1	<i>Genesis and Development of the CACPP</i>	76
3.1.3.2.2	<i>Threat Matrix</i>	83
3.1.3.2.3	<i>Role of Aircraft Protective Officers</i>	84
	<i>In-Flight Security</i>	
	<i>Airport Security</i>	
	<i>Behavioural Analysis</i>	
	<i>Intelligence</i>	
3.1.3.2.4	<i>Criticism of Air Marshal Programs</i>	88
3.1.3.2.5	<i>APO Recruitment, Training and Retention</i>	90
3.1.3.2.6	<i>Flight Crew Training</i>	92
3.1.3.2.7	<i>International Cooperation</i>	92
3.1.3.2.8	<i>Funding</i>	93
3.1.3.2.9	<i>Need for the Program</i>	93
3.1.4	After 9/11: Danger of Complacency Continues	94
3.1.5	Conclusion	95
3.2	Oversight in Aviation Security	96
3.2.1	International Governance	99
3.2.1.1	<i>International Regulatory Regime</i>	99
3.2.1.1.1	<i>International Conventions</i>	102
3.2.1.1.2	<i>Annex 17 and the ICAO Security Manual</i>	106
3.2.1.2	<i>Limitations on International Governance</i>	111
3.2.2	Oversight of Aviation Security in Canada	116
3.2.2.1	<i>Concepts in Oversight</i>	120
3.2.2.2	<i>Oversight of Aviation Security</i>	120
3.2.2.2.1	<i>Annex 17 and Canadian Aviation Security</i>	121
	<i>Regulatory Framework</i>	
	<i>National Civil Aviation Security Program and Stakeholder Security Programs</i>	
	<i>National Aviation Security Committee and Stakeholder Security Committees</i>	
3.2.2.2.2	<i>Regulatory Regime</i>	130
	<i>Underlying Principles</i>	

	<i>Proactive Approach</i>	
	<i>Layered Approach</i>	
	<i>Performance-based Approach</i>	
	<i>Security Culture and Risk Management</i>	
	<i>Identifying Threats: Past, Present</i>	
	<i>and Future</i>	
	3.2.2.2.3 <i>Inspection and Enforcement</i>	141
	3.2.2.2.4 <i>Shared Responsibility: Role of</i>	
	<i>Stakeholders in Oversight</i>	142
	3.2.2.2.5 <i>Independent Reviews of Aviation</i>	
	<i>Security</i>	143
	3.2.3 <i>Conclusion</i>	146
3.3	<i>Risk Management in Aviation Security</i>	147
	3.3.1 <i>Risk Management: Introduction</i>	148
	3.3.2 <i>Risk Management in Aviation Security</i>	150
	3.3.3 <i>Risk Management Methodology</i>	155
	3.3.4 <i>Risk Management Decision-making in Practice</i>	160
	3.3.5 <i>Matching Limited Resources with Risk Control</i>	
	<i>Objectives</i>	172
	3.3.6 <i>Shared Responsibility and Accountability</i>	174
	3.3.7 <i>Culture of Security</i>	179
	3.3.8 <i>Conclusion</i>	181
3.4	<i>Use of Intelligence in Aviation Security</i>	181
	3.4.1 <i>Integrated Threat Assessment Centre</i>	183
	3.4.2 <i>Information Sharing: Canadian Air Transport Security</i>	
	<i>Authority</i>	184
	3.4.3 <i>Information Sharing: Aviation Security Partners</i>	186
	3.4.4 <i>Conclusion</i>	190
3.5	<i>Passenger and Baggage Screening</i>	191
	3.5.1 <i>Post-1985 Developments</i>	192
	3.5.1.1 <i>Hold Bag Screening</i>	192
	3.5.1.2 <i>Creation of the Canadian Air Transport Security</i>	
	<i>Authority</i>	195
	3.5.2 <i>Passenger and Baggage Security: Lessons Yet to</i>	
	<i>be Learned</i>	198
	3.5.2.1 <i>Need for Proactive Approach</i>	198
	3.5.2.2 <i>Holistic Security: "Single Entity" Doctrine</i>	201
	3.5.3 <i>Passenger and Baggage Screening: Current Procedures</i>	
	<i>and Future Developments</i>	203
	3.5.3.1 <i>Hold Bag Screening and Passenger-Baggage</i>	
	<i>Reconciliation</i>	203
	3.5.3.2 <i>Pre-Board Screening</i>	205
	3.5.3.2.1 <i>Identity Screening Initiatives</i>	207
	<i>Advance Passenger Information and</i>	
	<i>Passenger Name Record</i>	
	<i>Trusted Traveller Programs</i>	
	<i>Behavioural Analysis</i>	
	<i>Passenger Protect Program</i>	

	<i>Rationale for the Program</i>	
	<i>Advisory Group and Specified</i>	
	<i>Persons List</i>	
	<i>Reconsideration Process</i>	
	<i>Consequences of Boarding Denials</i>	
	<i>Balancing Security and Rights</i>	
	<i>Regulatory Amendments</i>	
3.5.4	Conclusion	233
3.6	Use of Technology	234
3.6.1	Technology and Pre-board Screening	234
3.6.1.1	<i>Dual Energy X-ray</i>	235
3.6.1.2	<i>Threat Image Projection Systems</i>	236
3.6.1.3	<i>Explosives Detection Trace and Explosives</i>	
	<i>Vapour Detection Systems</i>	
3.6.1.4	<i>Closed-Circuit Television Monitoring</i>	237
3.6.2	Technology and Hold Bag Screening	238
3.6.2.1	<i>Canada's Five-level HBS System</i>	238
3.6.2.2	<i>CT X-ray Systems</i>	240
3.6.3	Access Control	240
3.6.3.1	<i>Biometrics</i>	240
3.6.4	Technology: Concerns and Limitations	242
3.6.4.1	<i>Privacy and Safety Issues</i>	243
3.6.4.2	<i>Reliability</i>	244
3.6.5	Other Screening Systems	246
3.6.5.1	<i>Passenger-Baggage Reconciliation</i>	246
3.6.5.2	<i>Explosives Detection Dogs</i>	247
3.6.6	Conclusion	248
3.7	Screeners	249
3.7.1	Recruitment	250
3.7.2	Training	254
3.7.3	Turnover	259
3.7.4	Testing	261
3.7.5	Conclusion	266
3.8	Closing the Gaps in Aviation Security	266
3.8.1	Air Cargo	266
3.8.1.1	<i>Air Cargo Security: A Decades-old Concern</i>	270
3.8.1.1.1	<i>The Seaborn Report</i>	273
3.8.1.1.2	<i>Reasons for Inaction</i>	276
3.8.1.1.3	<i>Need for a Proactive Approach</i>	278
3.8.1.2	<i>International Developments in Air Cargo Security</i>	279
3.8.1.2.1	<i>The Problem: Cargo Consignments</i>	
	<i>can Target Specific Aircraft</i>	280
3.8.1.2.2	<i>The Proposed Solution:</i>	
	<i>"Known Shipper"</i>	281
3.8.1.3	<i>Canada's Existing Air Cargo Security Regime</i>	283
3.8.1.3.1	<i>Lack of Vigilance: "Known Shipper"</i>	
	<i>Misconstrued</i>	283
3.8.1.3.2	<i>Canada Falls Behind</i>	287

3.8.1.3.3	<i>Voluntary Programs</i>	288
3.8.1.3.4	<i>Inadequate Cargo Screening</i>	290
	<i>Note on Terminology</i>	
	<i>Minimal Searching of Air Cargo</i>	
	<i>Lack of Technological Equipment</i>	
	<i>Challenges in Searching Air Cargo</i>	
	<i>Lagging Technological Advancement</i>	
	<i>Explosives Detection Dogs</i>	
	<i>Working Toward a Cargo Screening Standard</i>	
	<i>Interim Measures</i>	
3.8.1.3.5	<i>Inadequate Training</i>	300
3.8.1.3.6	<i>Poor Access Control</i>	301
3.8.1.3.7	<i>Enhancements Required</i>	302
3.8.1.4	<i>Proposal for an Enhanced Regime: Air Cargo Security Initiative</i>	302
3.8.1.4.1	<i>Developments in Air Cargo Security in the United States</i>	304
3.8.1.4.2	<i>Hardening Supply Chain Security Supply Chain Security Program Oversight and Compliance Monitoring</i>	308
3.8.1.4.3	<i>Improving Air Cargo Screening: Use of Technology</i>	316
3.8.1.4.4	<i>Funding</i>	322
3.8.1.5	<i>A Call for Action from the Government of Canada</i>	325
3.8.1.6	<i>Conclusion</i>	329
3.8.2	<i>Airport Security</i>	330
3.8.2.1	<i>Air India Flight 182: Airport Security Deficiencies Revealed</i>	332
3.8.2.2	<i>Basic Principles</i>	335
3.8.2.3	<i>Air Terminals as Targets of Opportunity</i>	336
3.8.2.4	<i>The Price of Poor Access Control</i>	340
3.8.2.5	<i>Access Control at Canadian Airports</i>	345
	3.8.2.5.1 <i>Supervision of Non-Security Cleared Individuals</i>	356
	3.8.2.5.2 <i>Restricted Area Identification Card</i>	356
	3.8.2.5.3 <i>Instilling a Culture of Security Awareness Airport Security Watch Program</i>	359
	3.8.2.6 <i>Conclusion</i>	361
3.8.3	<i>Fixed Base Operations and General Aviation</i>	362
3.8.3.1	<i>Enhancing Security and Meeting the Needs of Industry</i>	368
3.8.3.2	<i>Transport Canada: Action Taken but More Required</i>	369

3.8.3.3	<i>Conclusion</i>	371
3.9	Duty to Warn and Transparency in Aviation Security	371
3.9.1	Public Warning System for Security Threats against Airlines	373
3.9.2	Informing the Public: Greater Transparency Required in Civil Aviation Security	378
3.9.3	Conclusion	384
3.10	Funding Aviation Security	385
3.10.1	Cost-Effective Security: Reasonable Balance, Flexibility and a Risk Management Approach	385
3.10.2	Sustainable Funding	393
3.10.3	Conclusion	397

EPILOGUE	398
-----------------	-----

CHAPTER IV: RECOMMENDATIONS

APPENDICES

Appendix A	417
Chronology: Significant Acts of Unlawful Interference with Civil Aviation	

Appendix B	441
Report on Security Arrangements Affecting Airports and Airlines in Canada [“Seaborn Report”]: Principal Recommendations of the Airport/Airline Security Report	

Appendix C	443
The Myth of Security At Canada’s Airports: Report of the Standing Senate Committee on National Security and Defence – Recommendations	

Appendix D	449
Flight Plan: Managing the Risks in Aviation Security – Report of the Advisory Panel – List of Recommendations	

Appendix E	457
Canadian Security Guidebook 2007 Edition: Airports – Appendix III Index of New Recommendations	

VOLUME FOUR

AVIATION SECURITY

CHAPTER I: INTRODUCTION

The terms of reference for the Commission require the Commissioner to make findings and recommendations with respect to "...whether further changes in practice or legislation are required to address the specific aviation security breaches associated with the Air India Flight 182 bombing, particularly those relating to the screening of passengers and their baggage."¹

Despite knowledge of existing threats and of the need for protective security measures, Canada was ill-prepared to defend itself against aviation terrorism in 1985. The bombing of Air India Flight 182 on June 23, 1985, revealed major shortcomings in the country's aviation security regime. Although Canada responded immediately and has since made numerous improvements to security, many deficiencies exposed in the wake of the bombing remain unaddressed.

It became clear to the Commission early on in its work that a broad interpretation of this aspect of its mandate was required. Although the bombing resulted directly from an unaccompanied bag that infiltrated the airline system and was then interlined to the Air India flight in Toronto, a narrow focus by the Commission on passenger and baggage security would not have provided assurance that all the security deficiencies that led to the bombing had been examined. Breaches in aviation security do not often occur in isolation. The security deficiencies that led to the bombing were widespread and interdependent, ranging from poor threat communication to lax aircraft and airport security.²

Aircraft and airport environments are attractive targets for terrorists because they offer the potential of a large number of victims in a contained area, along with a virtual guarantee of widespread public attention after an attack. Air travel is comparatively safe, since aircraft have one of the lowest accident rates of any mode of transportation.³ Nevertheless, when accidents or terrorism incidents occur, the consequences can be profound and their high visibility generates much public concern. Terrorists specifically target civil aviation because they have expectations of a high propaganda return from a successful attack.⁴

¹ Terms of Reference, P.C. 2006-293, para. b(vii).

² See Volume Two: Part 1, Pre-Bombing, Sections 1.9, 2.4, 4.3, 4.4 and 4.7 for a detailed analysis of the security breaches associated with the bombing of Air India Flight 182.

³ Exhibit P-169, p. 15 of 202.

⁴ Exhibit P-169, p. 15 of 202.

Since the 1960s, aviation has witnessed an increase in the deadliness of terrorist attacks, from simple aircraft seizures with the purpose of escaping political oppression in the 1960s to the use of aircraft as guided missiles in suicide attacks, as on September 11, 2001. Included on this continuum was the era of sabotage involving the unaccompanied, infiltrated bag – the *modus operandi* of the Air India bombers.

A careful examination of the history of civil aviation security reveals patterns that experts say give predictability to air terrorism. As Rodney Wallis, one of the Commission's key experts in civil aviation security, observed, "...There is very little that is new in threat[s] or in aviation security generally. What is changing is the ability to respond."⁵

In many ways, civil aviation security in Canada has made great strides since 1985. A stronger regulatory regime and oversight mechanism exist today. Threat communication and screening technology have vastly improved and a new government agency, the Canadian Air Transport Security Authority (CATSA), has been established exclusively to screen passengers, their baggage and non-passengers seeking access to restricted areas of airports. Still, important security deficiencies remain, despite recognition of these very deficiencies in the immediate aftermath of the bombing of Air India Flight 182.

As suggested by Wallis, the Commission has not found many new weaknesses in civil aviation security, but the fact that many deficiencies persist more than two decades after they first surfaced is of great concern. Earlier reviews of civil aviation security in Canada, notably those of the Standing Senate Committee on National Security and Defence (Senate Committee) and an independent review panel, the *CATSA Act Review Advisory Panel* (CATSA Advisory Panel), also called attention to many of these deficiencies,⁶ but they remain unaddressed.

Specifically, the Commission learned that there are several methods of sabotage besides those involving passengers and baggage. One of the most significant vulnerabilities is air cargo, which, though largely unscreened, travels in the hold of passenger aircraft.⁷ Persons and vehicles accessing airside and restricted areas of airports are also inadequately screened.⁸ In addition, the General Aviation (GA) sector and Fixed Base Operations (FBOs) have not been designated for CATSA screening. As a consequence, some passengers and their baggage are not screened at all, and the facilities used by the GA sector and FBOs are often not well secured. Flights from these facilities sometimes land at one of 89 "designated" airports in Canada, and their passengers may then transfer to connecting flights without ever being screened. In addition, a number of FBOs are located at the periphery of designated airports and permit direct access to restricted areas that normally require passing through levels of security

⁵ Testimony of Rodney Wallis, vol. 41, June 6, 2007, p. 5009.

⁶ See Exhibits P-169, P-171 and P-172; see also Appendices C, D and E for a listing of the recommendations of these reports.

⁷ See Section 3.8.1, which provides a detailed analysis of the current deficiencies in air cargo security.

⁸ See Section 3.8.2, which provides a detailed analysis of the current deficiencies in airport security.

screening that FBOs do not offer.⁹ These security weaknesses in the GA sector and FBOs leave the aviation system as a whole vulnerable to attack. Bombs can still find their way onto passenger aircraft.

A key lesson of the Air India bombing is that security measures must be applied in mutually reinforcing layers that address all vulnerabilities. Each layer on its own is not foolproof, as no measure on its own can ever be. Redundancy helps ensure that, if one measure fails, another will cover the gap. Effective security requires that all gaps be covered.

In 1985, the Government of Canada itself recognized that a broad-based examination of aviation security was required in response to the bombing. Shortly after, the Government commissioned a comprehensive review, which resulted in the “Seaborn Report.” In many respects, this report is as relevant today as it was in 1985. It recommended sweeping changes to aviation security to better manage the threat of sabotage. Transport Canada implemented some, but not many, of the report’s recommendations.¹⁰ Many weaknesses identified in the Seaborn Report are now the focus of this volume of the Commission’s own report.

Annex 17 to the *Convention on International Civil Aviation (“Chicago Convention”)*, a treaty governing civil aviation, outlines the minimum security standards.¹¹ As a signatory, Canada is obliged to comply with the Convention, but the Commission finds that it has not done so.

Besides calling for a multi-layered, holistic approach to security, aviation security experts and officials from Transport Canada identified several other underlying principles to strengthen defences against terrorists. Many of these principles are rooted in the lessons learned from the bombing of Air India Flight 182. Security measures must be developed to anticipate threats,¹² provide for flexibility and performance-based measures where suitable,¹³ and foster a culture of security awareness. The security regime must be constantly scrutinized for its effectiveness. Since there are few security measures available to prevent harm once an aircraft is aloft, effective security must be provided on the ground. As well, technology, even if properly used, should rarely be seen as the final answer. It is merely one tool that may assist in providing security.

Transport Canada reported that it is developing proposals to address many of the security gaps that were the focus of the Commission – primarily air cargo security, airport security and FBO and GA security. It has also undertaken a comprehensive review of its regulatory regime. The Commission strongly urges

⁹ See Section 3.8.3, which provides a detailed analysis of the current deficiencies at FBOs and in the GA sector.

¹⁰ Exhibit P-101 CAF0039; see also Appendix B, which provides a list of the recommendations.

¹¹ International Civil Aviation Organization (ICAO), *Convention on International Civil Aviation (“Chicago Convention”)*, 7 December 1944, (1994) 15 U.N.T.S. 295; Exhibit P-181.

¹² Testimony of Reg Whitaker, vol. 38, June 1, 2007, p. 4646.

¹³ Exhibit P-169, +pp. 92-93 of 202.

Transport Canada to ensure that it honours all of its Annex 17 obligations, and to exceed them where possible by looking to international best practices. Almost 25 years after the bombing of Air India Flight 182, the time for reflection is long past. Action is now required.

There is also a need for independent oversight of security measures. For this reason, the Commission recommends a regular five-year review by an independent panel of experts to ensure that Canada is addressing threats as effectively as possible. The Commission strongly encourages the Senate Committee and the Auditor General of Canada to continue to inform the public about the state of civil aviation security in Canada.

The Commission was greatly assisted in its work, not only by the members of the independent CATSA Advisory Panel, the Senate Committee, including its Chair, Senator Colin Kenny, and the Auditor General of Canada, but also by members of the Office of the Privacy Commissioner of Canada, including the Privacy Commissioner, Jennifer Stoddart, and the many industry representatives and Transport Canada officials who appeared at the hearings. The Commission extends its thanks as well to its civil aviation security experts, including Moses Aléman, Dr. Peter St. John and Dr. Kathleen Sweet, and its expert in risk management, Dr. William Leiss, who assisted in navigating this technical field. The Commission wishes to extend its deep gratitude, in particular, to Rodney Wallis, whose knowledge and expertise in civil aviation security provided essential guidance throughout the hearings and during the preparation of this volume.