THE CANADIAN NAVY

AND DOMESTIC MARITIME ENFORCEMENT

by

Laurence M. Hickey

A thesis presented for the degree of
Doctor of Philosophy
at Cardiff University

2008

UMI Number: U585194

All rights reserved

INFORMATION TO ALL USERS
The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript
and there are missing pages, these will be noted. Also, if material had to be removed,
a note will indicate the deletion.

UMI U585194
Published by ProQuest LLC 2013. Copyright in the Dissertation held by the Author.
Microform Edition © ProQuest LLC.
All rights reserved. This work is protected against
unauthorized copying under Title 17, United States Code.

ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

Abstract

The objective of this research is to evaluate the employment of the Canadian Navy in a maritime enforcement role within the Canadian maritime zones. This investigation is comprised of two main parts: an analysis of the Canadian political and regulatory structures, as well as an analysis of naval enforcement operations. The marine geography of Atlantic Canada is described through six key ocean-use sectors, followed by an analysis of important oceans policy initiatives, and the federal government's *ad hoc* approach to security and defence policy formulation. The mandates, jurisdictions, and general capabilities of Canadian federal departments with either direct or indirect links to marine security and maritime enforcement are discussed, as well as the legal framework for the use of Canadian military forces for domestic operations. The second part of the thesis analyses the capabilities that the Navy brings to maritime security and enforcement operations. These include the contribution to maritime domain awareness, government "presence" derived through aerial surveillance, search and rescue operations, and naval support to fisheries enforcement. An analysis of patrol patterns is offered, as well as spatial analyses of at-sea inspection data. Two exploratory studies that address the perceived deterrent value of naval support to fisheries enforcement, and public opinion as it pertains to naval support to constabulary operations are presented, as well as the effect that fisheries support missions have on the combat readiness of warships. The thesis suggests that the Canadian Navy could take on a greater role in domestic enforcement, and a proposal is made for enhanced legal powers. The thesis ends by summarizing the Navy's important role championing and enabling improvement in the government's Marine Security Response System, as well as a whole-of-government approach to maritime surveillance planning.

Acknowledgements

A project of this nature cannot be completed without the assistance of a great number of people. This is my opportunity to thank and acknowledge the efforts and encouragement of this supporting team.

First, I wish to thank my advisor, Dr. Hance Smith, for the fatherly chats, sound advice, and quick responses to my queries despite the seemingly long interludes between intercontinental contacts.

Second, I'd like to acknowledge the outstanding assistance of Roxanne Gauthier, whose proficiency (and patience) with ArcGIS resulted in the excellent maps found throughout this thesis.

Many others have supported this research. Dr. Yvonne Severs gave generously of her time in helping me structure and proofread some of the chapters. Greg Royston assisted me with the many ships' logs at the Archives. Janice Peters gave a year of her time reading news stories on my behalf. Paul Massel compiled the force employment record that made possible a logical search through the Archives for patrol data. The Commanding Officers of *HMCS Montréal*, Dean McFadden then Norm Jolin set the standard for collection of fisheries patrol data for this project. I'd like to thank them as well as the Officers-of-the-Watch and operations departments of all of the warships who collected patrol data on my behalf. Scott Howden, Spike Lavigne, Sid Green, Chris Munro-Cape, Rob Elford, Greg Stead, Rory Rafuse and the watch-keepers of the Maritime Operations Centre made possible the extraction of patrol and surveillance data. Tilman Bieger provided inspection statistics that were seemingly unobtainable from Fisheries and Oceans Canada. Gino Gagnon assisted with the archival microfiche search for the media content analysis. Guy Wheeler extracted combat readiness statistics on my behalf. Perry Kurzynski made the search and rescue data available through the Canadian Coast Guard.

Others contributed through discussions on thesis content or technical assistance. These people are Dr. Richard Gimblett, Nick Carson, Stephen Flemming, Ian Anderson, Ted Parkinson, Scott Latter, Steve Bell, Fred Crickard, Peter Haydon, Ed Tummers, Bob Edwards, Glen Herbert, Brent Hobson, Lorne Richardson, Mike Mangin, Randy Wyatt, Nicki Newell, John Van Oosten, Andrew Hawrylak, Isabelle Campagnon, Rick Mayne, Ralph Lang and Colin Warman.

I'd also like to thank the fishermen who participated in this project. These are Jeff Brownstein and Pat Rhynold, who reviewed the deterrence questionnaire for me from the fisherman's perspective. Other participants were Lenus Bungay and trawlermen of Grand Bank Seafoods Ltd, fishermen of Atlantic Herring Coop Ltd, Canso Trawlermen's Coop, Cumberland North Fishermen's Union, Eastern Kings Fishermen's Association, Eastern Shore Fishermen's Protective Association, Inverness North Fishermen's Association, Maritime Fishermen's Union Local 6, Maritime Fishermen's Union Local 9, Prospect Area Full-Time Fishermen's Association, Southwest Nova Tuna Association, Upper Bay of Fundy Fish Draggers' Association, and Western Gulf Fishermen's Association.

Although she appears at the end of this long list, her contribution is unquestionably the greatest. I'd like to thank my wife Linda for giving me the space needed to pursue this project, and for providing a supportive environment at home. I could not have completed this undertaking without your support.

Table of Contents

Section No.	Page No.
Abstract	
Acknowledgements	
Table of Contents	i
List of Tables	ix
List of Figures	xii
List of Appendices	xviii
List of Abbreviations	xix
Chapter One: INTRODUCTION	
1.1 Introduction	**1**
1.2 Aim of the Study	**2**
1.3 Geography versus Political Science	**3**
1.4 Scope of Study and Study Area	**3**
1.5 Structure of Research	**5**
1.6 Significance of the Study	**7**
1.7 Previous Research	**7**
1.8 Effect of Terrorist Attacks on 11 September 2001	**15**
1.9 Summary	**15**
Chapter Two: RESEARCH METHODS	
2.1 Introduction	**17**
2.2 Thesis Structure	**18**
2.3 Research Design	**18**
2.3.1 Theme – Geographical Description of Study Area	19
2.3.2 Theme – Policy and Regulatory Framework	19
2.3.3 Theme – Interdepartmental Co-op and Domestic Ops	21
2.3.4 Theme – Contribution to Maritime Domain Awareness	22
2.3.5 Theme – Contribution to Patrol and Response	23
2.3.6 Theme – Value of Naval Enforcement Activity	25

2.4 Data Collection and Analysis **27**
2.4.1 Surveillance Data Collection 28
2.4.2 Observation 31
2.4.3 Mapping Analysis 32
2.4.3.1 Standard Map Format and Attributes 32
2.4.3.2 Map Analysis Methods 36
2.4.4 Media Content Analysis 36
2.4.4.1 Media Content Analysis Criteria 39
2.4.5 Data Sources 40

2.5 Quality Control **43**

2.6 Interviews, Questionnaire Design, Format and Distribution **44**
2.6.1 Questionnaire Development 46
2.6.2 Questionnaire Responses 47

2.7 Stakeholder Involvement **48**

2.8 Role of Researcher, Opportunities and Constraints **48**
2.8.1 Constraints 49

Chapter Three: MARINE GEOGRAPHY OF ATLANTIC CANADA

3.1 Introduction **53**

3.2 General Description of Atlantic Canada **53**
3.2.1 Population 56
3.2.2 Critical Infrastructure – Road, Rail and Air 57
3.2.3 Ocean Dimension of Canada and Atlantic Region 59
3.2.4 Canada's Maritime Spaces and International Law 62
3.2.5 Maritime Boundary Disputes 64
3.2.5.1 Northwest Passage (Canada / United States) 65
3.2.5.2 Hans Island (Canada / Denmark) 66
3.2.5.3 Machias Seal Island (Canada / United States) 66
3.2.6 Military and Search and Rescue Zones 66

3.3 Economic Impact of Atlantic Canada's Maritime Zones **72**
3.3.1 Renewable Natural Resources 72
2.3.1.1 Commercial Fishery 72
3.3.2 Non-renewable Natural Resources 78
2.3.2.1 Offshore Non-Fuel Mineral Resources 78
2.3.2.2 Offshore Hydrocarbons 79
3.3.3 Marine Construction / Ship Repair 85

3.3.4 Marine Transportation 86
3.3.5 Ocean Tourism 97
2.3.5.1 Ocean Tourism 97
2.3.5.2 Recreational Fishery 97
3.2.6 Conservation and Protection 98

3.4 Summary 100

Chapter Four: CANADIAN MARITIME POLICY FRAMEWORK

4.1 Introduction 105

4.2 National Interests 105
4.2.1 Vital and Secondary Interests 107
4.2.2 Canada as a Maritime Nation 107
4.2.3 Vital Maritime Interests 109

4.3 Oceans Policy 110
4.3.1 Periods of Policy Development 110
4.3.2 The *Oceans Act* 113
4.3.3 Canada's Ocean Strategy 114
4.3.4 Oceans Action Plan 114

4.4 National Security and Defence Policy 116
4.4.1 1971 Defence White Paper 119
4.4.2 1974 Defence Services Review 120
4.4.3 1987 Defence White Paper 121
4.4.4 1994 Defence Review and Defence White Paper 122
4.4.5 National Security Policy 124
4.4.6 Maritime Sovereignty 128

4.5 Whither Surveillance Policy? 134

4.6 The 2005 Defence Policy Statement 138

4.7 Summary 140

Chapter Five: REGULATORY FRAMEWORK FOR MARITIME ENFORCEMENT

5.1 Introduction 145

5.2 The Federal Setting 146
5.2.1 Joint-Federal-Provincial Agencies – Petroleum Boards 149

5.2.2 Federal Regional Councils 152
5.2.3 Canadian Council of Ministers of the Environment 154
5.2.4 Atlantic Canada Opportunities Agency 155
5.2.5 Atlantic Pilotage Association 155
5.2.6 Canadian Environmental Assessment Agency 156
5.2.7 Canadian Transportation Agency 157
5.2.8 Transportation Safety Board 157

5.3 Federal Depts - Primary Responsibility for Enforcement 158
5.3.1 Fisheries and Oceans Canada 158
5.3.2 Canadian Coast Guard 160
5.3.3 Transport Canada 164
5.3.4 Public Safety Canada 167
5.3.5 Royal Canadian Mounted Police 170
5.3.6 Canadian Security Intelligence Service 174
5.3.7 Canada Border Security Agency 175
5.3.8 Environment Canada 179
5.3.9 Natural Resources Canada 180
5.3.10 Department of National Defence 181

5.4 Enabling Provisions for Naval Support 185
5.4.1 Memoranda of Understanding 185
5.4.1.1 DND/SOLGEN – Support to Counter Drug Ops 186
5.4.1.2 DND/DFO – Support to Fisheries 186
5.4.1.3 DND/EC – Environmental Emergencies 187
5.4.2 Domestic Operations 188
5.4.3 Regional Joint Task Force Structure 193

5.5 Summary 195

Chapter Six: INTERACTION BETWEEN GOVERNMENT AGENCIES AND DEPARTMENTS

6.1 Introduction 198

6.2 Security – Law Enforcement or Defence? 199

6.3 Nature of Multi-agency Relationships 201

6.4 The National Setting (Strategic Level) 202
6.4.1 Informal / Formal Relationships 205
6.4.2 Proactive Engagement 205
6.4.2.1 Day-to-day Liaison 206
6.4.2.2 Inter-agency Committees and Working Groups 207
6.4.2.2.1 The Osbaldeston Study 208

6.4.2.2.2 IPCRC 209
6.4.2.2.3 Cabinet Committee on Security 217
6.4.2.2.4 IMSWG 218
6.4.2.2.5 ITAC 221
6.4.2.2.6 ASWG 223
6.4.3 Reactive Engagement 224
6.4.3.1 Federal Emergency Response System (FERS) 224
6.4.3.2 National Emergency Response System (NERS) 228

6.5 The Regional Setting (Operational Level) 229
6.5.1 Informal / Formal Relationships 230
6.5.2 Proactive Engagement 231
6.5.2.1 Day-to-day Liaison 231
6.5.2.2 Inter-agency Committees and Working Groups 233
6.5.2.2.1 Oceans Management Committees 233
6.5.2.2.2 IBET / INSET / NPET 234
6.5.2.2.3 ECIMOC 235
6.5.2.2.4 NSFC Security Sub-Committee 235
6.5.2.2.5 Atl Regional Security Committee 236
6.5.2.3 Inter-agency Exercises and Simulations 237
6.5.2.4 RICMO 239
6.5.2.5 Summary Key Regional Proactive Relationships 239
6.5.3 Reactive Engagement 240
6.5.3.1 Threat Assessment Grp / Federal Co-ord Grp 241
6.5.4 Maritime Domain Awareness 242
6.5.4.1 Marine Security Operations Centres 243

6.6 Summary 247

Chapter Seven: NAVAL CONTRIBUTION TO MARITIME DOMAIN AWARENESS

7.1 Introduction 250

7.2 Naval Use of the Sea 250
7.2.1 Role of Navies 250
7.2.2 Constabulary Role of Navies 252
7.2.3 Spectrum of Conflict 254
7.2.4 Maritime Threats and Maritime Domain Awareness 255

7.3 Naval Contribution to Maritime Domain Awareness 257
7.3.1 Recognised Maritime Picture 258
7.3.1.1 Data Collection for the Maritime Picture 258
7.3.1.2 High-Frequency Surface Wave Radar 262
7.3.2 Contribution of Surveillance to Domain Awareness 264

7.3.2.1 CP-140 Aurora Presence (DND) 266
7.3.2.2 Contracted PAL Aircraft Presence (DFO) 271
7.3.2.3 Spatial Aspect of Marine Traffic 274
7.3.3 Comparison of Marine Activity and Govt Presence 278
7.3.4 Other Contribution to Maritime Domain Awareness 281
7.3.4.1 Canadian Maritime Network 281
7.3.4.2 Route Survey 283

7.4 Summary **285**

Chapter Eight: NAVAL CONTRIBUTION TO PATROL AND RESPONSE

8.1 Introduction **287**

8.2 Contribution to Search and Rescue **287**
8.2.1 Search and Rescue Structure in Canada 288
8.2.2 Search and Rescue Resources 291
8.2.3 Search and Rescue Activity Results 293
8.2.3.1 Spatial Aspect of SAR Support 293
8.2.3.2 Search and Rescue Output 301

8.3 Contribution to Fisheries Enforcement **311**
8.3.1 Maritime Domain Awareness 312
8.3.2 Naval Fishery Patrols 312
8.3.2.1 Historical Context 313
8.3.2.2 Level of Effort to Fisheries Enforcement 315
8.3.2.3 Spatial Aspect of Fisheries Patrol Effort 317
8.3.2.3.1 Typical Patrol 317
8.3.2.3.2 Naval Vessel Patrol Patterns 319
8.3.2.3.3 Hague Line Patrols 322
8.3.2.3.4 Naval Enforcement Presence 323
8.3.2.4 Inspections / Boardings 324
8.3.2.4.1 Spatial Aspect of Boardings 328
8.3.2.4.2 Proximity Analysis of Boardings 331
8.3.2.4.2.1 Distance to Bases 331
8.3.2.4.2.2 Distance to EEZ 338
8.3.2.5 Naval Fishery Patrol Statistics 344

8.4 Summary **348**

Chapter Nine: NAVAL BENEFIT FOR SUPPORT TO MARITIME ENFORCEMENT

9.1 Introduction **351**

9.2 Estimation of Deterrent Effect of Naval Forces **351**
9.2.1 Prior Studies on Deterrence in Cdn Fisheries 352
9.2.2 Deterrence Survey for this Research Project 355
9.2.3 Purpose of Key Questions in Questionnaire 357
9.2.4 Response to Questionnaire 360
9.2.5 Validity of the Survey 363
9.2.6 Results of Exploratory Deterrence Survey 364

9.3 Public Opinion Value **370**
9.3.1 Media Content Analysis Results 370

9.4 Benefit of Fisheries Patrols on Warship Crew Readiness **377**
9.4.1 Combat Readiness Requirement Analysis 377
9.4.2 Additional Training Value 386
9.4.3 Enforcement Support – Effect on Combat Readiness 387

9.5 Summary **387**

Chapter Ten: ANALYSIS OF THE NAVAL ROLE IN MARITIME ENFORCEMENT

10.1 Introduction **389**

10.2 Threats and Security **389**

10.3 Wariness for Increased Role **392**

10.4 Reticence - Armed Forces for Maritime Enforcement 395
10.4.1 The Army and Law Enforcement 396
10.4.2 Legitimacy of CF for Law Enforcement 399
10.4.3 Lack of Distinction between Army and Navy 401
10.4.4 Army as Non-Traditional Employment 402

10.5 European Example of Naval Enforcement **408**

10.6 United States Experience with *Posse Comitatus* **409**

10.7 Proposal for Naval Enforcement in Cdn Maritime Zones **411**

10.8 Champion and Enabler for Marine Security Processes 413
10.8.1 Marine Security Response System 415
10.8.2 Improved Surveillance Planning 420

10.9 Additional Naval Contribution to Oceans Management 423

10.10 Summary 425

Chapter Eleven: CONCLUSION

11.1 Introduction 426

11.2 Policy Framework 426

11.3 Complexity of Enforcement Problem 427

11.4 Naval Contribution through Patrol and Response 428

11.5 Naval Contribution through Maritime Domain Awareness 429

11.6 Naval Contribution as Champion for Co-operation 429

11.7 Contribution to Knowledge 430

11.8 Future Research 431

11.9 Closing Thoughts 432

BIBLIOGRAPHY 433

List of Tables

ID	Title	Page
2-1	Data Sets Used to Illustrate Geography of Study Area	20
2-2	Diverse Co-ordinate Formats by Source	34
3-1	Population – Atlantic Canada	57
3-2	Length of Canadian Shoreline	60
3-3	Size of Canadian Exclusive Economic Zone	61
3-4	Canadian Commercial Fishery 1995-2000	74
3-5	Offshore Petrocarbon Inventory	80
3-6	Oil and Gas Production – Atlantic Canada 1995-2000	85
3-7	Canadian Marine Construction 1995-2000	86
3-8	Canada's Top Ten Ports in 2005	89
3-9	Canadian Ocean Tourism 1995-2000	97
3-10	Canadian Ocean Industry Employment 1995-2000	102
3-11	Gross Value of Output of Ocean Sectors 1995-2000	102
5-1	Government Bodies with Oceans Responsibilities	147
5-2	Non-Government Bodies with Oceans Interests	149
5-3	DFO / CCG Vessel Fleet	162
5-4	DFO / CCG Aircraft Fleet	163
5-5	RCMP Vessels and Aircraft	173
5-6	Naval Fleet - Atlantic	184
5-7	Naval Aircraft - Atlantic	184
5-8	Key Inter-departmental Agreements	188
5-9	Legal Instruments Shaping Domestic Operations	192
7-1	DND CP-140 Aircraft Patrols by Area - 2002	267
7-2	DFO PAL Aircraft Patrols by NAFO Sub-Area - 2002	273
8-1	Distribution of SAR Cases – Halifax SRR 2002	305
8-2	Marine Responders in SAR Cases – 2002	307
8-3	Naval Responders in SAR Cases – 2002	308
8-4	Aircraft Responders in SAR Cases – 2002	309
8-5	Chronology of Changes to Dept Responsibility	314
8-6	Naval Vessel Total Days at Sea - Atlantic	315
8-7	DND Fisheries Patrol Asset Allocation - Atlantic	316
8-8	Fishing Vessel Inspections by Department	325
8-9	Fishing Vessel Inspections by Nationality	325
8-10	Naval Fisheries Patrol Boardings by Ship – 1990-2002	328
8-11	Naval Fisheries Patrol Averages – 1980 to 1997	345
8-12	Naval Fisheries Patrol Averages – 1999 to 2002	345
9-1	Fisheries Violations – Expectation of Consequences	355
9-2	Areas Fished by Respondents	363
9-3	Fishing Experience of Respondents	364
9-4	Time Spent Fishing Per Year	365
9-5	Licences Held by Respondents	365

List of Tables (continued)

ID	Title	Page
9-6	Areas Fished by Sub-Area or District	366
9-7	Number of Sightings Per Week of Patrol Assets	367
9-8	Perceived Deterrent Value of Patrol Assets	368
9-9	Enforcement Officers Embarked on Military Patrols	369
9-10	Media Content Analysis – Themes and Types	371
9-11	Media Content by Theme – 1 Jan to 31 Dec 2002	372
9-12	Media Content OGD Support – 1 Jan to 31 Dec 2002	373
9-13	Example Individual and Small Team CRRs	379
9-14	Example Intermediate CRRs	379
9-15	Example Advanced CRRs	380
9-16	CRR Completion Percentages – 1999 to 2001	382
A-1	Federal Legislation – DFO as Lead Agent	A1
A-2	Federal Legislation – ACOA as Lead Agent	A4
A-3	Federal Legislation – Agri-Can as Lead Agent	A4
A-4	Federal Legislation – ParksCan as Lead Agent	A5
A-5	Federal Legislation – CTA as Lead Agent	A5
A-6	Federal Legislation – INAC as Lead Agent	A6
A-7	Federal Legislation – DOJ as Lead Agent	A7
A-8	Federal Legislation – DND as Lead Agent	A7
A-9	Federal Legislation – EC as Lead Agent	A8
A-10	Federal Legislation – DFAIT as Lead Agent	A10
A-11	Federal Legislation – HC as Lead Agent	A10
A-12	Federal Legislation – HRDC as Lead Agent	A11
A-13	Federal Legislation – IC as Lead Agent	A11
A-14	Federal Legislation – NEB as Lead Agent	A12
A-15	Federal Legislation – NRC as Lead Agent	A12
A-16	Federal Legislation – CRA as Lead Agent	A12
A-17	Federal Legislation – NRCan as Lead Agent	A13
A-18	Federal Legislation – PCO as Lead Agent	A14
A-19	Federal Legislation – PWGSC as Lead Agent	A15
A-20	Federal Legislation – TC as Lead Agent	A15
B-1	Example Marine Security Scenarios	B1
C-1	Naval Unit Capability for Domestic Operations	C1
G-1	CP-140 Aurora Aircraft Patrols in Figure 7-4	G1
H-1	PAL Aircraft Patrols in Figure 7-7	H1
H-2	CCG PAL Aircraft Patrols in Figure 7-7	H17
J-1	Naval Fisheries Patrols 1980 - 2003	J2
J-2	Naval Preventative Patrols 1997 - 2003	J5
J-3	Naval Fisheries Patrol Totals – Major Warship	J6
J-4	Naval Fisheries Patrol Totals – Minor Warship	J7
J-5	Naval Boardings By Ship – 1990 to 2002	J8

List of Tables (continued)

ID	Title	Page
J-6	DFO Boardings By Ship – 1990 to 2002	J9
J-7	Surveillance Coverage by Ship - 1999 to 2003	J10
K-1	Naval Fisheries Patrols Used in Figures	K1
N-1	Participation of Atlantic Fisheries Associations	N1
N-2	Number of Licenced Fishers by Province – 2002	N3
Q-1	Key Words for News Article Categorisation	Q1
R-1	Approval Authorities	R1
R-2	SAR Incidents by Type – 1997 to 2002	R3
R-3	Marine Responders in SAR Cases – 2002	R3
R-4	Locations of CCG Lifeboat Bases – Atlantic Region	R4
R-5	Locations DND and DFO Patrol Asset Bases	R4

List of Figures

ID	Title	Page
1-1	Periscope Photo on Front Page	1
2-1	PAL Flight Summary – Nfld Region Example	30
2-2	Patrol Reconstruction – CP-140 Aircraft 26 Sept 02	44
3-1	Atlantic Canada and Main Study Area	54
3-2	Major and Minor Airports – Atlantic Canada	59
3-3	Canadian Exclusive Economic Zone	61
3-4	Territorial Sea, Contiguous Zone and EEZ	64
3-5	CANLANT Area of Responsibility	67
3-6	Maritime Forces Atlantic Operating Areas (MARLOAs)	69
3-7	Air Traffic Active and Restricted Danger Zones	69
3-8	Routine CP-140 Aurora Patrol Areas	70
3-9	Search and Rescue (SAR) Zones	71
3-10	Sub-Regions – Halifax Search and Rescue	71
3-11	Commercial Fishery Annual Landings – Atlantic	75
3-12	NAFO Regulatory Areas – Subareas and Divisions	76
3-13	NAFO Regulatory Areas – Divisions and Subdivisions	76
3-14	Lobster Fishing Areas – Atlantic Canada	77
3-15	Crab Fishing Areas – Atlantic Canada	77
3-16	Oil and Gas Exploration Lands 2004 – Atlantic	80
3-17	Oil and Gas Wells – Past Locations	81
3-18	Oil and Gas Wells Rigs in 2006	81
3-19	Ports and Main Ferries – Atlantic Canada	87
3-20	Ports – St. Lawrence Seaway and Great Lakes	88
3-21	Major Shipping Routes in 2000 – Atlantic Canada	90
3-22	Compulsory Pilotage Areas – Atlantic Canada	92
3-23	Vessel Traffic Management System (VTMS) – Atlantic	93
3-24	VTMS – St. Lawrence Seaway	93
3-25	VTMS – Belle Isle	94
3-26	VTMS – Cabot Strait	94
3-27	VTMS – Placentia	95
3-28	VTMS – Halifax and Canso	95
3-29	VTMS – Bay of Fundy	96
3-30	VTMS – NORDREG Area	96
3-31	Conservation and Marine Protected Areas	99
3-32	Vessel Traffic Separation and Right Whales	99
3-33	Submarine Cables – Atlantic Canada	100
4-1	A Simple Strategic Model	106
4-2	A Simple Strategic Model (adapted for maritime interests)	108
4-3	Rights of Coastal States in Offshore Zones	130
4-4	Trisection of Policy Objectives	141
4-5	Maritime Challenges and Responses – 1970 - Present	144
5-1	Offshore Petroleum Board Jurisdiction – Atlantic	150

List of Figures (continued)

ID	Title	Page
5-2	Jurisdictions – Fisheries and Oceans Canada	159
5-3	Jurisdictions – Canadian Coast Guard	161
5-4	Jurisdictions – Transport Canada	166
5-5	Jurisdictions – Public Safety Canada	170
5-6	Jurisdictions – Royal Canadian Mounted Police	172
5-7	Jurisdictions – Cdn Security and Intelligence Service	175
5-8	Jurisdictions – Canada Border Services Agency	178
5-9	Jurisdictions – Environment Canada	180
5-10	Process for Requesting Military Support - Atlantic	192
5-11	Regional Joint Task Force Atlantic	194
6-1	Nature and Levels of Multi-agency Relationships	202
6-2	Security Response Process Flow	225
6-3	Single Mandate Scenario – National / Regional	227
6-4	Multiple Mandate Scenario – Federal / Provincial	228
6-5	Interdepartmental Working Group Contribution	240
6-6	Relationship of Intel to Operational Response	246
6-7	Relationship of Intel to Response – Multiple Agencies	246
6-8	Intel-initiated Strategic and Operational Response	247
7-1	Canadian Naval Roles for the 21st Century	251
7-2	Spectrum of Conflict in the Maritime Context	255
7-3	High Frequency Surface Wave Radar Coverage	263
7-4	DND CP-140 Aircraft Patrols By Area - 2002	268
7-5	DND CP-140 Aircraft Patrols 15 Dec 03 – 15 Jan 2004	269
7-6	DND CP-140 Aircraft Patrols 15 Jan – 15 Feb 2004	270
7-7	DFO PAL Aircraft Patrols By NAFO Area - 2002	272
7-8	Vessel Detections by DFO PAL Aircraft - 2002	275
7-9	Vessel Detections by DFO Aircraft - 2002 Surface	277
7-10	Vessel Detections by DFO Aircraft - April 2002	278
7-11	Vessel Detections by DFO Aircraft - June 2002	278
7-12	Merchant Traffic Inbound to Atlantic Canada – 1995	281
7-13	CANMARNET Homepage - 2001	282
7-14	ELVIS Unclassified RMP Page - 2001	283
8-1	Search and Rescue Structure within DND	291
8-2	Coast Guard Lifeboat Locations – Atlantic Region	293
8-3	SAR Incidents in Atlantic Canada – 1999 to 2002	294
8-4	SAR Incidents – 1999 to 2002 Surface Model	295
8-5	SAR Incidents – 1999 to 2002 – Summer Months	297
8-6	SAR Incidents – 1999 to 2002 – Winter Months	297
8-7	SAR Incidents – 1999 to 2002 – Summer Surface	298
8-8	SAR Incidents – 1999 to 2002 – Winter Surface	298
8-9	SAR Incidents – 1999 to 2002 – Air	299
8-10	SAR Incidents – 1999 to 2002 – Marine	300
8-11	SAR Incidents – 1999 to 2002 – Humanitarian	300
8-12	Monthly SAR Caseload in Halifax SRR 2000 - 2002	301

List of Figures (continued)

ID	Title	Page
8-13	SAR Incidents by Urgency – Halifax SRR 2002	302
8-14	SAR Incidents by Type – Halifax SRR 2002	302
8-15	SAR Incidents by Type – Halifax SRR 1997 to 2002	303
8-16	SAR Incidents by User Type – Halifax SRR 2002	304
8-17	SAR Incidents by Root Cause – Halifax SRR 2002	305
8-18	Monthly SAR Cases in Halifax SRR –2002	306
8-19	Marine Responders in SAR Cases –2002	307
8-20	Aircraft Responders in SAR Cases –2002	310
8-21	SAR Asset Locations in Relation to SAR Incidents	310
8-22	Naval Fisheries Patrol Sea Days - Atlantic	317
8-23	Typical Frigate Fisheries Patrol – 1999 to 2002	318
8-24	Typical MCDV Fisheries Patrol – 1999 to 2002	319
8-25	Tracks - Ships on Fisheries Patrol: 1980 to 2003	320
8-26	Naval Ships on Fisheries Patrol: 1980 to 1997	321
8-27	Naval Ships on Fisheries Patrol: 1999 to 2003	322
8-28	Hague Line Fisheries Patrols: 1980 to 1997	323
8-29	Boardings by DFO aboard Naval Ships	327
8-30	Navy's Percentage of Total Boardings for Nfld Region	327
8-31	Boardings by Government Vessels – 1990 to 2002	329
8-32	Boardings by Naval Vessels – 1990 to 2002	329
8-33	Boardings by Government Vessels – Surface Model	330
8-34	Boardings by Naval Vessels – Surface Model	331
8-35	Location of Patrol Assets Airfields and Home Ports	332
8-36	Distances from Inspections to Patrol Asset Bases	333
8-37	Distance from Inspections to Halifax Patrol Bases	334
8-38	Distance from Inspections to Dartmouth/Gander	335
8-39	Distance from Inspections to Shearwater/Sydney	336
8-40	Distance from Inspections to Goose Bay/Greenwood	337
8-41	Distance from Inspections to St. John's Patrol Bases	338
8-42	Distance from Boardings to EEZ	340
8-43	Distance from Boardings to EEZ – 1995 to 2002	341
8-44	Distance from Boardings to EEZ – By Region	342
8-45	Distance from Boardings to 200nm Limit Beyond EEZ	343
9-1	Areas Fished by Survey Respondents – NAFO	362
9-2	Areas Fished by Survey Respondents – Canadian	362
9-3	Media Content by Theme – 1 Jan to 31 Dec 2002	372
9-4	Media Content OGD Support – 1 Jan to 31 Dec 2002	373
9-5	Naval Search and Rescue Newstories	374
9-6	Naval Environmental / Pollution Newstories	374
9-7	Naval Counter-Narcotics Newstories	375
9-8	Naval Arctic Sovereignty Newstories	375
9-9	Naval Fisheries Support Newstories	376
9-10	Combat Readiness Reqts – Avg of All Categories	383
9-11	Combat Readiness Reqts – Combat	384
9-12	Combat Readiness Reqts – Anti-Air Warfare	385
9-13	Combat Readiness Reqts – Marine Systems	386

List of Figures (continued)

ID	Title	Page
10-1	Trisection of Federal Policies	390
10-2	Proposed Marine Security Functional Template	418
10-3	Whole-of-Government Decision Support Process	419
10-4	New Interdepartmental Surveillance Planning Grid	422
D-1	Cumulative Vessel Detections by PAL Flights – 2002	D1
D-2	Vessel Detections by PAL Flights – January 2002	D2
D-3	Vessel Detections by PAL Flights – February 2002	D2
D-4	Vessel Detections by PAL Flights – March 2002	D3
D-5	Vessel Detections by PAL Flights – April 2002	D3
D-6	Vessel Detections by PAL Flights – May 2002	D4
D-7	Vessel Detections by PAL Flights – June 2002	D4
D-8	Vessel Detections by PAL Flights – July 2002	D5
D-9	Vessel Detections by PAL Flights – August 2002	D5
D-10	Vessel Detections by PAL Flights – September 2002	D6
D-11	Vessel Detections by PAL Flights – October 2002	D6
D-12	Vessel Detections by PAL Flights – November 2002	D7
D-13	Vessel Detections by PAL Flights – December 2002	D7
D-14	Vessel Detections by PAL Flights – Summer 2002	D8
D-15	Vessel Detections by PAL Flights – Fall 2002	D8
D-16	Vessel Detections by PAL Flights – Winter 2002	D9
D-17	Vessel Detections by PAL Flights – Spring 2002	D9
D-18	Cumulative Vessel Detections by PAL Flights – 2002	D10
D-19	Vessel Detections by PAL – January 2002 Surface	D10
D-20	Vessel Detections by PAL – February 2002 Surface	D11
D-21	Vessel Detections by PAL – March 2002 Surface	D11
D-22	Vessel Detections by PAL – April 2002 Surface	D12
D-23	Vessel Detections by PAL – May 2002 Surface	D12
D-24	Vessel Detections by PAL – June 2002 Surface	D13
D-25	Vessel Detections by PAL – July 2002 Surface	D13
D-26	Vessel Detections by PAL – August 2002 Surface	D14
D-27	Vessel Detections by PAL – September 2002 Surface	D14
D-28	Vessel Detections by PAL – October 2002 Surface	D15
D-29	Vessel Detections by PAL – November 2002 Surface	D15
D-30	Vessel Detections by PAL – December 2002 Surface	D16
D-31	Vessel Detections by PAL – Summer 2002 Surface	D16
D-32	Vessel Detections by PAL – Fall 2002 Surface	D17
D-33	Vessel Detections by PAL – Winter 2002 Surface	D17
D-34	Vessel Detections by PAL – Spring 2002 Surface	D18
D-35	Vessel Detections by Naval Vessels – 1999 to 2000	D18
E-1	SAR Incidents in Atlantic Canada – 1998 to 2001	E1
E-2	SAR Incidents – 1998 to 2001 Surface Model	E2
E-3	SAR Incidents 1998	E2
E-4	SAR Incidents 1999	E3
E-5	SAR Incidents 2000	E3
E-6	SAR Incidents 2001	E4

List of Figures (continued)

ID	Title	Page
E-7	SAR Incidents 1998 – Surface Model	E4
E-8	SAR Incidents 1999 – Surface Model	E5
E-9	SAR Incidents 2000 – Surface Model	E5
E-10	SAR Incidents 2001 – Surface Model	E6
E-11	SAR Incidents – 1998 to 2001 – Summer Months	E6
E-12	SAR Incidents – 1998 to 2001 – Fall Months	E7
E-13	SAR Incidents – 1998 to 2001 – Winter Months	E7
E-14	SAR Incidents – 1998 to 2001 – Spring Months	E8
E-15	SAR Incidents – 1998 to 2001 – Summer Surface	E8
E-16	SAR Incidents – 1998 to 2001 – Fall Surface	E9
E-17	SAR Incidents – 1998 to 2001 – Winter Surface	E9
E-18	SAR Incidents – 1998 to 2001 – Spring Surface	E10
E-19	SAR Incidents – 1998 to 2001 – Air	E10
E-20	SAR Incidents – 1998 to 2001 – Marine	E11
E-21	SAR Incidents – 1998 to 2001 – Humanitarian	E11
E-22	SAR Incidents – 1998 to 2001 – Air Surface Model	E12
E-23	SAR Incidents – 1998 to 2001 – Marine Surface Model	E12
E-24	SAR Incidents – 1998 to 2001 – Humanitarian Surface	E13
E-25	SAR Incidents – 1998 to 2001 – Distress	E13
E-26	SAR Incidents – 1998 to 2001 – Potential Distress	E14
E-27	SAR Incidents – 1998 to 2001 – Distress Surface	E14
E-28	SAR Incidents – 1998 to 2001 – Pot Distress Surface	E15
F-1	Naval Fisheries Patrols 1980 – 2003 – Raw Tracks	F1
F-2	Naval Fisheries Presence 1980 – 1996 – Surface	F2
F-3	Naval Fisheries Presence 1999 – 2001 – Surface	F2
F-4	Naval Fisheries Patrols 1980 – 1984 – Raw Tracks	F3
F-5	Naval Fisheries Patrols 1985 – 1989 – Raw Tracks	F3
F-6	Naval Fisheries Patrols 1990 – 1994 – Raw Tracks	F4
F-7	Naval Fisheries Patrols 1994 – 1999 – Raw Tracks	F4
F-8	Naval Fisheries Patrols 2000 – 2003 – Raw Tracks	F5
F-9	Naval Fisheries Patrols 1980 – 2000 – January	F5
F-10	Naval Fisheries Patrols 1980 – 2000 – February	F6
F-11	Naval Fisheries Patrols 1980 – 2000 – March	F6
F-12	Naval Fisheries Patrols 1980 – 2000 – April	F7
F-13	Naval Fisheries Patrols 1980 – 2000 – May	F7
F-14	Naval Fisheries Patrols 1980 – 2000 – June	F8
F-15	Naval Fisheries Patrols 1980 – 2000 – July	F8
F-16	Naval Fisheries Patrols 1980 – 2000 – August	F9
F-17	Naval Fisheries Patrols 1980 – 2000 – September	F9
F-18	Naval Fisheries Patrols 1980 – 2000 – October	F10
F-19	Naval Fisheries Patrols 1980 – 2000 – November	F10
F-20	Naval Fisheries Patrols 1980 – 2000 – December	F11
F-21	Naval Fisheries Patrols 1980 – 2000 – Summer	F11
F-22	Naval Fisheries Patrols 1980 – 2000 – Fall	F12
F-23	Naval Fisheries Patrols 1980 – 2000 – Winter	F12
F-24	Naval Fisheries Patrols 1980 – 2000 – Spring	F13

List of Figures (continued)

ID	Title	Page
F-25	Hague Line Naval Fisheries Patrols 1980 – 2003	F13
L-1	MS Access Template for Own Ship's Position Log	L2
L-2	MS Access Template for Vessel Contact Log	L2
Q-1	MS Access Template for Media Content Analysis	Q1
R-1	Monthly SAR Caseload in Halifax SRR – 2002 to 2005	R1
R-2	SAR Incidents by User Type – Victoria SRR 2002	R3

List of Appendices

ID	Title	Page
A	Canadian Oceans-Related Federal Legislation	A1
B	Example Marine Security Scenarios	B1
C	Naval Unit Capabilities for Domestic / Security Ops	C1
D	Maps – Marine Traffic Vessel Patterns	D1
E	Maps – Search and Rescue Activity	E1
F	Maps – Naval Fisheries Patrols	F1
G	CP-140 Aircraft Patrols Depicted in Figure 7-4	G1
H	PAL Aircraft Patrols Depicted in Figure 7-7	H1
J	Naval Fisheries and Preventative Patrols 1980 - 2003	J1
K	Naval Fisheries Patrols Depicted in Various Figures	K1
L	Naval Fisheries Patrol – Data Recording Instructions	L1
M	Naval Fisheries Patrol – Data Summary Sheet	M1
N	Participation of Fisheries Associations	N1
P	Deterrence Survey Questionnaire	P1
Q	Tools for Media Content Analysis	Q1
R	Miscellaneous Tables and Co-ordinates	R1
S	Published Articles	S1

List of Abbreviations Used

9/11	-	September 11, 2001
ACC	-	Air Component Commander
ACOA	-	Atlantic Canada Opportunities Agency
ACUG	-	Atlantic CANMARNET Users Group
ADAM	-	Airborne Data Acquisition Management
ADM	-	Assistant Deputy Minister
AG	-	Provincial Attorney General
AIMP	-	Aurora Incremental Modernization Program
AIS	-	Automatic Identification System
ALEA	-	Assistance to Law Enforcement Agencies
ALIX	-	Atlantic Littoral ISR Experiment
AMOSC	-	Air Maritime Operations Steering Committee
AOI	-	Area of Interest
AOR	-	Area of Responsibility
AOSC	-	Atlantic Operations Sub-Committee
APA	-	Atlantic Pilotage Association
ARCSSS	-	Arctic Sub-surface Surveillance System
ASIS	-	Air Surveillance Information System
ATC	-	Air Traffic Control
AUV	-	Autonomous Underwater Vehicle
CAF	-	Canadian Armed Forces
CANHYDROLANT	-	Navigation Warning Message (Atlantic – DND)
CANHYDROPAC	-	Navigation Warning Message (Pacific – DND)
CANLANT	-	Canadian Atlantic (region)
CANMARNET	-	Canadian Maritime Network
CANR	-	Canadian NORAD Region
CASARA	-	Civilian Aviation Search and Rescue Association
CAT	-	Crisis Action Team
CBSA	-	Canadian Border Services Agency
CCDWG	-	Canadian Counter-drug Working Group
CCG	-	Canadian Coast Guard
CCME	-	Canadian Council of Ministers of the Environment
CCRA	-	Canada Customs and Revenue Agency
CDS	-	Chief of the Defence Staff
CEAA	-	Canadian Environmental Assessment Agency
CEPA	-	Canadian Environmental Protection Act
CF	-	Canadian Forces
CFAAD	-	Canadian Forces Armed Assistance Directions
CFB	-	Canadian Forces Base
CFIA	-	Canadian Food Inspection Agency
CFIC	-	Canadian Forces IUSS Centre
CFIN	-	Canadian Fisheries Information Network
CFLO	-	Canadian Forces Liaison Officer
CFS	-	Canadian Forces Station
CIC	-	Citizenship and Immigration Canada
CIMIC	-	Civil-Military Cooperation

CMA	-	Census Metropolitan Area
CNOPB	-	Canada-Newfoundland Offshore Petroleum Board
CNSOPB	-	Canada-Nova Scotia Offshore Petroleum Board
COA	-	Course of Action
COE	-	Concept of Employment
COG	-	Centre of Gravity
COLREGs	-	International Rules for Avoiding Collision at Sea
Comd	-	Commander (of a unit, not the naval rank)
CONOPS	-	Concept of Operations
CONPLAN	-	Contingency Plan
COO	-	Concept of Operation
COREX	-	Aurora Crew Operational Readiness Exercise
COS	-	Canada's Ocean Strategy
COSEWIC	-	Committee on the Status of Endangered Wildlife in Canada
CPA	-	Closest point of approach
CPF	-	Canadian Patrol Frigate
CPX	-	Command Post Exercise
CSI	-	Container Security Initiative
CSIS	-	Canadian Security and Intelligence Service
CT	-	Counter-Terrorism
CTA	-	Canadian Transportation Agency
DCDS	-	Deputy Chief of the Defence Staff
DDDO	-	DCDS Direction on Domestic Operations
DFAIT	-	Department of Foreign Affairs and International Trade
DFO	-	Fisheries and Oceans Canada
DHS	-	Department of Homeland Security (US)
DHTC	-	Dwyer Hill Training Centre
DND	-	Department of National Defence
DOMOPS	-	Domestic Operations
DPS	-	Defence Policy Statement (2005)
DSIS	-	Deep Seabed Intervention System
EA	-	Environmental Assessment
EC	-	Environment Canada
ECAREG	-	Eastern Canada Regulation
ECIMOC	-	Eastern Canada Interdepartmental Maritime Operations Committee
EEC	-	European Economic Community
EEZ	-	Exclusive Economic Zone
EFZ	-	Exclusive Fisheries Zone
ELVIS	-	Enhanced Linked Virtual Information System
EMO	-	Emergency Measures Organization
EMOC	-	Emergency Measures Operations Centre
EPIRB	-	Emergency Position Indicating Radio Beacon
ERP	-	Emergency Response Plan
ERSTA	-	Electro-optical Reconnaissance, Surveillance

		and Target Acquisition
ERT	-	RCMP Emergency Response Team
ESSIM	-	Eastern Scotia Shelf Integrated Management
FEATS	-	Fish Enforcement Activity Tracking System
FLIR	-	Forward looking infrared
FOSSC	-	Fleet Operational Scheduling Steering Committee
FOSWG	-	Fleet Operational Scheduling Working Group
FP	-	Force Protection
FTE	-	Full Time Equivalents
GCCS	-	Global Command & Control System
GCCS(M)	-	Global Command and Control System-Maritime
GCS	-	Ground control station
GDP	-	Gross Domestic Product
GENet	-	Government Enterprise Network
GIS	-	Geographic Information System
GMDSS	-	Global Marine Distress Signaling System
GoC	-	Government of Canada
GOC	-	Government Operations Centre (Federal)
HALE	-	High Altitude Long Endurance *(UAV)*
HFSWR	-	High Frequency Surface Wave Radar
HMCS	-	Her Majesty's Canadian Ship
HQ	-	Headquarters
HRM	-	Halifax Regional Municipality
H-SAR	-	Humanitarian Search and Rescue
HSO	-	Hydrographic Services Office
IBET	-	Integrated Border Enforcement Team
IBIT	-	Integrated Border Intelligence Team
ICMO	-	Interdepartmental Concept of Maritime Operations
ICO	-	Interdepartmental Committee on Oceans
ICSAR	-	International Committee on SAR
IMS	-	Ion Mobility Spectrometry
IMSWG	-	Inter-Departmental Maritime Security Working Group
INNAV	-	Automated Information System for Marine Navigation
INSET	-	Integrated National Security Enforcement Team
IPCRC	-	Interdepartmental Program Coordination and Review Committee
IPS	-	International Policy Statement (2005)
IRU	-	Immediate Reaction Unit
ISR		Intelligence, Surveillance, Reconnaissance
ISTAR	-	Intelligence, Surveillance, Target Acquisition and Reconnaissance
I-STOP	-	Integrated Satellite Tracking of Polluters
ITAC	-	Integrated Threat Assessment Centre
JFIIC	-	Joint Information and Intelligence Fusion

		Capability
JMCIS	-	Joint Maritime Command Information System
JOTS	-	Joint Operations Tactical System
JRCC	-	Joint Rescue Coordination Centre
JTF	-	Joint Task Force
JTF(A)	-	Joint Task Force (Atlantic)
LFAA	-	Land Forces Atlantic Area
LOAC	-	Law of Armed Conflict
LOF	-	Levels of Force
LOS	-	Law of the Sea
MAC(A)	-	Maritime Air Component (Atlantic)
MAC(P)	-	Maritime Air Component (Pacific)
MAG	-	Maritime Assault Group *(Special Ops)*
MALE	-	Medium Altitude Long Endurance *(UAV)*
MARCOM	-	Maritime Command
MARLANT	-	Maritime Forces Atlantic
MARLOA	-	Maritime Forces Atlantic Operating Area
MARPAC	-	Maritime Forces Pacific
MCAN	-	Maritime Command Administrative Network
MCDV	-	Maritime Coastal Defence Vessel
MCOIN	-	Maritime Command Operational Information Network
MCPG	-	MARCOM Capability Planning Guidance
MCT	-	Maritime Counter-Terrorism
MDA	-	Marine Domain Awareness
MIMDEX	-	Maritime Information Management and Data Exchange
MND	-	Minister of National Defence
MOC	-	Maritime Operations Centre (DND)
MOSIC	-	Maritime Operational Surveillance Information Centres
MOU	-	Memorandum of Understanding
MPA	-	Marine Protected Area / Maritime Patrol Aircraft
MRSC	-	Maritime Rescue Sub-Centre
MSET	-	Marine Security Enforcement Team
MSOC	-	Marine Security Operations Centre
MUSIC	-	Multi-sensor integration within a common operating environment
MV	-	Merchant vessel
NAFO	-	North Atlantic Fisheries Organization
NATO	-	North Atlantic Treaty Organization
NAVRES	-	Naval Reserve
NB	-	New Brunswick
NCTP	-	National Counter-Terrorism Plan
NDCC	-	National Defence Command Centre
NDHQ	-	National Defence Headquarters
NERT	-	Nuclear Emergency Response Team
NF	-	Newfoundland and Labrador
NOC	-	National Operations Centre (RCMP)

NORAD	-	North American Air Defence Command
NORDREG	-	Northern Canadian Regulation
NOTMAR	-	Notices to Mariners
NPET	-	National Port Enforcement Team
NRCan	-	Natural Resources Canada
NS	-	Nova Scotia
NSFC	-	Nova Scotia Federal Council
NSIB	-	National Security Intelligence Branch (RCMP)
NSP	-	National Security Policy (2004)
NSS	-	National SAR Secretariat
NWT	-	Northwest Territories
OASIS	-	Observer Analysis and Statistics Information System
OCIPEP	-	Office of Critical Infrastructure Plans and Emergency Preparedness
OGD	-	Other Government Department
OPCOM	-	Operational Command
OPCON	-	Operational Control
OPSKED	-	Fleet Operations Schedule
ORP	-	Aurora Operational Readiness Patrol
PAIR	-	Pre-Arrival Information Reports
PAL	-	Provincial Air Lines
PCO	-	Privy Council Office
PEI	-	Prince Edward Island
PIRS	-	Police Information Retrieval System
PLB	-	Personal Locator Beacon
PLIX	-	Pacific Littoral ISR Experiment
PSAT	-	Cabinet Committee on Public Security and Anti-Terrorism
PSEPC	-	Public Safety and Emergency Preparedness Canada
PSU	-	Personnel Support Unit / Port Security Unit
QC	-	Quebec
RACE	-	Regional Air Co-ordination Element
RADARSAT	-	Radar Satellite
RAN	-	Royal Australian Navy
RCC	-	Rescue Coordination Centre
RCMP	-	Royal Canadian Mounted Police
RCN	-	Royal Canadian Navy
RHIB	-	Rigid Hull Inflatable Boat
RICMO	-	Regional Interdepartmental Concept of Maritime Operations
RN	-	Royal Navy
ROE	-	Rules of Engagement
RSMS	-	Regional Supervisor, Maritime SAR
SAR	-	Search and Rescue / Synthetic aperture radar
SARA	-	Species-at-Risk Act
SAS	-	Ship Abandonment Suits
SATCOM	-	Satellite Communications
SAU	-	Support Arrangement Unit

SCONDVA	-	Standing Committee on National Defence and Verterans' Affairs
SCONSAD	-	Senate Committee on National Security and Defence
SMMS	-	Search and Rescue Mission Management System
SMO	-	Senior Military Officer *(for SAR)*
SOEP	-	Sable Island Offshore Energy Project
SOLAS	-	Safety of Life at Sea
SOLGEN	-	Solicitor General of Canada
SORP	-	Aurora Student Operational Readiness Patrol
SOSUS	-	Sound Surveillance Underwater System
SRR	-	Search and Rescue Region
SRS	-	SAR Sub-region
TACOM	-	Tactical Command
TACON	-	Tactical Control
TAG	-	Threat Assessment Group
TB	-	Treasury Board
TC	-	Transport Canada
TSB	-	Canadian Transportation Accident Investigation and Safety Board
Type 11	-	Aurora patrol for surface surveillance
Type 9	-	Aurora patrol in support of DFO
UAV	-	Uninhabited air vehicle / Unmanned Autonomous Vehicle
UNCLOS	-	United Nations Convention on Law of the Sea
US	-	United States
USA	-	United States of America
USCGC	-	United States Coast Guard Cutter
USN	-	United States Navy
USV	-	Uninhabited surface vessel
UUV	-	Unmanned Untethered Vehicle
VACIS	-	Vehicle and Cargo Inspection Systems
VOI	-	Vessel of Interest
VOO	-	Vessel of Opportunity
VTMS	-	Vessel Traffic Management System
WESTREG	-	Western Canada Regulation

Chapter One
INTRODUCTION

1.1 Introduction

On April 6, 1995, twenty-eight days after the arrest of the fishing trawler *Estai* on the Grand Banks of Newfoundland, the *Toronto Sun* carried a provocative front page that displayed a periscope photograph of a Spanish stern trawler at close range. Published during the so-called "Turbot Crisis," a fisheries dispute between Canada and the European Union, the newspaper story conveyed the notion that Canadian submarines were enforcing Canada's contested jurisdiction over fish stocks on the continental shelf. This dispute brought fisheries and sovereignty issues into focus for Canadians. Moreover, the reporting of this unusual employment of a submarine was, for many Canadians, their first indication that their navy played an active role in the enforcement of domestic and international law in Canada's maritime zones and approaches.

Figure 1-1. Periscope Photo on Front Page
Source: *Toronto Sun* (Toronto), 6 April 1995.

This news story should not have come as a surprise to informed Canadians, given that the naval component of Canada's armed forces has always been active in the nation's maritime affairs. However, the manner by which naval forces contribute to oceans management has been largely misunderstood by both Canadian government and public alike. This research project will help advance the understanding of Canadian oceans management as it pertains to the use of naval forces for domestic purposes.

1.2 Aim of the Study

J.R.V. Prescott observes in *The Political Geography of the Oceans* that political geographers with interests in marine geography have tended to focus their research on five main themes. These are the role of the sea in influencing national characteristics, the role of the sea in determining national policies, the political significance of coastal features, landlocked states and their access to the sea, and Law of the Sea.[1] While this thesis touches on all but one of these topics, its principal thrust pertains to aspects in the execution of national maritime policy by the Government of Canada. Several government departments are mandated to deliver a variety of maritime programs; this thesis will concentrate on the naval component of the armed forces.

The aim of this thesis is to evaluate the current employment of the Canadian Navy in maritime enforcement within Canadian waters and their seaward approaches.[2] The basic thesis statement is that "the Canadian Navy has a key role in domestic maritime enforcement." The study will validate this thesis by determining whether there is a coherent government policy framework within which the Navy forms an integral part and, by both qualitative and quantitative measures, how the Navy contributes to domestic maritime

---

[1] J.R.V. Prescott, *The Political Geography of the Oceans*, (London: David & Charles, 1975), 13.
[2] In 1968, the *Canadian Forces Reorganization Act* dissolved the Canadian Army, Royal Canadian Navy and Royal Canadian Air Force. In their stead, the Act created a single armed Service called the "Canadian Armed Forces." Thereafter, the former army, navy and air force were referred to as the "land, sea and air elements." The descriptor "Armed" was dropped later from the Service's title; it is now referred to as the "Canadian Forces." Over time, the land, sea and air elements reintroduced, unofficially, the terms army, navy and air force. For simplicity in this thesis, the sea element of the Canadian Forces will be referred to as the "Canadian Navy."

enforcement through its compilation of whole of government maritime domain awareness analyses and patrol activities. The second research supposition is that employment of naval forces in a maritime enforcement role is of value to the Canadian Navy. In pursuing these two main avenues of inquiry, several additional objectives will be met, such as determining whether the pattern of enforcement activities changes with proximity to international or Exclusive Economic Zone (EEZ) boundaries, and whether sea patrols by naval ships are an effective use of assets.

1.3 Geography versus Political Science

This research was undertaken from a marine geography perspective. While there is a strong political geography thrust to the study, it is not a political science dissertation. During the conduct of the research, there was continual tension between the geographical and political elements, primarily because most of the literature and verbal debate pertaining to sovereignty, security, and enforcement originates from within the political realm. Moreover, any discussion of naval roles tends to gravitate towards the use of sea power for expeditionary military and diplomatic purposes rather than constabulary functions. This thesis deviates from this more common focus of sea power, and concentrates on its less frequently discussed role in non-defence applications.

1.4 Scope of Study and Study Area

The task of evaluating in detail every contribution made by the Canadian Navy to the federal government would be beyond the limits of this thesis. Thus, the research has been constrained to an examination of relevant elements of federal policy that deal with national security and sovereignty protection, and both a quantitative and geographical assessment of the principal activities undertaken by the Navy to support these policy aims.

Of the three oceans that delimit Canada, the Atlantic had been foremost in the country's history and development, largely because Canada was settled by Europeans from east to west. While its role in trade, commerce, resource development, and security is widely acknowledged, the increasing importance to

Canada of the Pacific and Arctic, other two oceans, cannot be discounted. The economic and geopolitical importance of the Pacific coast is growing. Canada's ties to other nations of the Pacific Rim have become even closer through more open immigration policies over the past 30 years that have encouraged larger numbers of immigrants to make Canada their home. Trade in the Pacific region has increased significantly since the 1970s, and Vancouver now ranks as Canada's busiest port.

Global warming is expected to accelerate the opening up of the last Canadian frontier, the Arctic. In the past the waters of the Arctic Archipelago have seen little use for sea borne commercial traffic due to the harshness of the environment, particularly during the long winter months when most of the bays and straits are blocked by sea ice. Analysts predict that, as average annual temperatures increase making safe navigation more viable, the Northwest Passage will become a desirable commercial conduit and will provide better access to the substantial hydrocarbon deposits in the Beaufort Sea, the MacKenzie Delta, the Svendurp Basin, and the Baffin Bay region.[3]

It had been intended to carry out this study from a national perspective, that is to say, to include the Pacific and Arctic regions as well as the Atlantic. However, as the project commenced, it quickly was determined that this would not be feasible in the time allotted. The sheer vastness of Canada made travel to the west and arctic coasts expensive and time-consuming, and made difficult the development of a network of contacts from whom the primary data would be derived. Although the marine geography of each region is different, the relationship of the Navy to the public and private sectors in each region is essentially the same. Accordingly, the observations made in the Atlantic are largely applicable to other regions, except where differences that affect findings have been noted.

[3] The term "Northwest Passage" is no longer officially sanctioned by the Canadian government. Rather, officials refer to this feature simply as "Canadian Internal Waters."

Thus, the study area selected was the Atlantic region of Canada. This region is defined broadly as the provinces of Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland and Labrador and their associated coastal zones. For some defence tasks, such as search and rescue, the Navy has responsibility for operations as far west as 95 degrees west longitude, including the province of Quebec and the territories of Nunavut and the Northwest Territories, and these additional areas are included whenever a specific issue dictates.

1.5 The Structure of the Research

In order to evaluate Canadian naval employment in maritime enforcement, it was necessary to understand the marine geography of the study area, to identify the regulatory and policy framework extant in the region, and to examine the relationships between the responsible enforcement agencies in the context of their capabilities and limitations. This research formed the foundation upon which the thesis could be addressed. The second part was an evaluation or measurement, in a spatial context, of the manner by which the Navy exercised its enforcement mandate.

These two complementary parts are presented in a thesis comprised of several chapters. Chapter One outlines the philosophy and template of the project. Chapter Two explains the methods used to establish the context for the study, and the manner in which research problem was investigated. Chapter Three describes the marine geography of the Atlantic region with reference to physical and political boundaries, the location of ports, areas of shipping, oil and gas exploration, fishing and conservation areas, and search and rescue zones. The purpose of this background is to demonstrate both the complexity and the significance of the coastal zone to Atlantic Canada, and to place the remaining chapters of the thesis in proper context.

Chapter Four is an examination of national oceans policy, security policy, and defence policy. The chapter briefly describes how each policy theme developed in Canada, with the most recent policy documents receiving the most

detailed treatment. The objective of this section is to determine the congruence of the various elements of national policy in order to frame the Navy's participation in oceans management.

Chapter Five flows directly from the review of policy to the enabling statutes for each federal department that has a security or enforcement responsibility. This part of the thesis examines in greater detail the mandates and capabilities of selected departments with the aim of understanding the unique attributes of each department and what part that department plays in the overall constabulary framework of the federal government.

Chapter Six is a study of the security and oceans-related interaction between federal government departments at both the regional and national levels. This chapter examines the methods of informal and formal co-operation and collaboration through the various working group and committee structures and the flow of communications between departments. The purpose of this chapter is to understand how the various organs of the federal government deal with security and sovereignty issues on a proactive and reactive basis.

It is in Chapter Seven that the Navy's contribution to domestic maritime enforcement is articulated in both qualitative and quantitative terms. The main focus of this chapter is how the Navy collates various data and information from diverse sources to develop a snapshot or "recognized maritime picture" of what marine activities are being undertaken in Canada's maritime zones and approaches. Also examined is what the Navy provides in maritime surveillance capability in co-operation with other government departments.

Chapter Eight continues with an examination of the Navy's patrol and response efforts to support enforcement. The nature, scope and spatial distribution of search and rescue activities occupy the first part of the chapter. The investigation then shifts focus to naval fisheries patrol support to Fisheries and Oceans Canada with a view to portraying patterns of enforcement activity over a multi-year time frame.

Chapter Nine explores what benefit the Navy might derive from its participation in maritime enforcement efforts. The issue is examined first through a study that assesses the perceived deterrent value of naval fisheries patrols. This is followed by the results of a year-long media content analysis that evaluates the impact on public opinion of naval-related newstories. The third element of the chapter is an examination of the effect that deployment on naval fisheries patrols has on the combat readiness of Canadian warships.

Chapter Ten presents an analysis that suggests that the Canadian Navy could take on a greater role in domestic maritime enforcement. In addition the evolving state of Canada's marine security response system is discussed, with reference to the Navy's key function as both champion and enabler for a whole-of-government approach to this important task.

The final chapter, Chapter Eleven, presents the conclusions, and further research recommendations.

1.6 Significance of the Study

In an era of downsizing and budgetary constraint, maritime nations must allocate enforcement resources efficiently, particularly those nations with small or medium-sized fleets. This research will assist Canadian policy makers and the naval leadership with difficult choices regarding employment of naval forces in constabulary roles.

1.7 Previous Research

There is precious little in the literature that pertains directly to the Canadian Navy and its role in domestic maritime enforcement. The literature that addresses naval matters tends to do so as a subset of defence policy as it relates to national power. Its authors fall into three broad categories. The first are those analysts who study the concepts of maritime strategy in a general political context without reference to a specific region. Next are scholars who examine maritime power in the context of a particular country and the third group are the

few writers who narrow the discussion to how navies are implicated in sovereignty operations.

Moving beyond the age of sail into an era more that closely resembles our own, many would argue that any discussion of maritime power should commence with reference to Alfred Thayer Mahan, an American naval officer. In 1890, Mahan expressed his ideas on maritime strategy as *The Influence of Sea Power Upon History 1660-1783*, a book that garnered as much attention in Europe as it did at home in the United States. Mahan outlined the six principles that, in his assessment, contributed to a strong sea power. Four of these have clear linkages to geography. Mahan's six elements were: geographic position, more specifically access to sea lanes; physical features that are suitable for ports and harbours; territorial extent large enough to supply material wealth but not so large as to be indefensible; a population sufficiently large to man the nation's ships, a people of seafaring character; and finally, a government with the character to support naval policy.

Mahan believed that sea power's primary use was for the attainment of strategic goals established by a navy's government. Mahan understood the strategic importance of commerce and was the first to articulate accepted maritime strategic concepts such as command of the sea, sea control, sea denial, and the idea of a fleet-in-being. Mahan believed that a strong navy was one designed to fight and win in all-or-nothing engagements and on that point other respected strategists of the day such as Julian Stafford Corbett challenged him. Corbett placed more emphasis on manoeuvre and maintenance of what we now call sea lines of communication, and was less concerned with the big naval battle. Notwithstanding this criticism, in speaking of Mahan and his 1890 treatise, some writers suggest that "no other single person has so directly and profoundly influenced the theory of sea power and naval strategy.[4]"

---

[4] Margaret Sprout as quoted in Geoffrey Till, *Maritime Strategy in the Nuclear Age.* (London: MacMillan, 1982),p. 28.

Other strategic writers followed Mahan and Corbett, men with alternate viewpoints who formed the *Jeune École* that offered weaker powers a different maritime strategy and was characterised by its detailed prescriptions for the offensive use of naval forces to counter direct battle or blockade. The strategy that arose from this era was the concept of the *guerre de course* or merchant vessel raiding, which led to the use of convoys as a counter-tactic. This strategy was employed to great effect during both World Wars.

The maritime strategies above were expressed before the wane of the great empires when navies were maintained for imperial purposes, and the range of a shore-based cannon defined the extent of a nation's sovereignty to seaward. The concept of coastal state rights ascribed by a formal convention on law of the sea was at the very least a half a century away. Since then, modern naval analysts such as Richard Hill, Eric Grove, and Geoffrey Till have studied the strategic implications of the naval conflicts of the twentieth century. They have written extensively on how sea power is evolving through the age of nuclear power and weaponry into the future. The backdrop of their study is a global maritime environment in which the United Nations, the North Atlantic Treaty Organisation (NATO), and coalitions of nations play major roles in the management of international crises rather than the imperial powers of the past. Following Richard Hill's earlier works, Ken Booth in *Navies and Foreign Policy* expands the naval role beyond warfare to include a diplomatic role as well as coast-guard and nation building functions that he calls the "policing" role. This trinity of naval roles, linked by their use of the sea to carry out these roles, is commonly referred to now in international naval circles as "Booth's Triangle."[5]

The main effort of the writings to date has been dedicated to analysing the expeditionary aspect of sea power in the modern context, at the higher levels of the conflict spectrum. In addition, the works of Hill, Grove, Till, and Booth incorporate comment on naval force structure, i.e., types and capabilities of hulls

---

[5] See Ken Booth, *Navies and Foreign Policy.* (New York: Holmes and Meier, 1979); Geoffrey Till, *Maritime Strategy in the Nuclear Age.* (London: MacMillan, 1982); J.R. Hill, *Maritime Strategy for Medium Power Navies.* (Annapolis, MD: Naval Institute Press, 1986); Eric Grove,

and platforms, as well as weapons technologies available. Less has been written about the use of naval power at the lower end of the conflict spectrum, the policing or constabulary roles. One author, Michael Pugh, in *Policing the Seas: The Challenge of Good Governance*, suggests that navies should be implicated in fisheries protection, anti-smuggling operations, and anti-piracy activities as a constituent element of good governance of a nation's maritime jurisdiction.[6]

In Canada, the locus for the study of maritime strategy is the Centre for Foreign Policy Studies at Dalhousie University. The two senior Research Fellows at the Centre, Fred Crickard and Peter Haydon, have written prolifically about the role of the Canadian Navy in international and domestic affairs. In the early 1990s, Crickard led the Centre's independent Canada's Oceans Strategy Project that identified the long-term needs of a national marine policy, as well as an integrated strategy to protect the nation's vital maritime interests. Out of this study came an acknowledgement that surveillance and government "presence" would be essential tasks for protection of maritime sovereignty.[7] Working with Haydon and others, Crickard went on to develop an Integrated Maritime Enforcement model that identifies the tasks that coastal state must undertake to effectively govern its maritime domain. Crickard lists these functions as the management of marine resources, the protection and preservation of the marine environment, maintenance of maritime sovereignty, prevention of illegal activity, and regulating marine safety. Crickard categorised the maritime enforcement responses available to a coastal state as operational responses undertaken by navies and coast guards, as well as political, legal, and non-government responses.[8]

The Future of Sea Power (Annapolis, MD: Naval Institute Press, 1990).

[6] Michael Pugh, "Policing the Seas: The Challenge of Good Governance," In *The Role of European Naval Forces after the Cold War*, edited by G. de Nooy. (Netherlands: Kluwer Law International, 1996),106.

[7] Fred W. Crickard and Glen J. Herbert, *Canada's Oceans Strategies Project - The Atlantic: Final Report* (Halifax, NS: Dalhousie University, Centre for Foreign Policy Studies, 1997); Fred W.Crickard and Glen Herbert, "An Oceans Strategy for the Northwest Atlantic: Applications to Maritime Enforcement," In *Maritime Security Working Papers Number 7/8,* edited by E.L. Tummers. (Halifax, N.S.: Dalhousie University, December, 1997).

[8] Francois N. Bailet, Fred W. Crickard, and Glen J. Herbert, *Integrated Maritime Enforcement: A Handbook* (Halifax, NS: Dalhousie University, Centre for Foreign Policy Studies, 2000).

Haydon's writings have tended to focus on naval policy as a subset of defence policy, and the force structure of the navy in relation to tasks as set forth in policy. Haydon emphasises that for a coastal state to exercise sovereignty at sea, the nation must have the capacity to control the activities in waters under its maritime jurisdiction. Haydon points out that to have sea control over a body of water, the coastal state must know exactly who is using those waters and for what purpose. As well, he argues, an unequivocal expression of government authority in those waters must be maintained; and the government must be able to respond quickly and effectively to violations of the law or threats to national security.[9] Common throughout the analyses of both Crickard and Haydon is an emphasis on surveillance and integration of efforts between responsible departments, as well as a call to employ emerging technology to best advantage.

There is a similar body of work by Sam Bateman, Dick Sherwood, and Anthony Bergin through the Australian Defence Studies Centre, and associated with the University of Wollongong and the University of South Wales. These Australian defence fellows offer complementary analyses to those of Crickard and Haydon; indeed the similarities between Australia and Canada are striking in terms of geography, size of maritime zones, size of population, and structure of maritime forces. The Australian analysts echo the assertions made by the Canadian research fellows in terms of the tasks that nations must undertake to effectively govern their maritime domains as well as the nature of the responses available to the coastal state. Where there are differences they are attributable to the Australian legal and regulatory framework rather than divergence of opinion between the Australian and Canadian writers.[10]

---

[9] Peter T. Haydon, *Canadian Naval Future: A Necessary Long-Term Planning Framework*, IRPP Working Paper Number 2004-12, November 2004. p.9.

[10] See Sam Bateman, "Oceans Management Policy: Catalyst for Cooperation?" In *Oceans Management Policy: The Strategic Dimension: Wollongong Paper on Maritime Policy No. 1*, edited by Sam Bateman and Dick Sherwood. (Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1995); Sam Bateman, "Strategic Change and Naval Roles," In *Strategic Change and Naval Roles: Issues for a Medium Naval Power: Canberra Papers 102*, edited by Sam Bateman and Dick Sherwood. (Canberra: Strategic and Defence Studies Centre, The Australian National University, 1993); Sam Bateman and Eric Grove, "Maritime Enforcement in the Southern Ocean: Some Operational and Policy Considerations," In *Southern Ocean Fishing: Policy Challenges for Australia: Wollongong Paper on Maritime Policy No. 7*, edited by Sam Bateman and Donald R. Rothwell. (Wollongong, Australia: Centre for Maritime Policy,

In terms of graduate studies that pertain to the naval role in enforcement or sovereignty operations, there are three projects that warrant mention. In 1992, a Royal Navy officer, Lieutenant Commander Steven Haines presented his PhD thesis, *The Provision of Military Aid to Civil Authorities in Britain's Maritime Domain*. In the context of a post-UN Convention on Law of the Sea III environment in which there was widespread extension to maritime boundaries by many coastal states, Haines examined the process by which the United Kingdom's maritime jurisdiction was extended and how, concomitant with that process, Britain's civil authority was also extended seaward. Haines identified the doctrinal framework that permits British military forces to support civilian authorities within the United Kingdom, and related this regulatory basis to the maritime zones and approaches.

Haines reviewed the majority of marine security tasks, such as protection of offshore hydrocarbon installations, prevention of terrorist attacks, support to HM Customs, search and rescue, fisheries protection, and military aid to the civil power. Haines concluded that despite a significant amount of military assistance to the maritime community, particularly in terms of search and rescue and humanitarian relief, what little doctrine that existed in 1992 concerning military aid to civil authorities was biased towards requirements on land rather than what was needed at sea. Haines also observed that naval involvement in fisheries protection has always been regarded as a natural fit; indeed the Royal Navy continues to maintain a squadron of ships for the express purpose of fisheries protection. Haines noted also that naval support is appropriate in certain

---

University of Wollongong, 1998); Anthony Bergin, "Inter-Departmental Coordination: The Australian Experience." In *Managing and Protecting the Offshore Estate*, edited by Jack McCaffrie. (Canberra: Australian Defence Studies Centre, 1995); Dick Sherwood, "Implications for Naval Roles." In *Policing Australia's Offshore Zones: Problems and Prospects: Wollongong Paper on Maritime Policy No. 9*, edited by Doug MacKinnon and Dick Sherwood. (Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1997); Dick Sherwood, *The Navy and National Security: The Peacetime Dimension: Canberra Paper No. 109* (Canberra: Strategic and Defence Studies Centre, The Australian National University, 1994); Peter Briggs, "The ADF's Role in Policing the Offshore Zones." In *Policing Australia's Offshore Zones: Problems and Prospects: Wollongong Paper on Maritime Policy No. 9*, edited by Doug MacKinnon and Dick Sherwood. (Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1997).

circumstances for customs, salvage, and pollution control. In addition, he emphasized the significant contribution that the Royal Navy and Royal Air Force make to search and rescue around the British Isles.[11]

Brent Hobson's 1999 M.A. thesis, *New Solutions for Old Problems: Canadian Naval Support of Sovereignty: 1971-2000*, examined Canada's sovereignty support requirements and the policy developments that drove these requirements. His examination of the Navy's role was biased towards naval force structure, as well as the technologies available to Canadian naval forces such as radar, sonar, communications, and data management capabilities. He also examined interdepartmental co-operation through the lens of changes to Canadian oceans policy. Hobson concluded that the importance of protection of national sovereignty increased in the public's mind since the 1970s, and that although the government officially tasked the Navy with sovereignty protection as an official "role," with it came no reduction in extant naval tasks nor any appreciable increase in resources. Moreover, Hobson called into question the Government of Canada's true commitment to this policy, since it was not reflected in any defence structure review nor by increased defence procurement that could be linked to sovereignty protection. Hobson identified gains made in inter-departmental co-operation, but was disappointed that the technological advantage that the Navy possessed in comparison to other government departments (OGD) was not leveraged for greater effect in sovereignty operations. Hobson posited that the Navy's championing of increased used of emerging technologies such as High Frequency Surface Wave Radar, Radar Satellites, and wide area networks accessible by OGDs, would be one area in which the future of sovereignty support could result in demonstrated improvement.[12]

More recently, Andrew Forbes examined the Royal Australian Navy's (RAN) role in conducting sovereignty support operations in Australia's Exclusive

---

[11] Steven W. Haines, "The Provision of Military Aid to Civil Authorities in Britain's Maritime Domain." (Ph.D. dissertation, Aberdeen University, 1992).
[12] Brent A. Hobson, "New Solutions for Old Problems? Canadian Naval Support of Sovereignty:

Economic Zone in his 2001 M.P.A. project, *Protecting the National Interest: Naval Constabulary Operations in Australia's Exclusive Economic Zone*. In his paper, he compared the various policy documents that factored into protecting the sovereignty of Australian maritime zones, and re-stated the basic concepts of sea power and naval strategy articulated by earlier naval analysts. Forbes suggested that the Australian Defence Force contributes considerably more to coastal surveillance than is recognised by the Australian public and echoed Hobson's sentiments about the important role that a Navy plays in providing OGDs with access to sophisticated communications networks, intelligence data and assessment, and planning expertise. Forbes concluded that better integration between Australian oceans and defence policy was required, and that Australian maritime doctrine be linked to future force development. Forbes challenged the existing RAN force structure, noting that coastal surveillance requirements for patrol boats had not been assessed, but that the capacity of the RAN to undertake constabulary operations was affected by insufficient resources.[13]

What differentiates this thesis from the earlier work described above is that the research goes beyond a discussion of policy and strategy in the maritime context, and evaluates exactly what the Canadian Navy actually does to support domestic enforcement efforts and, just as important, where the Navy does it. Earlier works, for instance, cite their navies' contributions to fisheries protection in terms of the number of "sea days" provided by naval vessels, but analyse the sea day no further. However, this thesis will examine, for example, what the naval vessels did during those sea days assigned for fisheries support, where it was done, and whether it made any difference in terms of interdepartmental co-operation and effectiveness.

1971 - 2000." (M.A. dissertation, Dalhousie University, 1992).

[13] Andrew Forbes, "Protecting the National Interest: Naval Constabulary Operations in Australia's Exclusive Economic Zone." (M.P.A. project, Queen's University, 2001).

1.8 Effect of Terrorist Attacks on 11 September 2001

Since the Second World War, ocean governance in Canada had evolved in a relatively benign threat environment. While Canadian fisheries may have been susceptible to over-fishing or pollution of fish habitat, and smuggling of contraband and persons occurred on an ongoing basis, these were largely non-violent threats. Since the end of the Cold War, large co-ordinated attacks on continental North America by either state or non-state actors were considered highly unlikely. Maritime security was taken for granted by most Canadians, including those employed in the government ministries responsible for monitoring and enforcing Canada's sovereignty.

That dynamic changed with the terrorist attacks in New York City on 11 September 2001. Although the assault occurred on American soil, there were repercussions on both sides of the Canada/United States border. The lethargic Canadian government was poked out of its slumber and forced to address national security issues it had long ignored.

Why is this relevant? This research project was started in 1998, three years before the terrorist attacks in New York. Both the structure of Canadian government departments and the relationship among one another were different then. The events of 11 September brought about notable changes to the federal structure to address the heightened security threat. In some cases, entirely new departments were established, or morphed from one or two former organs of government. This thesis depicts existing structures and relationships that exist in 2006. Where significant change has occurred since 2001, it has been noted where relevant to this thesis.

1.9 Summary

This thesis takes a geographic approach to studying the role and contribution to domestic maritime enforcement by a nation's naval forces. Only a handful of other scholars have undertaken similar studies, and their studies examined the cases of foreign navies. This thesis contributes to knowledge by going beyond the mere discussion of policy and strategy, and undertakes a

spatial analysis of the enforcement effort to measure and evaluate the execution of oceans, security and defence policy. Moreover, this thesis does so in the uniquely Canadian maritime context.

The next chapter will outline how the research was structured to best determine what role the Canadian Navy plays a key role in domestic maritime enforcement in Canada, and whether this employment is of value to the Canadian Navy.

Chapter Two
RESEARCH METHODS

2.1 Overview of Research Plan

The overall objective of this thesis was to evaluate the employment of the Canadian Navy in a maritime enforcement role within Canadian waters and their seaward approaches. This research was intended to validate two suppositions. The first is that the Canadian Navy plays a key role in domestic maritime enforcement in Canada. The second is that employment of naval forces in an enforcement role is of value to the Canadian Navy.

There are many ways to approach such a research problem. The temptation is great to direct the research towards a comparative study among the navies of Canada and other like-minded democracies whose government fleets are of similar size and character. However, to adequately validate the two thesis suppositions, my approach to the research problem was to augment a policy framework assessment with a measurement and analysis of the operational results. In other words, this research has taken into account the mandate for enforcement that the Government of Canada has given to the Navy and, in turn, how the Navy executes that mandate.

Thus, this investigation was comprised of two main parts. They are:

a. an analysis of political and regulatory structures; and
b. an analysis of enforcement operations.

The first part is an examination of the policy and regulatory framework that governs the enforcement components of oceans management and national security in Canada. It is in this part that answers are found for the questions of what constitutes the defence department's role, what is maritime enforcement, and how does it relate to defence and security. Also addressed are the questions as to which departments and agencies have responsibilities for maritime enforcement and what is the expected contribution of the Navy in this regard.

The second part of the investigation is a determination of the Navy's contribution to domestic maritime enforcement, but pursued through the lens of marine geography, i.e., spatial analyses. What goes on in Canada's maritime zones, what are the patterns of marine traffic and activity, what resources are allocated for enforcement, and where the resources are focussed are the key questions that will be addressed. In addition, the second part will demonstrate the value that the Navy accrues from this type of employment.

The relationship between the Navy and other government departments is multi-layered and complex. Thus, investigation of the enforcement linkages alone is insufficient to provide an understanding of how the Navy contributes to both oceans management and national security. Accordingly, I considered that the Navy's role in the conduct of domestic operations was worthy of treatment on its own.

2.2 Thesis Structure

To evaluate the employment of the Canadian Navy in a maritime enforcement role within Canadian waters and their seaward approaches six key themes were explored. These themes are:

a. geographical description of study area;
b. policy and regulatory framework;
c. interdepartmental relationships in domestic operations;
d. naval contribution to maritime domain awareness;
e. naval contribution to patrol and response; and
f. value of naval enforcement activity.

2.3 Research Design

To investigate these six themes of inquiry, a variety of methods were incorporated in the research design. Literature reviews and interviews would address the first three themes. Researching archival sources for reconstruction of historical enforcement patrol activity would partially address the naval contribution to domain awareness and patrol themes. Gathering of primary data by survey, and a media content analysis would address the final theme. A

desktop computer geographic information system (GIS) was used for statistical analysis where appropriate, as well as for map analysis of the primary data.

2.3.1 Theme - Geographical Description of Study Area

The objective of this theme of inquiry was to demonstrate the dimensions of the physical features, distribution of marine and air transportation infrastructure, clusters of marine activity, patterns of movement, and economic impact of the sea on the study area. This theme allowed an understanding of the jurisdictional complexity and interdependence of the study area, and provided the marine geographical context for the thesis.

There were two methods employed to address this section. A literature review was conducted to enable a general description of the geographical study area. Additionally, a series of maps were developed to accompany and clarify the description. The key sources of map data were obtained from the offices of DFO, the DND Hydrographic Services Office (HSO), Transport Canada (TC), Maritime Air Component Atlantic (MAC(A)), Canada-Nova Scotia Offshore Petroleum Board (CNSOPB), Canada Newfoundland Offshore Petroleum Board (CNOPB), Joint Rescue Co-ordination Centre Halifax (JRCC), and Natural Resources Canada (NRCan). Table 2-1 lists the data sets acquired by the research for creation of the maps that addressed the marine geography of the study area.

2.3.2 Theme - Policy and Regulatory Framework

The objective of this theme is to understand from whence the mandate for naval support to maritime enforcement is derived. The use of maritime power is not confined to a single policy domain. Rather, oceans, security, and defence policies are all implicated by employment of naval forces. While the mandate for enforcement may be prescribed as strategic-level policy objectives, the execution of the mandate requires an operational-level regulatory framework to support it. This avenue of inquiry provides a comprehension of the evolution of the main policy areas that influence naval operations, and to understand where the Canadian Navy fits into the overall framework.

TABLE 2 - 1

DATA SETS REQUIRED TO ILLUSTRATE MARINE GEOGRAPHY OF STUDY AREA

Map intended to Show	Data set / Shapefile	Sources
Limits of total Canadian EEZ	Cdn EEZ co-ordinates	DFO, DND HSO, NRCan
Limits of CANLANT Area	CANLANT co-ordinates	DND HSO
Distribution of ports and ferries	Ports co-ordinates	Internet sources, TC
Distribution of airports	Runway co-ordinates	Internet sources, TC
MARLANT operational exercise areas	Exercise grid co-ords	DND HSO
Military patrol aircraft patrol areas	Air exercise grid co-ords	MAC(A), DND HSO
Limits of NAFO regulatory areas	NAFO grid co-ordinates	Internet sources, NAFO
DFO marine conservation areas	Area co-ordinates	DFO, NSOPB
Changes to VTMS for whale protection	VTMS co-ordinates	DFO, TC, Internet
Limits of Canadian lobster fishing areas	Area co-ordinates	DFO
Limits of Canadian crab fishing areas	Area co-ordinates	DFO
Distribution of submarine cables	Cable co-ordinates	Telecomms companies
Extent of past offshore drilling	Old well co-ordinates	CNSOPB, CNOPB
Current hydrocarbon drill rig locations	Drill Rig co-ordinates	JRCC, CNSOPB, CNOPB
Offshore Petroleum Boards Jurisdiction	Area co-ordinates	CNSOPB, CNOPB
Current parcels of oil & gas exploration	Land co-ordinates	CNSOPB, CNOPB
Limits of federal dept jurisdictions	Jurisdiction co-ordinates	Various federal depts
Boundaries of Halifax SAR Region	SRR co-ordinates	JRCC Halifax
Shipping areas served by VTMS	VTMS co-ordinates	DFO, TC, Internet
Areas of compulsory pilotage	Pilotage co-ordinates	Internet sources, TC
Common Data Sets for All Maps		
Canada/US border on landmass	Cdn/US border co-ords	DND HSO, NRCan
NB/NS provincial borders on landmass	NB/NS border co-ords	DND HSO, NRCan
QC/NB provincial borders on landmass	QC/NB border co-ords	DND HSO, NRCan
QC/NL provincial borders on landmass	QC/NB border co-ords	DND HSO, NRCan
Limits of Hague Line between Canada/US	Cdn/US border co-ords	DFO, DND HSO, NRCan
Limits of French EEZ in Canadian waters	French EEZ co-ords	DFO, DND HSO, NRCan
Limits of Cdn EEZ in study area	Cdn EEZ co-ordinates	DFO, DND HSO, NRCan
Limits of Cdn territorial sea in study area	Cdn TS co-ordinates	DFO, DND HSO, NRCan
1000 metre isobath	Isobath co-ordinates	DFO, DND HSO

To achieve this understanding, a literature review was undertaken to determine gaps, overlaps, and common themes in strategic-level policy that affect naval support to maritime security. This review also examined the mandates and operational capabilities of the federal departments and agencies that have responsibility for maritime affairs in Canada. The main source material was government policy documents, federal statutes, and government Internet sites. The aim of this facet of research was to identify direct and indirect links to maritime enforcement, and to explain the statutory relationships between government departments and agencies. This inclusion of this framework in this thesis was necessary since there is no Canadian equivalent to the UK Civil Services Handbook that would have satisfied the aim. Rather,

each Canadian department maintains its own Internet web-site that changes frequently, and no common standard exists as to the type of information or the level of detail to be found on these sites.[14]

To provide the spatial element to this analysis, a series of maps were designed to show the jurisdictional dimensions of each federal department that had a mandate for marine affairs. The data sets required for these maps were the same as those listed in the common data set section of Table 2-1, except for Fisheries and Oceans Canada. This department delimits its operational jurisdiction over water rather than using political boundaries over landmasses. Thus, DFO was contacted to obtain this particular data set.

2.3.3 Theme – Interdepartmental Relationships in Domestic Operations

The objective of this theme was to understand how the Navy and government departments interact and co-operate in domestic operations and maritime enforcement activities. This understanding requires knowledge of the levels of co-operation and the processes that departments employ to co-ordinate their operations. This avenue of inquiry provides a comprehension of both the evolution of interdepartmental operations as well as, an understanding of how the Canadian Navy contributes to the overall Government of Canada maritime security effort.

There were two methods employed to address this section. The first was a literature review of departmental standard operating procedures, operations plans, operations orders, as well as guidance documents such the Interdepartmental Concept of Maritime Operations and the Federal Emergency Response Plan. The minutes of national level interdepartmental working groups and committees were also requisitioned and reviewed.

The second method of data collection involved active participation, as a member, in Regional Director General level interdepartmental working groups

[14] Had there been a compendium that describes Canadian federal departmental mandates and statutory relationships, I would have referred to that rather than incorporate Chapter Five into this thesis.

and committees. This opportunity capitalised on the access afforded to me by my employment, and allowed an assessment to be made of real interdepartmental processes as opposed to theoretical ones. The assessment was derived from observations as a key participant in interdepartmental planning teams and working groups and, in particular, as the Chair of the Eastern Canada Interdepartmental Marine Operations Committee (ECIMOC), and as a member of the Nova Scotia Federal Council Security Committee. While I made a concerted effort to observe and describe the interdepartmental processes as objectively as I could, the potential for the perception of bias is unavoidable given my position as both committee member and Chair. However, I don't believe that this detracts from the overall thesis, since my observations form only a small component of the research, and the majority of my observations are corroborated by other sources.

2.3.4 Theme – Naval Contribution to Marine Domain Awareness

An understanding of what is happening and what is likely to happen in the maritime zones and approaches to a coastal state is known as "maritime domain awareness." The objective of this theme was to examine the elements that comprise maritime domain awareness. This theme provides an understanding by what means marine domain awareness is achieved, which departments and agencies contribute to this awareness, and to understand the Navy's role in this key element of marine security.

To achieve this objective, process mapping was undertaken to understand the components of marine domain awareness. This included determining the level of human activity in the maritime approaches, the manner and level of effort expended by federal departments to monitor this activity, and the spatial context of the monitoring effort.

Analysis focused on the federal government's maritime surveillance activities and, through this surveillance, identification of patterns of marine activity. There were several methods employed to achieve this aim. The first was a search for Government of Canada guidance on maritime surveillance. This was followed by a review of DND standard operating procedures,

surveillance plans, and operations orders. A process map was then created to chart the multi-agency surveillance process. In addition, in order to understand better the capabilities of Fisheries and Oceans contracted aircraft (Provincial Airlines Limited, or PAL), an observation ride was completed during a five-hour DFO surveillance flight over the Grand Banks of Newfoundland.

To evaluate the level of effort and spatial context of the federal government's maritime surveillance operations, the results of military and other government department (OGD) surveillance aircraft patrols for the year 2002 were reconstructed for analysis. The analysis consisted of three paths:

a. determination of patrol asset "presence" in Canada's maritime zones;
b. determination of patterns in marine activity in these zones; and
c. comparison of government presence to the marine activity.

The main contributors to government presence in Canada's maritime zones are military patrol aircraft, DFO/CCG patrol aircraft, naval vessels, and DFO/CCG vessels. The inherent speed of a patrol aircraft allows it to cover an area eight to twenty times more rapidly than the fastest government ship, and aircraft are tasked for surveillance patrols on every day of the year. Given the distinct advantage as surveillance platforms that aircraft have over ships, I decided to concentrate on reconstruction of surveillance aircraft patrols to evaluate the naval contribution to maritime domain awareness.

2.3.5 Theme – Naval Contribution to Patrol and Response

The objective of this theme was to ascertain how the Navy contributes to the patrol and response objectives in Canadian oceans management regime, and to gauge the magnitude of contribution in these activities. This theme provides the opportunity to quantify the level of direct support to maritime enforcement in Canada.

The patrol activities described in this section pertain to ship patrols in support of enforcement activities, as opposed to aircraft patrols in support of recognised maritime picture compilation identified the preceding section.

Specifically, this section will demonstrate the naval contribution to fisheries enforcement. The questions to be answered are who is fishing in Canadian and North Atlantic Fisheries Organisation (NAFO) waters, where do we conduct our patrols, and where are the gaps? Is the enforcement presence where it ought to be? In addition, search and rescue (SAR) is considered a response activity in the framework of maritime enforcement. The questions to be answered are what is the frequency and pattern of SAR incidents in the study area, do they change over time, and are SAR response assets based appropriately to respond to these incidents.

To evaluate the level of effort and spatial context of the Navy's contribution to patrol and response, data from enforcement activities that the Navy is required to support, whether by federal statute or through departmental Memoranda of Understanding were assessed. Thus, the main avenues for inquiry of this sub-theme are support to search and rescue and support to fisheries enforcement.

To demonstrate the naval contribution to fisheries enforcement four aspects of enforcement support in Canada's maritime zones and approaches were assessed. These were:

a. location and pattern of fishing activity;
b. pattern of naval vessel presence and level of effort in enforcement support;
c. pattern and level of effort of inspection of fishing vessels; and
d. relative contribution of naval vessels to the inspection effort.

There were two methods employed to address this section. The first was a literature review of DND and Canadian Coast Guard standard operating procedures, operations plans, operations orders, as well as guidance documents such the National SAR Manual. A literature review would also be performed of DND and DFO Memoranda of Understanding, standard operating procedures for both departments, and operations orders for fisheries patrols. In addition, the literature was analysed to ascertain the evolution of the naval role

in fisheries enforcement to understand how that might affect current operations. The second method for both search and rescue and naval fisheries patrol support was a spatial analysis of SAR incident data and naval fisheries patrols. The aim was to demonstrate the distribution of all SAR incidents over a 5-year period and naval fisheries patrols on Canada's Atlantic coast for the past two decades.

2.3.6 Theme - Value of Naval Enforcement Activity

While the analysis of naval operations for maritime security in Canada in both geographic and political contexts contributes to knowledge, another purpose of this research is to determine whether or not the employment of naval forces in a maritime enforcement role is of value to the Canadian Navy. This assessment is important within government circles since there continues to be pressure to cease routine naval support to enforcement on the basis that it is an inefficient use of maritime combat power.

To determine the value of enforcement support to the naval institution, three elements were examined. These elements were the deterrent value of naval fisheries patrols, the value of naval enforcement activities on public opinion, and the effect that fisheries support has on the combat readiness of warships, i.e. the ability of ships to complete combat readiness training on patrol.

Of particular interest to the Navy is whether or not patrols by naval vessels deter illegal activities in the areas of Canadian maritime jurisdiction. The Navy's obligation through Memoranda of Understanding with other government departments requires that it spend several millions of dollars per year on fuel and other costs associated with fisheries and counter-narcotic patrols. If the deterrent effect is minimal, then the expenditure is questionable, and a review of those Memoranda of Understanding might be warranted.

The area in which the Navy conducts patrols and assumes surveillance responsibility is vast, encompassing the coastal zones of all of the Atlantic provinces, Québec, and the northern administrative regions of Nunavut and the

Northwest Territories as far west as 95 degrees west longitude.[15] The distribution of operations, exercises, and patrols in this geographic area is not uniform; naval operations tend to be concentrated in the military operating areas in the vicinity of Halifax, and naval fisheries patrols are normally conducted in support of the Newfoundland Region of DFO. Accordingly, a survey of fishermen from all the Atlantic provinces would be needed to determine the perception of naval presence in the region.

In addition to the overall deterrent value of naval fisheries patrols, one should suppose that support to government departments, including fisheries patrols, provides inherent value to the Navy from the perspective of public opinion. Anecdotally, federal departments receive "good press" for their efforts to control international and domestic harvesting activities in fisheries that have experienced severe decline in the past two decades, as well as stemming the flow of illegal narcotics into Canada.

An additional method employed in this section to determine the value of naval enforcement activity, from a public perception point of view, was to answer the question, "How is the Canadian Navy portrayed in its support of other government department operations, in particular, fisheries enforcement?" To measure public opinion a media content analysis was employed.

One of oft-cited reasons for the reluctance of senior naval officers to embrace warship participation in constabulary operations is that this type of employment offers limited training value, and diminishes combats skills and war-fighting capability of naval crews. In order to examine this supposition with the aim of determining the training value of naval fisheries patrols, a means to measure the value of maritime enforcement to the Navy as a training impact needed to be developed.

In generating maritime forces that are ready for a variety of naval operations, the Navy maintains a series of combat readiness requirements for

[15] The Commander, Maritime Forces Atlantic routinely quotes 3.7 million square kilometres as

each class of vessel. These readiness requirements vary depending upon where the vessel is in its operational cycle and what the operations plan dictates. These formalized requirements are known as Combat Readiness Requirements (CRRs), and are reported to higher headquarters on a monthly basis. Commanding Officers of naval vessels are required to train their crews and to achieve the CRRs appropriate to the crew's status in the Navy's tiered readiness structure.

To measure the impact that naval fisheries patrols have on the ability of warship Commanding Officers to train their crews to assigned levels of operational readiness, monthly combat readiness statistics were acquired. These statistics were reported to Maritime Forces Atlantic Headquarters (MARLANT) by each warship in the Atlantic region. The combat readiness statistics of twenty-nine warships that conducted fisheries patrols over a three-year period were examined. The combat readiness levels achieved during each fisheries patrol were compared against those reported by the same ships in the months leading up to and after they had undertaken fisheries patrols. This comparison permitted an assessment of the effect, either an increase or decline in the combat readiness levels, due to employment of the ships on single vessel fisheries patrols. In addition, the combat readiness levels of three warships that had participated in multi-ship international exercises were compared against the single ship fisheries patrol statistics to determine whether single ship operations, such as fisheries patrols, affected the attainment of higher combat readiness levels.

2.4 Data Collection and Analysis

A major component of monitoring and maritime enforcement is the development of maritime domain awareness. There are two components to establishing this situational awareness: obtaining an accurate "snapshot" of the marine traffic and activity, and obtaining the intelligence, indicators and warnings of influences that could cause the marine activity to change. The Canadian Navy is involved in both of these aspects; multiple departments and

---

his maritime area of responsibility, an area that extends well beyond the Canadian EEZ.

agencies are involved in providing the intelligence and indicators, but the Navy is the *de facto* lead department for piecing together the "snapshot" or what is known in security circles as the "recognised maritime picture."

There are multiple inputs into development of the recognised maritime picture. However, the security classification associated with the source and nature of the some of the sensors constrained what could be used in this project to establish patterns of maritime activity. So, for the purposes of data collection, the input that provided the best level of fidelity of data in an unclassified format was the vessel detection data derived from PAL surveillance flights. The data from PAL sources was used as the primary means to conduct the spatial analysis of marine activity in the Canadian maritime zones.

2.4.1 Surveillance Data Collection

There are several methods one can use to determine government "presence" in the maritime zones and approaches. The most accurate is to obtain frequent geographic positions of a patrol asset while it is on patrol, and then determine the relative amount of time the patrol platform spent in a particular area. If the actual "track" of the aircraft is known, a GIS can be used to determine the density of geographic positions in the patrol area. This density plot, or surface model, will provide an indication of relative presence of a patrol asset in a given area. The sum of multiple patrols provides a good indicator of presence for that type of ship or aircraft.

Surveillance data was obtained for CP-140 Aurora maritime patrol aircraft presence (DND) in addition to contracted PAL aircraft patrol presence (DFO). These two types of aircraft provide virtually the complete aerial surveillance picture off of Canada's coasts.[16] Unfortunately, data for individual track reconstruction was not available for either aircraft type prior to 2003; however, the geographic limits of their individual patrol boxes were known. For consistency of comparison, data for both aircraft types were collected for the

[16] This assertion excludes a limited amount of space-based data not releasable for this thesis.

year 2002. Data collected for determination of patterns of marine activity included the mission designator, date, time, geographic co-ordinates of the patrol area, as well as information on vessels detected during each patrol, such as geographic co-ordinates, vessel name, nationality, and type of vessel.

For the CP-140 Aurora patrols, since individual track data was not available for data collection, recording was completed for the predefined sector in which the CP-140 flew then, once the desired period of inquiry had passed, the number of times aircraft flew missions in a given sector was determined.[17] The totals for each sector provided an indication of the relative presence of the patrol aircraft for a given period. Data was collected from the Maritime Operations Centre, which provided post-mission summaries, known within the North Atlantic Treaty Organisation (NATO) as Forms Purple. Each message contained the length of the patrol in hours, the overall geographic area assigned for the patrol, the percentage of the area that the air crew estimated that they'd actually patrolled, and a summary of the contacts detected. The data was then collated in an Excel spreadsheet.

The data collection method for PAL aircraft presence was the same as that used to measure the presence element of military surveillance aircraft. Since the PAL aircraft used the NAFO grid for surveillance planning and reporting, the totals for each NAFO area would provide an indication of the relative presence of the PAL patrol aircraft for a given period. All mission data extracted from PAL surveillance flights are stored in the Surveillance Information System (SIS) server at PAL's facility in St. John's, NL. The Department of National Defence has access to this server, and is able to view mission profiles and tracks, but they are stored as raster images. Figures 2-1 provides an example of the type of raster image available.

[17] Maps of the predetermined patrol grids are found in Figures 3-7 and 3-8 of Chapter Three.

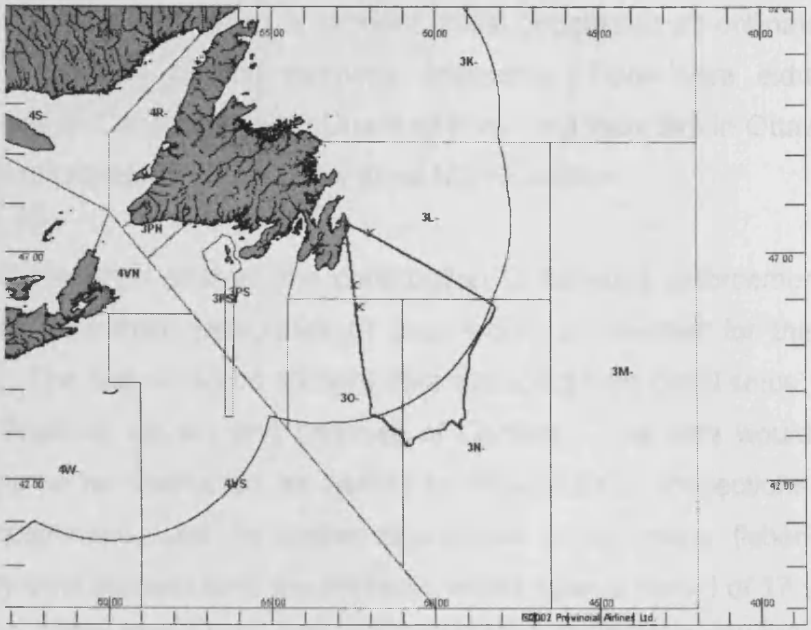


Figure 2-1. PAL Flight Summary – Newfoundland Region Example
Source: DFO/PAL Surveillance Information Server, 2002.

Data for PAL flight summaries were again obtained from the Maritime Operations Centre. The data collected included the mission designator, date, and the NAFO area and sub-divisions that the aircraft flew over during the patrol for each post-mission summary, which was then collated to an MS Excel spreadsheet.

For the spatial analysis of SAR incident data, the aim was to demonstrate the distribution of all SAR incidents over a 5-year period from 1998 through to 2002. This period was chosen for two reasons. The first reason was that this data would be more easily obtained than data from other years. Prior to 1998, the Canadian Coast Guard had compiled their SAR data in a different format and the conversion would have been cumbersome and unreliable. The second reason was that I needed to analyse the SAR data over multiple years in order to determine whether the data collected for 2002 (the year chosen for comparison with other elements of this thesis) was normal or abnormal.

Through the Halifax Joint Rescue and Co-ordination Centre, Halifax region search and rescue incident data were collected for incident date,

incident type, classification of incident, initial geographic co-ordinates, incident cause, and type of unit requiring assistance. Data were extracted from databases in Canadian Coast Guard national headquarters in Ottawa, and the data were provided in the form of three MS Excel files.

In order to analyze the contribution to fisheries enforcement over two decades, two main categories of data would be needed for this theme of inquiry. The first would be archival data extracted from naval ships' logs stored at the National Library and Archives of Canada. This data would allow ship tracks to be reconstructed, as well as to obtain data on inspections of vessels, SAR responses, and helicopter operations during naval fisheries patrols. Primary data derived from the Archives would span a period of 17 years, 1980 to 1997. From these logs data were collected on distance steamed per day, dates of departure and arrival at various ports, and the number of inspections carried out. The data also included the number of minutes that the embarked helicopter had flown, the names of any violators arrested, and whether or not the ship had been involved in a search and rescue activity during the fisheries patrol.

In addition, to analyze recent fisheries patrols, data was acquired from ships employed in fisheries enforcement support from 1999 to 2003. Positional information, fuel consumption, detection ranges of vessels, location of inspections and other related information were collected for the more recent patrols.

Ships' logs were also requested from the Archives to identify vessels that had conducted other OGD operations. There were an insufficient number of logs to warrant further effort.

2.4.2 Observation

During the study period, I was employed as the Commanding Officer of a Canadian *Halifax*-class frigate for 18 months. My ship was tasked to conduct a fisheries patrol on the Grand Banks from 2 to 19 June 2000. This task provided me with first-hand experience in the conduct of a naval fisheries

patrol, and allowed me to place data collected by other frigates in their proper context.

Additionally, midway during the June 2000 fisheries patrol, there was an opportunity for me to embark aboard a contracted DFO aircraft for a surveillance mission over the 3NO NAFO area of the Grand Banks.[18] This provided me with an understanding of how PAL surveillance missions were planned, and the process by which surveillance data were recorded by PAL and shared among stakeholders.

2.4.3 Map Analysis

Two types of maps were developed for this thesis. The first were those maps that were purely illustrative in nature that did not depict data derived from primary sources. These maps illustrated departmental jurisdictions, locations of transportation nodes, etc. They are found mainly in Chapter Three, and augment the description of the marine geography of the study area. The second type of map presented data obtained from primary sources, usually point data. These maps depicted naval vessel tracks, marine traffic densities, the locations of search and rescue incidents, and other similar information.

2.4.3.1 Standard Map Format and Attributes

The coverage of the "standard" map was set 40 degrees to 52 degrees North latitude and from 43 degrees to 68 degrees West longitude, reflecting the dimensions of the study area.[19] Map coverage further north would be necessary for some specific maps, and would be dealt with on a case-by-case basis. The ArcGIS projection selected was conic; the central meridian was minus 54.9077890356 degrees, and the mathematical relationship was equidistant.[20] This Equidistance Conic projection was chosen to preserve the scale along the meridians and is the preferred projection for measuring distances.

---

[18] DFO/PAL Mission # BKNF00-180 aboard aircraft C-GMWR on 10 June 2000. Flight time 4.9 hours.
[19] The reasons for these limits are explained in the next chapter.
[20] In most GIS software, west longitudes and southern latitudes are entered as negative numbers.

Standard map attributes were applied. The landmass displayed would be the Atlantic region provinces and, as required, the Arctic landmasses. All maps would display the Canadian Exclusive Economic Zone and Canadian Territorial Sea, 200 nautical miles and 12 nautical miles respectively. As well, the Canada/United States maritime boundary, also known as the Hague Line, and the Canada/France maritime boundary would be included. The land borders between Canada and the United States, New Brunswick and Nova Scotia, Quebec and New Brunswick, and Quebec and Labrador would be displayed on all maps.

Standard maps would display the 1000 metre isobath. The main reason for inclusion of the 1000 metre isobath is that where this isobath intersects a line representing the EEZ, the Nose and the Tail of the Grand Banks are clearly delineated. These are two key geo-political features of the Canadian maritime approaches. Standard maps would display latitude and longitude delimited every five degrees, and the ellipsoid reference system would be the World Geodetic System of 1984 (WGS 84).

Once in receipt of the data sets required to create the maps, geographic co-ordinates were converted into degrees/minutes/seconds format in MS Excel. Table 2-2 depicts the potential input that the researcher might receive for the position 47 degrees 38 minutes 42 seconds North latitude 50 degrees 42 minutes 51 seconds West longitude. A conversion utility program was used to render all map data sets into a format that would allow the spatial data to be processed, stored, and managed by the ArcView or ArcGIS software.

TABLE 2 – 2

DIVERSE CO-ORDINATE FORMATS BY SOURCE

Source	Latitude	Longitude	Remarks
SIS Server	N4738.71	W5042.85	Format used for reports created by contracted DFO surveillance aircraft; accessed from DFO Surveillance Information System (SIS) website
GCCS	N4738.71	W5042.85	Format used for military Global Command and Control System (GCCS); data captured from warship onboard command and control system
GPS	N47°38.710	W050°42.851	One format of electronic GPS data capture. Used by scientific community, some ships
GPS	47.645000	–50.714167	One format of electronic GPS data capture. Used by scientific community, some ships. This is the format required by ArcGIS
Manual record	47.38.71	50.42.85	Although researcher requested co-ordinates to be recorded as degrees, minutes, seconds some ships provided data in degrees, minutes, tenths of minutes
Manual record	47.38.71N	50.42.85W	Although researcher requested co-ordinates to be recorded as degrees, minutes, seconds some ships provided data in degrees, minutes, tenths of minutes with N and W added
Manual record	4738.71	5042.85	Although researcher requested co-ordinates to be recorded as degrees, minutes, seconds some ships provided data in degrees, minutes, tenths of minutes minus period after degrees
Manual record	N4738.71	W5042.85	Although researcher requested co-ordinates to be recorded as degrees, minutes, seconds some ships provided data in degrees, minutes, tenths of minutes minus period after degrees with N and W added
Form Purple	4737N1	5042W1	Format used for post-mission formatted reports created by military CP-140 aircraft; Data recorded as degrees and whole minutes with check sums (all digits summed to confirm message was not garbled in transmission)

With the assistance of a GIS technician at the Hydrographic Services Office, data sets were entered in the GIS to render the required maps. Where necessary, the ArcView Spatial Analyst module was used to measure the relative densities of the point data, and a surface model or choropleth map was rendered that depicted the densities in varying orders of magnitude.

For surveillance analysis, maps were created that depicted the NAFO areas and military sectors most frequently patrolled by PAL and CP-140 aircraft. For the spatial analysis of SAR incident data, surface model maps were created for the period of 1999-2002 inclusive, depicting individual months, as well as seasons, and by category of SAR incident, i.e., marine, air, or humanitarian nature of the case.

For the spatial aspects of naval fisheries support, maps of the track and radar coverage of a typical frigate and a minor warship on fisheries patrols would provide an appreciation of the large area that naval vessels are capable of patrolling and surveying. Individual tracks of naval ships over a 23 year period, as well as showing the cumulative tracks of naval ships during the periods 1980 to 1997 and 1999 to 2003, would depict the patterns of patrol, and would indicate the relative enforcement presence of naval vessels. Mapping would permit the spatial analysis of the cumulative inspections by government vessels from 1990 to 2002 in comparison to just those inspections carried out by DND vessels.

In the case of naval fisheries patrols during the period 1980 to 1997, ship's logs were reviewed at the National Library and Archives, and geographic positions of the ship were extracted from the logs for every watch and entered into an Excel file. The ships' positional information was converted into decimal degrees and the files, and using an ArcView extension called X-Tools, the point data was converted into line data that represented individual ship tracks. Data from recent naval fisheries patrols, i.e., 1999 to 2003, were collected to record ships' positions every hour, weather data, and vessel contact logs that identified the ranges at which marine traffic contacts were detected by the ships' radars or other sensors. The patrol report survey also collated the fuel expended, costs, detection ranges of contacts encountered for each patrol. Examples of these templates and summaries can be found at Appendices L and M.

2.4.3.2 Map Analysis Methods

Comparison of marine activity and government presence was performed by a visual comparison of maps with a view to identify patterns of marine activity by month and season against the backdrop of patrol effort for the entire year.

A proximity analysis was performed on the boarding/inspection data sets using the Nearest Feature Extension. This tool was used to calculate the distance in kilometres from each fisheries boarding/inspection to the Canadian EEZ, both inside and outside the line. A similar proximity analysis was performed using the same tool to calculate the distance from each fisheries boarding/inspection to DND and DFO airfields and vessel home ports. The purpose of these two analyses was to determine whether there is a correlation between where fishing vessels are inspected, and proximity to a maritime political boundary, as well as to patrol bases.

2.4.4 Media Content Analysis

In order to determine whether naval enforcement activities provide inherent value to the Navy from the perspective of public opinion, the Navy's senior public affairs officer was consulted, and it was discovered that the Director General Public Affairs (DGPA) conducts, on almost an annual basis, periodic nation-wide public polling. Although during the mid-1990s, the poll sought Canadians' opinions on the use of its military to assist police forces, prevent illegal fishing, prevent illegal drugs and immigrants from entering Canada, the majority of questions in DGPA's "Canadians on Defence" public opinion poll were not germane to this thesis. Moreover, DGPA advised that the DND-commissioned poll questions would remain broad in their outlook, and could not be adjusted to obtain the public's perspective for a single Service such as the Navy. Rather, the DGPA instrument could only be used for the questions pertaining to the Canadian Forces as a whole.[21]

[21] Canada. Department of National Defence, Canadians on Defence: Public Perception of the Canadian Forces. December 1999. <http://dgpa-dgap.mil.ca/DGPA/Polling/jan99/eng/dec_e_99.htm> (16 February 2002).

It seemed necessary to answer the question, "How does media portray the Canadian Navy in its support of other government department operations, in particular, fisheries enforcement?" Accordingly, a media content analysis was designed to gauge the public relations value of naval fisheries patrols. A qualitative media content analysis was conducted largely because one of the aims of this part of the study was to determine the bias of data being collected. A qualitative media content analysis of print media would facilitate the coding of data based on an interpretation of the data by the collector.

News articles from 1993 and later were reviewed because it was in 1993 that DGPA established the means to capture electronic newspaper stories from over 30 Canadian newspapers, and made them available to anyone with a DND-networked computer. This made it possible to monitor a large number of electronic print stories and all articles relating to "naval" stories could be identified easily since the network system used "key words" to categorize the electronic articles. The complete list of DGPA's "naval" key words is found at Appendix Q.

It is common in media content analysis to include many data sources, such as visual presentation, diversity of sources, photos, amount of area on the page devoted to the article in addition the story theme and author.[22] However, this additional data was not considered relevant to the study. Thus, media content analysis focused on naval stories and whether or not they could be interpreted as depicting the Navy in a positive, negative or neutral light.

A pilot project was conducted for a 3-month period, whereby through the DGPA web-site relevant stories were rated according to theme and categorized as to whether the print media portrayed the Canadian Navy in a positive, negative, or neutral light. The result identified 10 themes and, if they related to support to other government departments, an additional sub-theme. These findings provided the basis for the media content analysis. The front page of the template employed for the media content analysis is found at Appendix Q.

A period of one year, 2002, was chosen for analysis since a year would provide a sufficient number of articles and would incorporate a full cycle of seasons. This aspect was considered important, since many of the articles that would have a naval angle, such as search and rescue or relating to fisheries openings and closings, would have a seasonal element to them. A one-year media content analysis would then be compared to the annual DGPA public opinion poll.

To avoid bias in interpretation of the data, a single reviewer compiled all the data to assess the positive, negative or neutral bias for each media piece. Instructions were provided on how to interpret the stories, categorization criteria, and which stories to include. Since the DGPA web-site includes only complete news stories as they appeared in on-line newspapers, no instructions were necessary for non-inclusion from extraneous matter (i.e., paid advertising, promotional references, sports stories, or stories from gossip columns or blogs).

The reviewer was instructed to include articles about the Canadian Forces or Minister of National Defence, and articles referring to the Armed Forces that had any potential application to the Navy (i.e., articles about pay raises, quality of life in the military, stress of military life). Additionally, any reference to the Sea King helicopters, Aurora aircraft and search and rescue were counted as naval assets for the purposes of this media content analysis. Only the first appearance of a syndicated story would be counted, rather than multiple counts as the same story by the same author might appear in other newspapers.

The reviewer was also instructed to exclude stories in French, as well as television or radio items, and letters to the editor, and any stories relating to the Army or Air Force that had no direct or indirect bearing on the Navy. The analysis did not include stories about the Merchant Marine, or articles about the

[22] Stacy Lynch and Limor Peer, Analyzing Newspaper Content: A How-To Guide (Chicago:

Minister of National Defence or Prime Minister if the articles were political in content with scant reference to the Navy.

2.4.4.1 Media Content Analysis Criteria

The reviewer was given instructions to guide in determining whether an article had a specific bias. The criteria for classifying an article as having a positive bias were those that leave a general feeling or impression that the military is good. Almost anything to do with Op APOLLO would be a positive article because the public was very supportive of the military right after 9/11.[23] Often there are articles that criticize politicians and the government but are supportive of how the Canadian Forces is managing despite them. "People" stories are usually positive, as are articles about search and rescue in which the military aids individuals in distress.

The criteria for an article with a negative bias were those articles that left a general feeling or impression that the military was out of touch with reality as to how its people were actually doing. Such an article might suggest that the military did "too little too late" or tried to be politically correct in what it said. The article might contain examples that refuted the "official word" or made the military look inept, incompetent or that it was merely paying lip service, or trying to hide something. Articles that portrayed the Navy as negligent or wasteful of taxpayers money, or had the appearance of not checking fully into circumstances were considered negatively biased, as were those that portrayed the military as not an organisation at which anyone would want to work.

Neutrally biased articles were those that were flat, unemotional, purely factual articles. While an article might have been very negative where the government is concerned, such as with the Sea King helicopter replacement programme, the article neither praised nor condemned the military.

Northwestern University, Readership Institute, 2002), 4.

[23] Operation APOLLO was the name given to the deployment of Canadian Forces to Afghanistan and the Persian Gulf in response to the terrorist attacks of 9/11.

2.4.5 Data Sources

In the design of this project, ship and aircraft activity data were collected from various sources for patrol reconstruction purposes, and for measurement of the naval contribution to maritime surveillance. The major source of these data was the Navy's Maritime Operations Centre in Halifax. Three other significant sources were the National Library and Archives in Ottawa, the Halifax Joint Rescue Co-ordination Centre, and the Conservation and Protection Branch of DFO Newfoundland Region.

There are many formats and data collection methods used to report governmental operations both within the region and to the strategic headquarters. In reconstructing the operational activities of surveillance aircraft and ship patrols, the next few paragraphs will discuss the sources available and their utility for reconstruction of events.

CP-140 Aurora aircraft surveillance flights were reconstructed from post-mission summary messages (NATO Form Purple) generated by flight aircraft crews in 2002 and sent electronically for review and archiving to the Maritime Air Component Commander (Atlantic), who is co-located with the Maritime Operations Centre. Forms Purple are submitted immediately upon return to base of the aircraft, and are the most accurate flight summaries available. The patrol area and vessel detection data from the Forms Purple was extracted by the Maritime Operations Centre staff, and provided for reconstruction in MS Excel spreadsheets. Table G-1 at Appendix G contains the dates and areas patrolled by CP-140 Aurora aircraft in 2002.

Contracted PAL aircraft surveillance flights were reconstructed from post-mission reports archived in the DFO/PAL Surveillance Information System server. Mission reports are saved to disk from the aircraft computer, then downloaded to the shore-based server immediately upon return to base of the aircraft. These are the most accurate summaries of PAL flight activity available. In 2002, selected staff at the Maritime Operations Centre in Halifax had dial-up access to the server, and could download the mission summaries generated by flight aircraft crews, and convert the data MS Excel spreadsheets. I obtained

access to the PAL patrol area and vessel detection data from the Maritime Operations Centre staff. Table H-1 at Appendix H contains the dates and areas patrolled by PAL surveillance aircraft under contract for fisheries enforcement in 2002.

Search and rescue data were obtained from the national headquarters of the Canadian Coast Guard by placing a request through the Officer-in-Charge of the Halifax Joint Rescue Co-ordination Centre (JRCC). The data were provided to the JRCC in data MS Excel format. I obtained the data, which included incident date, type, classification, geographic co-ordinates, and cause from the OIC JRCC.

Reconstruction of ship patrol activities proved to be more complicated. In order to compare fisheries patrol support over an extended period, I needed to locate sources that would indicate when and where ships conducted patrols, and what occurred on the patrols. As a naval officer, I was aware of a variety of reporting mechanisms and investigated each to determine their utility. Operations schedules, individual ship "flex" schedules, electronic ship activity reports, annual historical reports, post-deployment reports, and Officer-of-the-Watch notebooks were investigated as possible sources of data. I quickly determined that none of these sources were either reliable in terms of consistency of submission, or in completeness of content.[24]

Ship's logs proved to be the best primary source for reconstruction of pre-1998 ship operations available to me. Ship's logs form the official legal record of the ship's activities, and are sent to the National Library and Archives of Canada for storage. At the Archives, I was able to draw the logs of ships that had completed fisheries patrols, and could manually record one geographic position for every four hour block of time, or "watch" as it's referred to by mariners. In addition to the positional information, the ship's logs provided

[24] For a detailed description of the accuracy and reliability of naval ship activity source material see Canada. Department of National Defence, *Ship activity related data and information in the age of business planning and performance measurement*, by LCdr P. L. Massel and Jay Adamson, Operational Research Division Ottawa DOR(CAM) Research Note RN 9815, December 1998.

data pertaining to length of patrols, duration of patrols, contacts detected per patrol, boardings and arrests per patrol, helicopter hours flown, and search and rescue incidents on patrol. In total, 84 naval fisheries patrols were reconstructed from ship's logs. A list of the vessels and dates of the patrols is found at Appendix K.

While ship's logs were the only reliable means of reconstructing naval fisheries patrols prior to the 1998 commencement of this project, I was able to acquire data from ships employed in fisheries enforcement support from 1999 to 2003. Electronic templates were provided to naval ship Commanding Officers for the collection of positional information, fuel consumption, detection ranges of vessels, location of inspections and other related information. In total, 33 naval fisheries or preventative patrols were reconstructed from templates supplied by the researcher. A list of vessel patrols and dates is found at Appendix K.

In all, during the project I determined that 214 fisheries patrols had been conducted in the Atlantic between 1980 and 2003. Of these, I was able to reconstruct and map the tracks of 119 vessel patrols. Although I was unable to obtain positional data on 83 of the 214 patrols, I was able, nevertheless, to use some data, such as boarding and inspection data, to further the research. No data, other than the dates of the patrols, was available for 14 of the 214 patrols.

Ship's logs and templates provided data on boardings and inspections carried out during naval fisheries patrols, but the data from some of these sources were found to be incomplete. Better quality data were extracted from the Canadian Fisheries Information Network System (CFINS) by the staff of Conservation and Protection Branch, DFO Region Newfoundland. These data were provided in the form of a MS Excel file covering the years 1990 to 2002, and contained the date, time, name of patrol vessel, name of vessel inspected, nationality, and geographic position of the vessel.

The data sources used to create the standard map format, e.g. political boundaries, isobaths, etc and illustrative maps in the next chapter were identified earlier in at Table 2-1 in section 2.3.1.

2.5 Quality Control

To ensure that the data collection method accurately represented aircraft patrol surveillance, actual track data for some of the long-range patrol aircraft were acquired for the period covering 2003. It was not possible to obtain this data for all military patrol aircraft, only those that had avionics packages designed for anti-submarine warfare. Thus although more accurate, as three of the aircraft in the operational squadrons were not fitted with the necessary avionics package, and they performed roughly half of the surveillance missions, sufficient data would not be available. However, what the track data could provide a measure of "ground truth" for the aircrews' estimates of sector coverage.

To determine the relative accuracy of the aircrews' estimates of sector coverage, 32 missions over a two-month period were obtained for the CP-140 tracks at the end of 2003. The tracks were reconstructed and mapped against the patrol grid to determine whether the aircraft had actually covered the percentage of the sectors claimed in the formatted message summaries.

In virtually every case, it was determined that the radar of the aircraft had covered more area than the aircrew had estimated. In less than five percent of the missions the aircraft did not achieve the coverage estimated by the aircrew. This confirmed that the method of counting of sectors covered by patrol aircraft provided a reasonable representation of CP-140 presence in the Atlantic region.

Figure 2-2 is a post-flight reconstruction of a CP-140 patrol that shows the "ground truth" of the planned 4-sided patrol area versus the coverage achieved. This graphic is based on the actual aircraft track and two values for radar range, 150 nautical miles and 75 nautical miles (the radar horizons for the

search and identification altitudes normally flown by that type of aircraft.) The figure also records all of the vessel contacts detected during that flight.

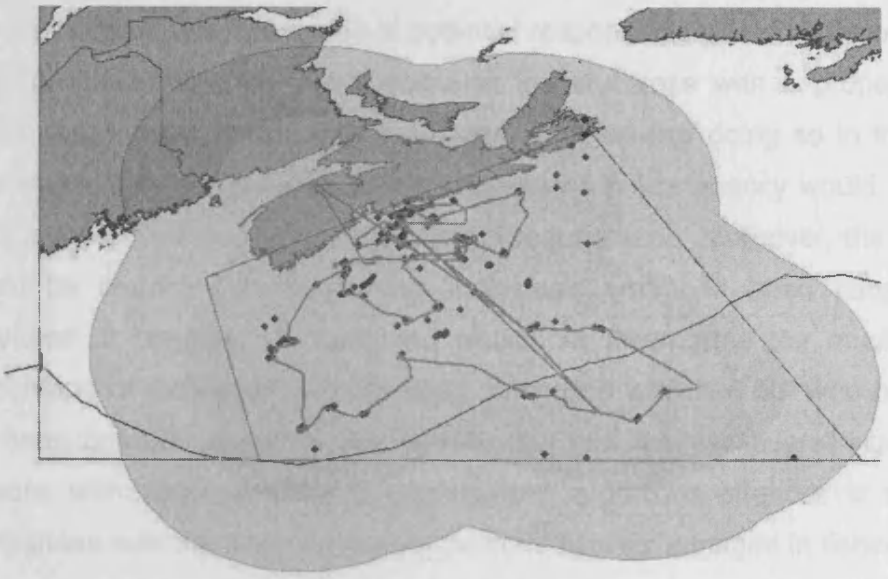


Figure 2-2. Patrol Reconstruction - CP-140 Aircraft 26 September 2002
Source: Derived from data supplied by Maritime Air Component Commander (Atlantic).

In late 2003, DFO agreed to allow PAL to generate an automatic ASCII flight summary of aircraft track and contact data. As with the CP-140, GIS software was used to plot almost all PAL tracks. The same 75 nautical mile buffer was applied to both sides of the tracks, which were then mapped against the NAFO grid to determine what percentage of the NAFO areas the aircraft had actually covered. Again in virtually every case, the radar coverage of the PAL aircraft was equal to or greater than 90 percent the sub-division counted. This confirmed that counting the NAFO areas by sub-division that were overflown by patrol aircraft provided a reasonable representation of PAL surveillance aircraft presence in the Atlantic region.

2.6 Interviews and Questionnaire Design, Format and Distribution

To address the issue of the value of the deterrent effect, views of those individuals who spend considerable time on the water in the Canadian maritime zones was sought. Through interviews and a questionnaire format, individuals could comment upon the perceived presence of maritime patrol ships and aircraft, as well as the observed effect of this presence on those who would be

inclined break the law. Ideally, the best respondents would be commercial fishermen, drug smugglers, and illegal migrants.

The latter two categories of potential respondents would be problematic. First, it would be virtually impossible to identify those with a propensity to violate these laws, unless they had been apprehended doing so in the past. This was simply out of the question because no police agency would conduct such a search without a *bona fide* judicial requirement. Moreover, the sample would be restricted to only those individuals who had been caught and convicted of breaking the law, and would not incorporate the much larger percentage of individuals who conduct smuggling activities but who have not yet been brought to justice. Additionally, the fact that the overall number of persons with convictions for smuggling and migrations offences is small in comparison with the large number of persons actively engaged in fishing in the Atlantic provinces. There was a much better chance of success at obtaining credible data from the population of fishers, and there would be no need to handle sensitive personal information with potential legal implications. Accordingly, fishermen were used as respondents for survey purposes.[25]

To prepare the survey, an interview was conducted with a former commercial fisherman in the Atlantic region.[26] During this interview, the types of questions were clarified, and aided in forming the language and jargon for subsequent interviews and questionnaire development. It also reinforced the mistrusting nature of all levels of government and, in particular DFO who fishermen blame for mismanaging fish stocks in the region. Moreover, the survey sought information about a potentially sensitive issue, the nature of law breaking. Some of the respondents would have violated various regulations, or knew those who had, and might be uncomfortable being questioned about the subject. To better attract participation, the questionnaire and its administration should not be perceived, and was thus clarified, as being associated with any

[25] The term "fishermen" refers to persons of both genders who engage in fishing as a means of support. The researcher found, in the Atlantic region at least, that females who fished for a living genuinely chafed at the more gender-neutral term "fishers" favoured by government and academia.

arm of the federal or provincial government. For this reason the survey was designed to avoid directly seeking responses about the Navy in isolation. Rather, the questionnaire posed questions concerning the maritime patrol activities of all appropriate federal departments in a comparative manner, and the naval data was culled as required.

2.6.1 Questionnaire Development

The questionnaire was designed to measure the deterrent effect of government enforcement assets in the Atlantic region. This survey required the development of a suitable instrument, the sampling of an appropriate population, and the analysis of the responses. The questionnaire design incorporated a section from which information about the person's fishing experience and geographical areas fished, as well as a section designed to elicit responses that made comparisons between surveillance ships and aircraft. In addition, some questions attempted to determine what percentage of time fishermen felt that fisheries and law enforcement officers were aboard naval vessels and aircraft. The questionnaire can be found in Appendix P.

The questionnaire was reviewed by an experienced social researcher with extensive experience in survey methods and practice within the Department of National Defence. The deterrence questionnaire was also reviewed by a representative audience for content, a fisherman who represented the local union and also one representing the Fishermen's Association. The intent was to confirm that the questions and language would make sense to the sample population, and that the questionnaire was structured and formatted in a manner that would encourage completion of the instrument.

Given the vastness of the study area, it would was not possible to administer the questionnaire "face-to-face" at all Atlantic region fisheries associations. Accordingly, a decision was made to distribute through a mail

[26] Lieutenant(N) Colin Warman, interview by author, 12 March 2001, Fifth Maritime Operations Group, Halifax, Nova Scotia.

survey.[27] An initial mailing was sent to the fisheries associations that represented those fishers who fished the inshore and offshore waters. Those associations representing the aquaculture industry, or those whose members fished internal or fresh waters were excluded from the initial mailing. Also excluded were all aboriginal fisheries associations due to ongoing tensions over aboriginal fishery rights in various locations throughout the Maritime provinces. It was felt that the questionnaire might be construed by the natives as an intrusion in an ongoing struggle between natives, government officials, and scientists.

The questionnaire also included an introduction covering the key "who, what , where, when, how" information as well as a self-addressed stamped envelope for a return card on which the association could agree or decline to participate. The return card also prompted the association for the number of questionnaire copies that it would require. In order to distance the research from any arm of government, all survey correspondence was directed to a post office box address. The initial mailing consisted of letters to 76 fisheries associations.

2.6.2 Questionnaire Responses

Responses to the survey were as follows: five envelopes were returned as undeliverable due to unknown addresses or persons; the majority of return cards, 84 percent, simply were not returned. Of the fisheries associations that had responded favourably to the letter of introduction, the numbers of questionnaires requested was low relative to number of members in an association, i.e., five copies desired for a membership of over 100 fishermen.

In all 144 questionnaires were mailed out to 14 different fisheries associations; 51 questionnaires were returned completed. The final questionnaire response was 35.4 percent.

---

[27] George Gray and Neil Guppy, *Successful Surveys: Research Methods and Practice* (Toronto: Harcourt, 1999),134. To increase the chance that a sample population will participate

2.7 Stakeholder Involvement

The issue of release of military data was handled by obtaining verbal permission in January 1999 from the Commander Maritime Forces Atlantic, Rear-Admiral Duncan Miller, for release of the data, and for the use of naval ship and air assets for survey and data collection purposes. Subsequently, continuation of the research was obtained from each incoming authority, listed in Table R-1 of Appendix R. All military data released to me passed through the Maritime Operations Centre, Maritime Air Component (Atlantic) or the commanding officers of ships tasked with data collection. These officers and their staffs provided a "sober second-look" to ensure that no sensitive data made it to the public domain.

2.8 Role of Researcher, Opportunities and Constraints

Through my employment as a senior serving naval officer, positions, appointments and delegated authorities provided me access to maritime operations in general, and security and enforcement operations in particular. Duties related to surveillance and enforcement operations included an appointment to command of a high-readiness frigate that conducted a fisheries patrol in 2000. This operation allowed direct experience first-hand the process from start to finish. In addition, from 2001 to 2003, I held the appointment of senior operations officer for Maritime Forces Atlantic.[28] In this capacity, I had direct dealings with national headquarters at the strategic level, and was the region's senior military liaison officer to other government departments; and was responsible for the planning and co-ordination of domestic operations, fisheries patrols, and counter-drug operations. Moreover, the appointment furnished direct access to the local federal departments' Regional Directors General, and entailed membership on various high-level interdepartmental committees. In 2003, I chaired the Eastern Canada Interdepartmental Marine Operations Committee.

---

in a mail survey, it is important to create a good impression and make a survey easy to complete.

[28] The official title of the position is Assistant Chief of Staff - Plans and Operations.

In my capacity as a warship commanding officer, and subsequent senior operations appointment, the conduct of day-to-day business allowed immediate insight into the issues that encompassed both the planning and execution of maritime enforcement operations, and to understand the perspectives of the other agencies involved.

2.8.1 Constraints

Certain factors had an impact on research design. In order to conduct spatial analyses to understand the Navy's effect in establishing maritime domain awareness, geographic data would need to be collected from airborne, ship-borne, and shore-based surveillance platforms and sensors conducting current operations, as well as defence and other government department databases. This data includes geographic co-ordinates of government patrol assets as well as those of marine traffic, and potentially "vessels of interest." Depending upon its nature, some of the data is "sensitive" and restricted for release. Moreover, in the case of data originating from other government departments, some data is statute-restricted for release to third-parties for purposes other than those for which the data were collected.

The sensitivity of classified data usually decreases with the passage of time, particularly data that associates government assets with current geographic positions. To mitigate any reticence to release data, the research design called for the use of data that would be at least five years old at the time of thesis submission. By using this older data, no argument could be sustained that current enforcement operations might be compromised once the thesis entered the public realm.

Research design was affected by concern over release of data in another way. While analysis of the full spectrum of constabulary activities would provide as complete a picture of maritime enforcement as one could hope for, some operations are significantly more dangerous than others. Counter-narcotics operations are particularly sensitive; the police have a need to protect their "sources" and, as far as civil authorities are concerned, the less

that is in the public domain about the capabilities of enforcement agencies and patterns of drug interdiction, the better.

While the loss of life associated with the drug trade is well recognised, few people are murdered over fish. In light of this, the research design focused on fisheries enforcement and the naval contribution to this facet of sovereignty protection, in the expectation that federal authorities would be more willing to release fisheries data than they would counter-narcotics information.

This was not entirely the case. Significant bureaucratic resistance was also encountered to release of fisheries data directly from the former Scotia/Fundy Region Fisheries and Oceans Canada office in Halifax. However, through participation in various oceans management forums and working groups, contacts were established to acquire a decade's worth of boarding and inspection data from the Fisheries and Oceans Canada national database. This data was provided by Mr. Tilman Bieger, Director of Enforcement Operations, Conservation and Protection Branch, DFO Newfoundland Region. The data was released for academic purposes without caveat.

In order to derive the best appreciation of marine traffic, clusters of activity, and patrol patterns, the design intent was to analyse data that covered a common period of investigation. However, the diverse sources from which the data were obtained were unable provide data that encapsulated a common time frame. While some of the data sets span up to twenty years, 2002 was the sole year that was common to almost all of the data sets available for analysis.

In reconstruction of the naval vessel fisheries patrols from 1980 to 2003, some ship's logs could not be located for the year 1997 and none could be located for 1998. This was because the logs had only just been received in the National Library and Archives, and had not been entered into the Archives holdings for viewing by researchers. Consequently, I was unable to reconstruct naval fisheries patrols during that period, and therefore unable to analyse a complete, unbroken 20-year period of patrol activity.

In calculating the "presence" of a patrol aircraft, if the actual track of the aircraft is known, a geographic information system can be used to determine the density of geographic positions in the patrol area. This density plot will provide an indication of relative presence of a patrol asset in a given area. However, prior to 2003, there was no means to obtain track data for CP-140 or PAL aircraft, either by electronic data capture, or by manual recording of positional information by aircrew. In order to evaluate surveillance presence in 2002, I was limited to assessing presence based upon the predefined sector in which the CP-140 or PAL flew then, once the desired period of inquiry had passed, adding up the number of times aircraft flew missions in a given sector.[29] The totals for each sector would provide an indication of the relative presence of the patrol aircraft for a given period.

This method was less accurate than conducting a density calculation on track positions. Some of the sectors in the patrol grid cover vast areas. In this method if an aircraft enters the sector, the entire sector is counted for presence, even though the aircraft may have favoured only a small portion of the area. Notwithstanding this limitation, considering the timeframe limitations for data collection, this method was employed as the best means available to me, and I assess that it sufficiently addresses the concept of enforcement presence.

With regard to survey data collection, although much simpler and less expensive to administer, a survey of fishermen belonging to one or two fisheries associations representing a small geographic area would not reflect the spatial implications of a large area with few patrol assets. If the only fishermen surveyed were those that fished in an area that the Navy rarely patrolled, the results of the survey would be skewed. As such, ideally a poll of fishermen distributed throughout huge area of study would have been desired. Regrettably, conditions for completion of the survey would be less controlled, i.e. the researcher would not be present, and there would be potential for fewer

[29] Maps of the predetermined patrol grids are found in Figures 3-7 and 3-8 of Chapter Three.

respondents; however, these disadvantages would be offset by the greater credibility resulting from a wider distribution of respondents within the entire study area.

A limitation of the Nearest Feature Extension tool for ArcGIS software is that it cannot measure distances point to point; the tool is constrained to measuring line to point. Due to the limitations of this extension, the patrol bases point theme data were reformatted manually to line theme data by placing short lines over the point data at a zero scale for accuracy. This manual method introduced error into the distances of less than one kilometre. This error would not be considered significant for the purposes of this thesis.

This chapter has explained the framework upon which the research was carried out. The next chapter will provide a geographical description of the study area that will provide the necessary context for interpretation of the remaining material in the thesis.

Chapter Three
MARINE GEOGRAPHY OF ATLANTIC CANADA

3.1 Introduction

The purpose of this chapter is to examine the marine geography of the Atlantic region so that the remainder of this thesis can be placed in proper context. By understanding the region's dimensions, patterns of movement, disposition of population and clusters of various activities, the reader will better appreciate the complexity of the enforcement challenge in the study area.

This chapter opens with a general description of Atlantic Canada, with reference to the national situation when this comparison lends better insight to the subject. This is followed by a review of Canada's maritime zones as they are founded in international Law of the Sea and domestic statute. Included is a short synopsis of Canada's maritime boundary disputes. The chapter then narrows its focus to six key ocean-use sectors in Atlantic Canada, with a discussion of their economic importance to the study area. Critical infrastructure will be treated in each of the sectors rather than as a separate category.[30]

3.2 General Description of Atlantic Canada

As stated in Chapter One, the study area is the Atlantic region of Canada that comprises the four provinces of Nova Scotia, New Brunswick, Prince Edward Island (PEI) and Newfoundland and Labrador. However, reference will be made to the province of Quebec, and Nunavut and the Northwest Territories when their inclusion provides a greater context to a specific aspect to the marine geography of the east coast of Canada.

The main study area is that between 40 degrees to 52 degrees North latitude and 43 degrees to 68 degrees West longitude. The limits of this area were chosen because the majority of the Atlantic region's population resides within these boundaries, and the associated human marine activity is concentrated in this area. Beyond these limits, the land is sparsely populated to

[30] Critical infrastructure are those elements whose loss or damage would have a significant strategic impact on the nation as a whole, or an impact on the regional economy and population.

the north, and search and rescue is largely the only marine activity relevant to this thesis. Beyond these limits to the west, the area becomes less a maritime region than the hub of Canada's industrial base and centre of population.

As can be seen in Figure 3-1, the Atlantic region shares, in addition to the relatively short land border between New Brunswick and the United States, maritime territorial boundaries with the United States to the south, and Denmark (Greenland) to the north. The eastern frontier is the Atlantic Ocean, in which Canada and France share maritime boundaries at the islands of Saint Pierre and Miquelon, a few kilometres south of Newfoundland. The rest of Canada lies to the west along land and sea provincial borders.

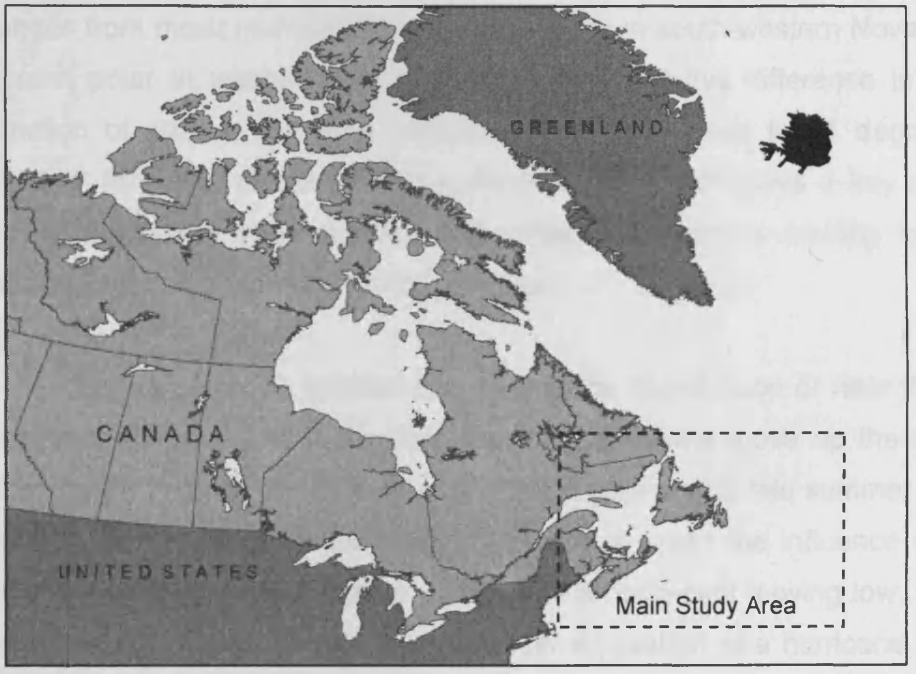


Figure 3-1. Atlantic Canada and Main Study Area

The physical geography of the Atlantic region is greatly varied. With the exception of Prince Edward Island, each province has abrupt transitions from gentle rolling lowlands to locally high uplands. A large block of mountains is found in northern New Brunswick and another in western Newfoundland. A linear belt of uplands stretches across southern New Brunswick and northern mainland Nova Scotia. Another linear block runs easterly through northern mainland Nova Scotia and into the Cape Breton highlands. These upland blocks

serve to divide the region not only physically but psychologically as well. The isolated valleys provide areas where general subsistence farming can be carried out, although the Annapolis Valley in Nova Scotia and the south-eastern portion of New Brunswick have well developed agriculture activities. Most of the interior regions of the area are heavily forested with the eastern boreal forest dominating in Newfoundland and Labrador and the rest of the region having mixed, predominantly softwood forests. Prince Edward Island stands unique in the Atlantic region, being mostly low-lying and rolling with well-developed soils supporting a high level of commercial agriculture.[31]

The climate of the region is as varied as the physical geography and often geography is the main determinant to climatic differences. The climate zone ranges from moist mid-latitude with mild winters in south-western Nova Scotia to almost polar in western Newfoundland. Much of this difference is simply a function of size as the area stretches from 43 degrees to 51 degrees north latitude; however, proximity to the Atlantic Ocean also plays a key part. The ocean moderates both summer and winter temperatures making for warmer winters and cooler summers near the coast.

The mid-latitude location also means the region is on or near the path of seasonal storms. The hurricanes and tropical storms move up the coast and bring heavy rains to the eastern part of the region during late summer and early autumn. In the winter, while most of Canada is under the influence of a polar high, the Atlantic region is often affected by a north-east moving low, called the "Nor-Easter". These storms are the winter equivalent of a hurricane and bring with them high winds and heavy snowfall. In the early summer months the warmer air temperatures combined with cold sea surface temperatures mean fog is a regular occurrence with an average of 122 days at the Halifax Airport, 80 days at Sydney, Nova Scotia and 206 days at Argentia, Newfoundland. Another marine hazard, sea ice, is found predominantly in the Gulf of St Lawrence and Straits of Belle Isle area, as well as off the east coast of Newfoundland.

[31] Ian Brookes, "The Physical Geography of the Atlantic Provinces," *in Studies in Canadian Geography: The Atlantic Provinces,* ed. Alan G. MacPherson (Toronto: University of Toronto Press, 1972), 14-28.

Hurricanes, "Nor-Easters", fog and sea ice all combine to make maritime operations difficult in the Atlantic region.[32]

3.2.1 Population

The Atlantic region has a small population, less than eight percent of the total Canadian population if Quebec is not taken into consideration.[33] Most of the population lives in the coastal periphery and is more rural than in the rest of Canada. Halifax, with a population of 359,183 persons, is the only major metropolis in the region, and was ranked 13th among major census metropolitan areas (CMA) in Canada in 2001. St John's, Newfoundland, ranked 19th among Canadian CMAs during the same census, is only half the population of Halifax.[34] Labrador is to a large extent, unpopulated.

The population is ethnically much more homogeneous than the rest of modern day Canada and, is in many ways, reflective of an old style Canada. Atlantic Canada's population is overwhelmingly Anglophone of British origins with roots in the region going back several generations. Of the four Atlantic Provinces, only New Brunswick has a significant Francophone representation, roughly one third of its overall population.

There is very little immigration (except in Halifax) in comparison to rest of Canada. Outside Halifax, there is slow to negligible population growth.

---

[32] Canada, Environment Canada, *Climate of the Atlantic Provinces*, 23 December 2004 <http://atlantic-web1.ns.ec.gc.ca/climatecentre/default.asp?lang=En&n=7D7FE131-0> (8 August 2006).

[33] Eighty percent of the Quebec population, approximately 5 million people, lives far from the sea in urban areas that make up six Census Metropolitan Areas (CMA). These are Montreal, Quebec City, Gatineau, Saguenay, Sherbrooke, and Trois-Rivieres. See Gouvernement du Québec, *Vivre au Québec: La population*, 11 April 2005 <http://www.immigration-quebec.gouv.qc.ca/ vivrequebec/section9/9_1-fr.htm> (17 April 2006).

[34] Canada, Statistics Canada, *Population and Dwelling Counts for Census Metropolitan Areas and Census Agglomerations, 2001 and 1996 Censuses - 100% Data* , 16 July 2002 <http://www12. statcan.ca/english/census01/products/standard/popdwell/Table-CMA-N.cfm?T=1&SR=126&S= 3&O=D5> (8 August 2006).

TABLE 3-1

POPULATION – ATLANTIC CANADA

	2005 Population[35]	Percent English[36]	Percent French	Percent Aboriginal
Canada	**32,270,500**	58.5	22.6	3.3
Atlantic Canada	9,942,100	71.4	24.4	1.9
Nfld and Labrador	516,000	98.3	0.4	3.6
Nova Scotia	937,900	92.7	3.8	1.9
New Brunswick	752,000	64.6	32.8	2.3
Prince Edward Island	138,100	93.8	4.2	1.0
Quebec	7,598,100	7.8	80.8	1.1

Sources: Canada, Statistics Canada, *Population by year, by province and territory*, 2006; Canada, Statistics Canada, *2001 Census*.

3.2.2 Critical Infrastructure – Road, Rail and Air

To frame the later discussion of marine transportation, it is worth understanding how the critical infrastructure of road and rail transportation renders the marine link strategic to Canadian security and by extension, its economy.

The Atlantic region is connected by road to the rest of Canada and to the United States. Perhaps the single most significant part of the road network lies outside of the region in Quebec in the vicinity of Rivière-du-Loup, since this represents the only road connection to the rest of Canada that lies wholly within the Canadian landmass. Similarly the Trans-Canada Highway near the Nova Scotia/New Brunswick border is the only road connection linking Nova Scotia, and by extension Newfoundland, with the rest of Canada. The Canso Causeway is the only land link for Nova Scotia's Cape Breton Island (and by extension Newfoundland) with the Canadian mainland.

[35] Figures for 2005 are estimates. The last official census took place in May 2006 with data not yet available. See Canada, Statistics Canada, *Population by year, by province and territory*, 3 March 2006 <http://www40.statcan.ca/l01/cst01/demo02.htm> (16 April 2006).

[36] Percentages are taken from 2001 census. See Canada, Statistics Canada, *Population by mother tongue, by province and territory (2001 Census)*, 27 January 2005 <http://www40.statcan.ca/l01/cst01/demo11a.htm> (16 April 2006); Canada, Statistics Canada, *Aboriginal Identity Population, 2001 Counts, for Canada, Provinces and Territories -20% Sample Data*, 13 August 2004 <http://www12.statcan.ca/english/census01/products/highlight/Aboriginal/Page.cfm?Lang=E&Geo=PR&View=1a&Table=1&StartRec=1&Sort=2&B1=Counts01&B2=Total > (16 April 2006).

The Halifax-Montréal rail link is the principal rail line in the region. It is strategically important for the movement of cargo between east coast ports and the interior of Canada and the United States. There is no longer a rail network in PEI or Newfoundland.

The principal commercial airports in the region are shown in Figure 3-2. Halifax acts as the regional hub. Its closure by bad weather, a rather frequent occurrence, has significant short-term impacts.

Of national strategic important are the Air Traffic Control (ATC) Centres at Moncton and Gander. Moncton has responsibility for the control of all air traffic in Eastern Canada. Gander controls all trans-Atlantic travel between North America and Europe. Some 1,000 flights carrying approximately 200,000 passengers pass though the Gander ATC region every day.

There are also four major military airfields in the region whose aircraft are primarily concerned with maritime operations. 12 Wing, located at Shearwater, Nova Scotia is the location of the air squadrons that provide the anti-submarine helicopter support to the Atlantic naval fleet. 14 Wing, located at Greenwood, Nova Scotia, is the largest Air Force Wing on the east coast, and provides fixed-wing air support for maritime operations, mainly CP-140 Aurora long-range maritime patrol aircraft, although several Cormorant helicopters are based there for search and rescue. Other search and rescue helicopters are located at the third air base, 9 Wing in Gander Newfoundland. The last airfield in the region is 5 Wing located at Goose Bay Labrador. This airbase was established to allow low-level flight training over the Arctic barrens, but in recent years as allied Air Forces have reduced training flights at this base it has diminished in significance. German and Italian Air Forces continue to operate from Goose Bay, but the only Canadian unit is a squadron of CH-124 Griffon helicopters that are used for emergencies at the base or in a secondary role of local search and rescue.[37]

[37] Canada, Department of National Defence, *Welcome to 5 Wing*, 29 March 2006 <http://www.airforce.forces.gc.ca/5wing/about_us/index_e.asp> (8 August 2006).

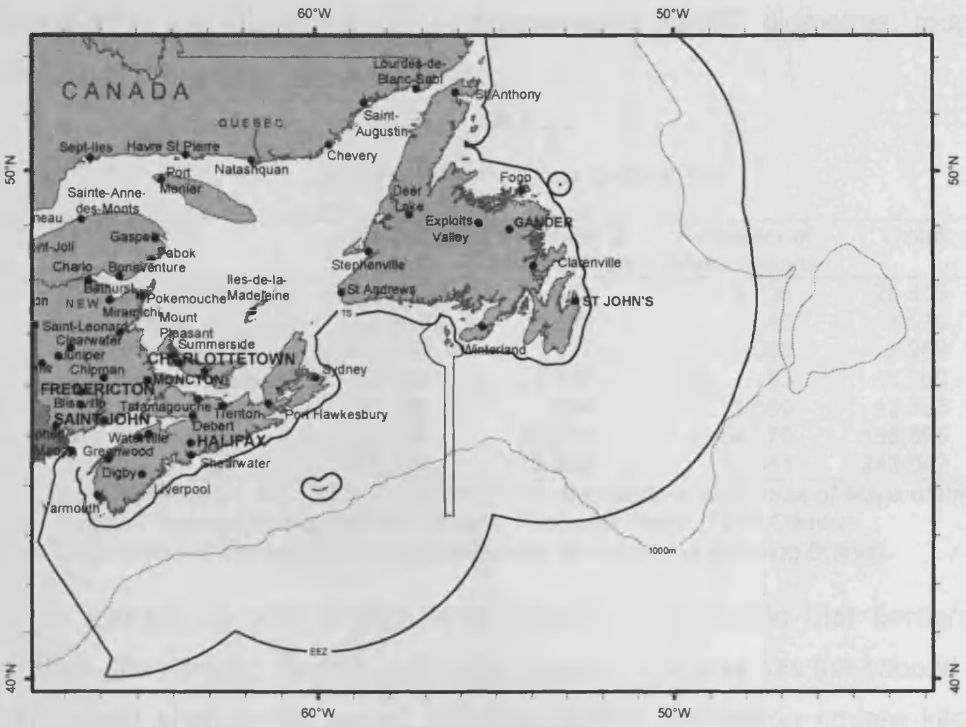


Figure 3-2. Major and Minor Airports – Atlantic Canada
Source: Transport Canada, *Canada's Transportation System*, Canada's Major Airports, 2005.

of CH-124 Griffon helicopters that are used for emergencies at the base or in a secondary role of local search and rescue.[37]

Although the land and air portions of the area are important, the defining characteristic of the Atlantic region is the maritime dimension. No place in the Atlantic provinces is more than several hours from the ocean, and this proximity has come to define the people and their way of life.

3.2.3 Ocean Dimension of Canada and Atlantic Region

Canada has the longest coastline and shoreline in the world.[38] The latter is some 57,759 kilometres in length, excluding the shoreline of most islands. When the perimeter of the 52,626 surveyed Canadian islands are included, that figure jumps to an enormous length of 243,042 kilometres. By contrast, the

[37] Canada, Department of National Defence, *Welcome to 5 Wing*, 29 March 2006 <http://www.airforce.forces.gc.ca/5wing/about_us/index_e.asp> (8 August 2006).
[38] Shoreline is the more exact measure of the perimeter along the water's edge. The term coastline refers to the general line of a coast, where straight lines may be used to join bays or other indentations to the coast. See Canada, Natural Resources Canada, *Coastline and Shoreline*, 9 May 2005 <http://atlas.gc.ca/site/english/learningresources/facts/coastline.html#c4>

shoreline in the Atlantic region is approximately 53,387 kilometres, roughly 22 percent of the entire Canadian coast.

TABLE 3-2

LENGTH OF CANADIAN SHORELINE

Province	Mainland Coast	Perimeter of Major Islands	Perimeter of Minor Islands	Total
Nfld and Labrador	8,172	11,548	9,236	28,956
Nova Scotia	4,051	1,883	1,645	7,579
New Brunswick	1,524	177	568	2,269
Prince Edward Island	n/a	1,107	153	1,260
Quebec	10,389	554	2,380	13,323
Rest of Canada	33,623	97,653	58,379	189,655
Totals	57,759	112,922	72,361	243,042

Source: Sebert, L.M., and M. R. Munro. 1972. *Dimensions and Areas of Maps of the National Topographic System of Canada*. Technical Report 72-1. Ottawa: Department of Energy, Mines and Resources, Surveys and Mapping Branch.

Canada is one of only three nations in the world that borders three oceans, the Atlantic, Pacific and Arctic Oceans. Canada has the second largest continental shelf in the world, covering roughly 6.4 million square kilometres (km^2). As well, Canada is one of only seven Arctic nations, and has the longest Arctic coastline in the world.[39]

Just over 1,606,000 km^2 of the country's land area is made up of islands, including one entire province. Three of Canada's provincial capital cities are located on islands. Two of these are in the Atlantic region, Charlottetown in Prince Edward Island and St. John's in Newfoundland.[40]

Canada has the second largest landmass in the world at 9,984,670 km^2. The stated size of the Canadian Exclusive Economic Zone EEZ varies depending on whether the calculation included large bodies of inland marine waters, such as Hudson Bay and the Gulf of the St. Lawrence. As well, contested maritime boundaries with the United States in the Arctic and North Pacific Ocean also affect the final outcome of the calculation. Whichever figure is used, the Canadian ocean areas are approximately two-thirds to three-

(15 April 2006).

[39] R. McNab, ed., *Canada and Article 76 of the Law of the Sea: Defining the Limits of Canadian Resource Jurisdiction beyond 200 Nautical Miles in the Atlantic and Arctic Oceans* (Dartmouth: Geological Survey of Canada, 1994),17.

[40] Canada, Natural Resources Canada, *Sea Islands*, 10 March 2004 <http://atlas.gc.ca/site/english/learningresources/facts/islands.html > (15 April 2006).

quarters the size of the landmass thus, as depicted in Figure 3-3, creating a second country to seaward.[41]

TABLE 3-3

SIZE OF CANADIAN EXCLUSIVE ECONOMIC ZONE

Region	Size of Area
Atlantic Exclusive Economic Zone	1,400,000 km^2
Pacific Exclusive Economic Zone	380,000 km^2
Arctic Exclusive Economic Zone	2,920,000 km^2
Internal Arctic Waters	3,380,000 km^2
TOTAL	8,080,000 km^2
Continental Margin beyond EEZ	1,800,000 km^2

Source: Canadian Marine Policy and Strategy Project: Phase One Report on National Requirements, Dalhousie University, 1992.

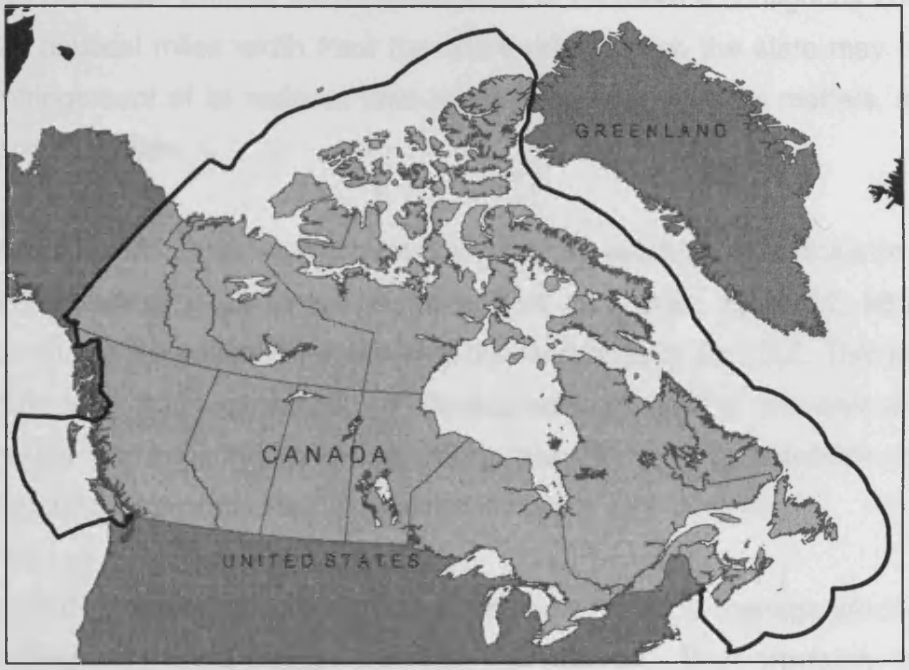


Figure 3-3. Canadian Exclusive Economic Zone
Source: Compiled from DND data set by Hydrographic Services Office Halifax.

[41] The size of the Canadian EEZ is given as 4,698,968 km^2 (1,370,000 square nautical miles) in Martin Pratt, ed., *Janes Exclusive Economic Zones* (Surrey: Selwood Printing, 1999), 28; as 5,543,913 km^2 in *Canada's Marine Areas: Integrating the Boundaries of Politics and Nature*, <http://www.whc.org/documents/MarineAreasMapText.doc> (16 April 2006); and as 6,380,000 km^2 in R. McNab, ed., *Canada and Article 76 of the Law of the Sea: Defining the Limits of Canadian Resource Jurisdiction beyond 200 Nautical Miles in the Atlantic and Arctic Oceans* (Dartmouth: Geological Survey of Canada, 1994).

3.2.4 Canada's Maritime Spaces and International Sea Law

The capacity of a coastal state to conduct more effective oceans management increased as a consequence of the evolution of international law. The most recent convention, the 1982 United Nations Law of the Sea Convention III (UNCLOS 111), establishes certain maritime zones and affords coastal states jurisdiction in these waters to varying degrees depending upon the zone. From Canada's perspective, among the most important of the UNCLOS Convention's provisions are:

ARTICLE 3: Entitles each coastal state to a territorial sea extending 12 nautical miles from shore, within which the nation has complete sovereignty.

ARTICLE 33: Entitles each coastal state to establish a contiguous zone of up to 24 nautical miles width from the shore within which the state may prevent the infringement of its national laws relating to customs, fiscal matters, immigration and sanitation.

ARTICLE 57: Entitles each coastal state to establish an Exclusive Economic Zone extending 200 nautical miles from its shores. ARTICLE 56: Gives the coastal state sovereign rights over the resources of the EEZ. This includes the right to control exploration and development, the right to conserve and manage resources, either living or non-living, and the right to establish and enforce regulations to protect and preserve the marine environment.

ARTICLE 66: Gives coastal states extensive rights to manage stock levels and fishing for "anadromous" species, i.e. salmon. This provision is of great importance to Canada, and especially to British Columbia.

ARTICLE 76: Gives coastal states the right to lay claim to areas of the seabed up to the continental shelf or out to 200 nautical miles should the continental shelf not extend that far. In certain cases, coastal states may also lay claim to areas extending beyond the 200 mile EEZ limit, up to a maximum of 350 nautical miles. In order to claim areas beyond 200 nautical miles, they must lie within 60 miles of the foot of the continental slope. To claim beyond that to the 350

nautical mile maximum, the thickness of sedimentary rocks must be at least 1 per cent of the shortest distance from the foot of the continental slope. Not included in these claims are seamounts or submarine ridges.

ARTICLE 77: Gives coastal states exclusive rights to explore or exploit the natural resources lying on the surface of, or below their continental shelf, whether living or non-living. This includes the right to regulate drilling on the continental shelf.

SECTION 5 (ARTICLES 207-212): Charges states with extensive responsibility in relation to controlling and preventing marine pollution from a variety of sources.

SECTION 6 (ARTICLES 213-222): Charges coastal states with extensive responsibilities for enforcing anti-pollution rules and regulations in their territorial sea, EEZ and continental shelf areas.

ARTICLE 234: Gives coastal states possessing ice-covered areas within their EEZ the right to make special laws for the protection of the marine environment in such areas. This article reinforces the existing provisions of Canada's *Arctic Waters Pollution Prevention Act* (1970).

When the UNCLOS III came into force 16 November 1994, it allowed Canada to claim sovereign rights, jurisdiction or control over an area almost 10 million square kilometres in size. In response to the UNCLOS III provisions, Canada's *Oceans Act* was passed by the House of Commons October 21, 1996 came into effect January 31, 1997. It describes Canada's maritime zones in much the same language as that of UNCLOS III. More importantly, it codified the sovereign rights and jurisdiction of Canada in these zones. For instance, as in the UNCLOS III Article 33 example above, Section 12(1)of the *Oceans Act* specifies that in respect to customs, fiscal, immigration or sanitary law "every basic power of arrest, entry, search or seizure, or other power that could be exercised in Canada ... may also be exercised in the contiguous zone of Canada."

Figure 3-4 is a smaller scale map of the southern maritime region that depicts the limits of Canada's declared maritime zones and their relationship to the continental shelf. Three offshore features that that figure prominently in Atlantic Canada's maritime affairs are the Nose and Tail of the Grand Banks of Newfoundland and the Flemish Cap.

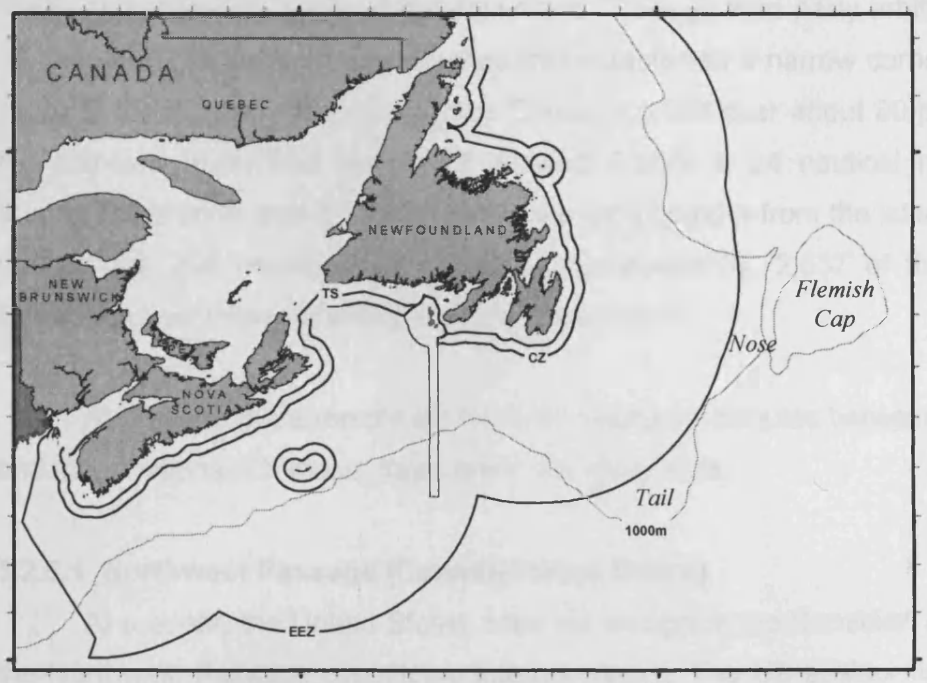


Figure 3-4. Territorial Sea, Contiguous and Exclusive Economic Zones
Source: Compiled from DND data sets by HSO Halifax.

3.2.5 Maritime Boundary disputes

Canada's maritime jurisdictions are well-established and internationally recognized. There are several unsettled maritime boundaries with the United States in areas of valuable fishery and seabed resource exploitation, both actual and potential. However, the two countries have developed amicable means of managing these disputes, including co-operative development or mutual, non-prejudicial use agreements for disputed areas.

The two most contentious and long-standing maritime boundary disputes in the Atlantic region between Canada and other parties were settled through judicial and third party resolution processes. The first was a dispute with the

United States over the international boundary on Georges Bank, south west of Nova Scotia. In that case, the International Court of Justice at the Hague established a boundary in 1984 that bisected the rich scallop fishing grounds of the bank.

The most serious and protracted dispute was with France, and concerned that nation's claim to an Exclusive Economic Zone around the islands of St. Pierre and Miquelon, south of Newfoundland. Through third party arbitration, on 10 June 1992, a decision was reached that established a narrow corridor to the south of the islands. The ruling gave Canada control over about 80 percent of the disputed area. The settlement allowed France a 24 nautical mile zone around the islands, and a 10.5 nautical mile wide corridor from the islands south through the 200 nautical mile limit EEZ. Consequently, 2,537 of the 13,703 square nautical miles fall under French jurisdiction.

At present, there remain six maritime boundary disputes between Canada and other nations. Of these, three are in the study area.

3.2.5.1 Northwest Passage (Canada/United States)

At present, the United States does not recognize the Canadian claim that the Northwest Passage constitutes internal waters. The US position is that the Northwest Passage is an international strait within the meaning of the United Nations Convention on the Law of the Sea. Thus, the United States is claiming the right to pass unhindered through Canadian waters of the Northwest Passage in the "normal mode of transit." In 1985 Canada announced that it would draw straight baselines around the islands of the Arctic archipelago, declaring all marine areas encompassed by the process to be internal waters. The new regime came into effect on 1 January 1986. It is worth noting in this regard that Canada's 12 nautical mile territorial limit effectively closes off Barrow Strait, one of the narrows within the Northwest Passage.

In January 1988, Canada and the United States concluded an Arctic co-operation agreement with respect to Canadian control over Arctic waters for the regulation of commercial and icebreaker navigation. It requires that the United

States seek Canada's consent prior to navigation of the Northwest Passage by American icebreakers. The agreement does not address the issue of submarine activity in the Canadian Arctic.

3.2.5.2 Hans Island (Canada/Denmark)

Another dispute involves Hans Island, lying on the maritime boundary between Ellesmere Island and Greenland. Canada and Denmark/Greenland have agreed to a maritime boundary off Ellesmere Island, notwithstanding the disagreement over Hans Island. In 1973, in order to establish the maritime boundary between Canada and Greenland, the island itself was simply not included in the boundary. This dispute was largely dormant until 2004, when the Opposition party used the dispute to argue that the government was not supplying sufficient military funding for sovereignty purposes. Canadian national newspapers published a number of short articles about Hans Island, and reported that the Danes had sent ships north in the vicinity of the island in 2002 and 2003. In 2005, Canada and Denmark agreed to resolve the dispute peacefully, but there has been no further progress towards resolution since then.

3.2.5.3 Machias Seal Island (Canada/United States)

The other island dispute is over Machias Seal Island, which lies at the landward and unsettled end of the maritime boundary established by the International Court between Nova Scotia and the United States. The island has little inherent value, and is not a major issue in resolving the disputed boundary. In addition to being maritime boundary dispute, it remains the sole terrestrial sovereignty dispute between the two North American neighbours.

The remaining contested maritime boundaries lie outside the study area on the Pacific Coast. All of the disputes are between Canada and the United States. The disputes concern the Beaufort Sea, Dixon Entrance and the Strait of Juan de Fuca.

3.2.6 Military and Search and Rescue Zones

The ocean area that Canada is responsible for defending under a combination of NATO and Canada-US defence treaties and agreements equals

an even greater 11,000,000 square kilometres. In defence circles, this zone is known as the Canadian Atlantic (CANLANT) area of responsibility (AOR). It encompasses a vast amount of water space and extends well beyond the Canadian EEZ. The delimitation of this AOR was derived through negotiated defence agreements with Allied and NATO partners. Figure 3-5 depicts the limits of the CANLANT AOR. These limits span 3979 kilometres east/west, 5627 kilometres north/south, and encompass an area of 5,931,757 square kilometres.

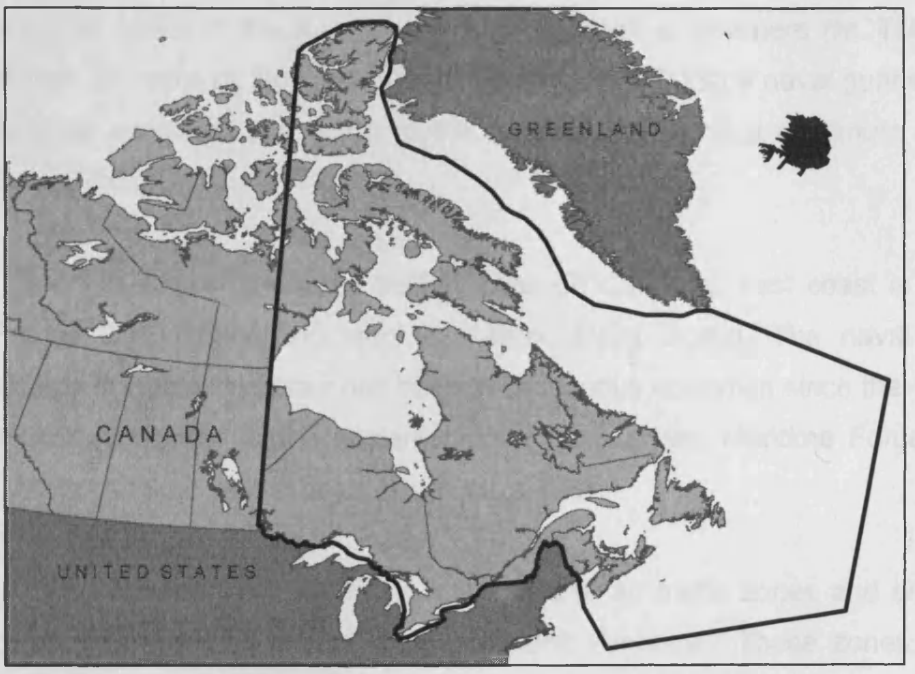


Figure 3-5. CANLANT Area of Responsibility
Source: Compiled from DND data set by HSO Halifax.

The allocation of particular military training activities to designated areas of ocean helps to reduce the amount of interference between air, surface, and sub-surface military units, and assists civilian ships and aircraft to avoid areas in which military operations are being conducted. This process also can assist in limiting the impact that military training activities have on the marine environment by co-ordinating and thus reducing the presence and type of activity in areas of biological sensitivity.

The current Maritime Forces Atlantic Operating Areas (MARLOAs) depicted in Figure 3-6, were promulgated in 1996. They replaced the Maritime Command Exercise and Firing Ranges that had formerly been used as practice

areas by naval and air units of the Canadian Forces, and before 1967 by the Royal Canadian Navy and Royal Canadian Air Force. The current MARLOAs encompass virtually all of the waters of Canada's eastern continental shelf and the Gulf of St Lawrence, not including the area surrounding the French islands of St. Pierre and Miquelon. This gives a much wider area of control for air and water space management.

Warning of military exercises and activities are promulgated to civilian maritime traffic in the form of Canadian Notices to Mariners (NOTMARs) and civilian air traffic by Notices to Airmen (NOTAMs). Surface naval gunnery and air defence exercises take place in the operating areas to a maximum altitude of 30,000 feet.

The major naval and military base on Canada's east coast is Canadian Forces Base Halifax, located at Halifax, Nova Scotia. The naval dockyard located in Halifax Harbour has been in continuous operation since the 1700s and is currently home to the eastern naval headquarters, Maritime Forces Atlantic (MARLANT), as well as the eastern naval fleet.

Overlying the MARLOAS is a series of air traffic zones and air maritime patrol areas off the eastern coast of North America. These zones, like their surface equivalents, provide a means for military air control authorities to separate aircraft and minimise mutual interference between aircraft. In the Canadian maritime region a number of patrol areas have also been established as a means of managing long-range maritime patrol aircraft flights in the CANLANT AOR.

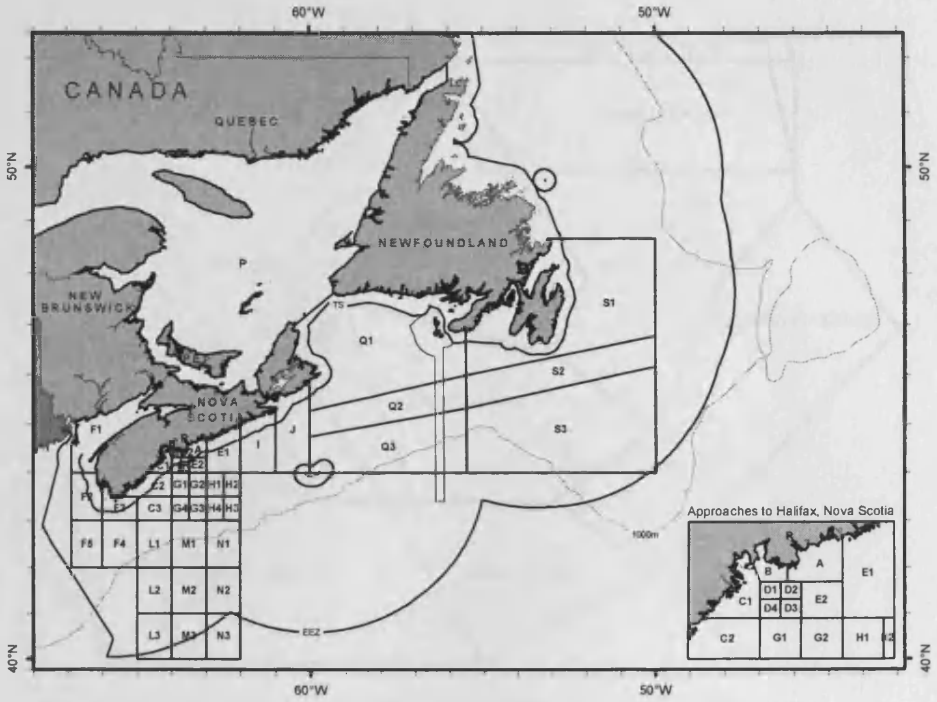


Figure 3-6. Maritime Forces Atlantic Operating Areas (MARLOAs)
Source: Compiled from DND data set by HSO Halifax.

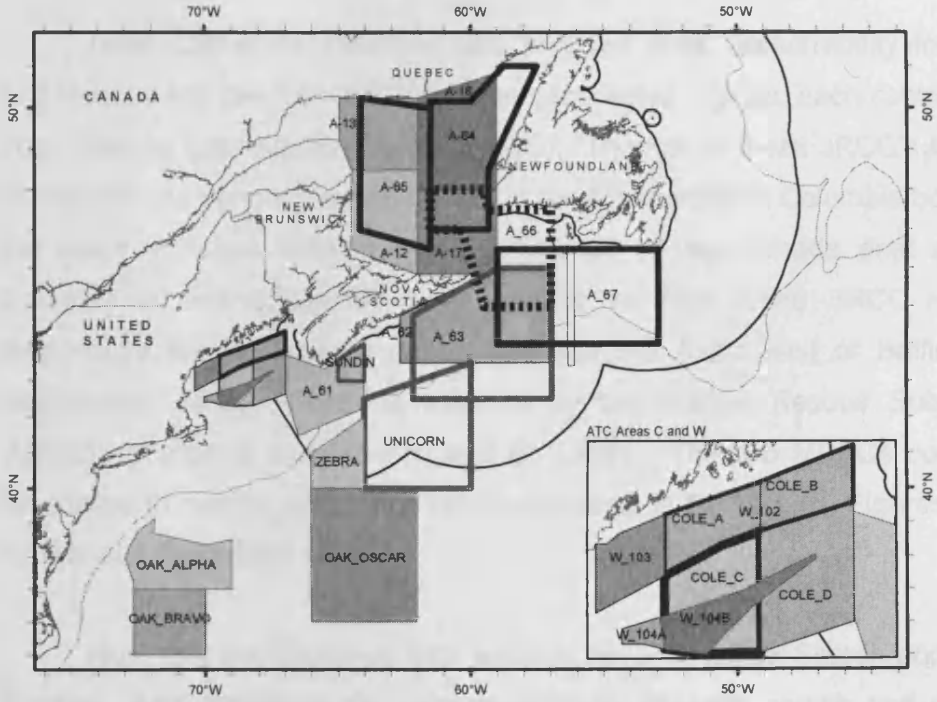


Figure 3-7. Air Traffic Active and Restricted Danger Zones
Source: Maritime Air Component Commander (Atlantic) staff, 2003.

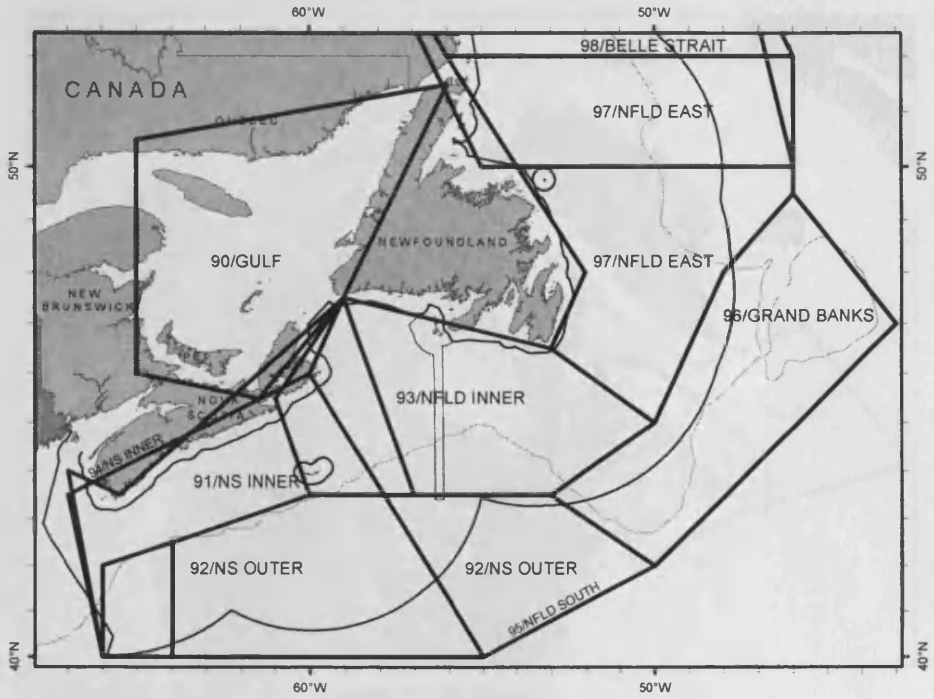


Figure 3-8. Routine CP-140 Aurora Patrol Areas
Source: Maritime Air Component Commander (Atlantic) staff, 2003.

Given Canada's immense land and sea area, responsibility for Search and Rescue has been divided into three geographic regions, each controlled at a Joint Rescue Coordination Centre (JRCC). The first of these JRCC's is located at Victoria and serves the region west of the Alberta/British Columbia border and the Nunavut/Yukon borders. JRCC Trenton serves Canada east of British Coumbia to central Quebec, and north to the high Arctic. JRCC Halifax is responsible for the Atlantic region and into the Arctic east of Baffin Island. Additionally, JRCC Halifax is assisted by two Marine Rescue Sub-Centres (MRSC) located at Quebec City and St John's. The two MRSCs co-ordinate responses to marine search and rescue incidents in their areas. Figures 3-9 and 3-10 depict these SAR zones.

Note that the Canadian EEZ extends beyond Halifax Search and Rescue Region. This results in the unusual situation whereby search and rescue is administered within a portion of the Canadian EEZ by the United States through rescue co-ordination centres in Boston and Norfolk.

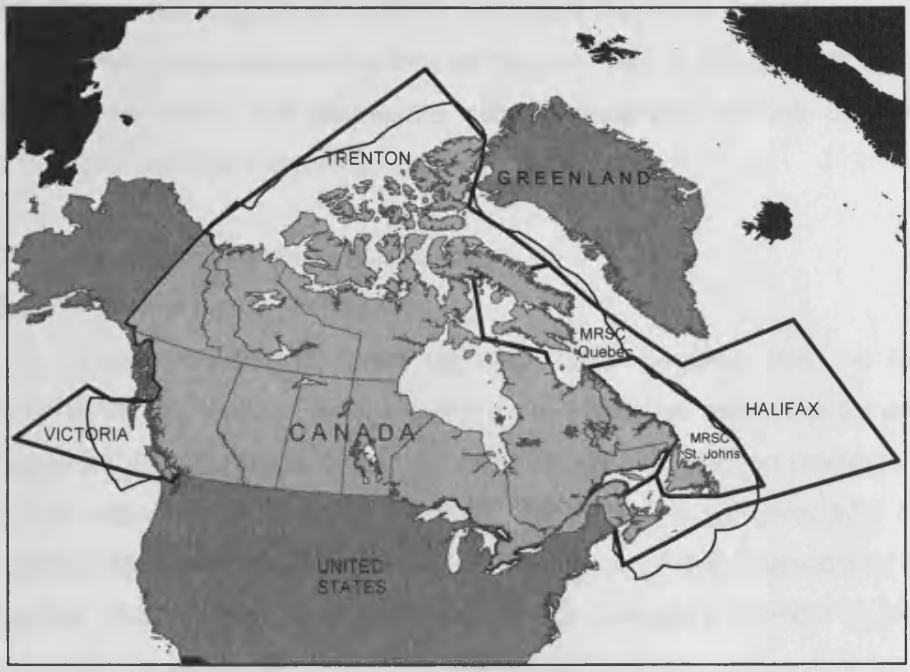


Figure 3-9. Search and Rescue (SAR) Zones
Note: SAR zones in thick line, 200 nm EEZ in thin line.
Source: Halifax Joint Rescue Co-ordination Centre.

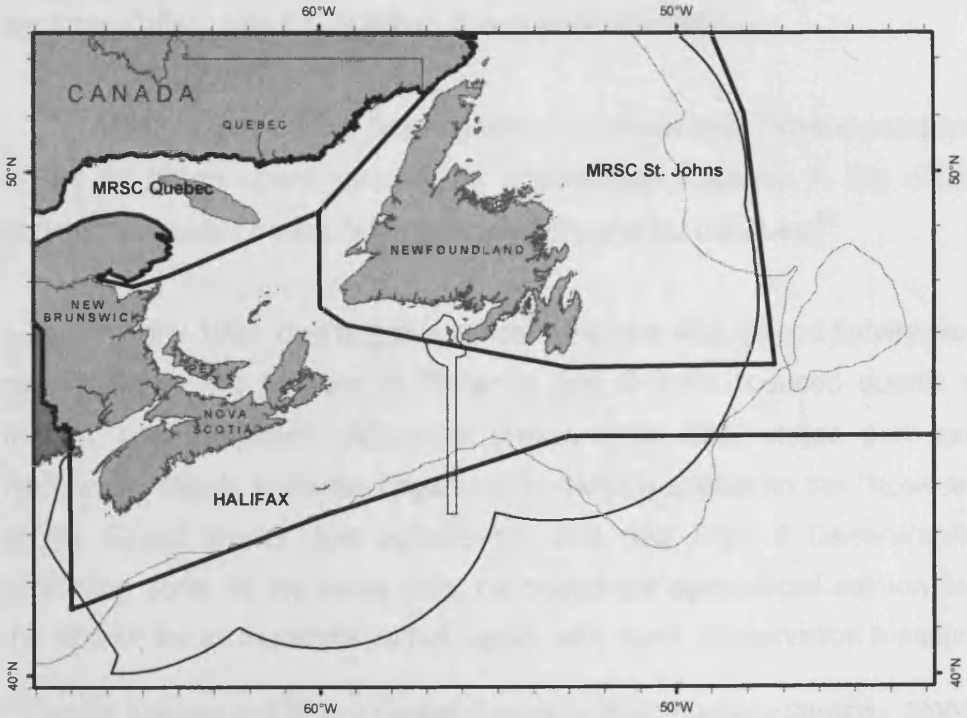


Figure 3-10. Sub-Regions – Halifax Search and Rescue Region
Source: Halifax Joint Rescue Co-ordination Centre.

3.3 Economic Impact of Atlantic Canada's Maritime Zones

The ocean-use sectors that will be reviewed in this chapter are renewable natural resources, non-renewable natural resources, marine construction and ship repair, marine transportation, and ocean tourism.

3.3.1 Renewable Natural Resources

3.3.1.1 Commercial Fishery

For a number of years up until 1988, Canada was the leading fish exporter in the world. Despite well-known difficulties within the fishery, Canada remains the world's fifth largest exporter of fish and seafood products. The value of fish exports, measured in US dollars (2004), was just over $3.5 billion. This represents just under five percent of the value of the international fish export market. Furthermore, the United States is Canada's leading market for fish products, receiving 69 percent of the export volume. Japan and the European Economic Community (EEC) are Canada's next largest customers, receiving 11 and 10 percent of exports, respectively. By comparison, the world's leading fish exporter, China, sold $6.79 billion in fish abroad in 2004.[42]

A 1987 study by the Department of Fisheries and Oceans estimated that, of the $8 billion spent annually on ocean-related activity in this country, 30 percent was spent on the fishery and directly related activities.[43]

In early 1992, due to grave concern that the Atlantic cod fishery was being over-depleted, the Minister of Fisheries and Oceans reduced quotas for that fishery, and increased diplomatic pressure on EEC states that exceeded Northwest Atlantic Fisheries Organization (NAFO) quotas on the "Nose and Tail" of the Grand Banks, just outside the 200 mile limit of Canada's fisheries protection zone. At the same time, he closed the commercial salmon fishery in the Atlantic for an indefinite period, again, as a stock conservation measure.

---

[42] Canada, Fisheries and Oceans Canada, *Exports by Major Producing Countries, 2000-2004*, 6 July 2006 <http://www.dfo-mpo.gc.ca/communic/statistics/trade/world_trade/export_data/wxv0004_e.htm> (8 August 2006); Canada, Fisheries and Oceans Canada, *Domestic Exports of Selected Commodities by Major Market and Country, December 2004*, 6 July 2006 <http://www.dfo-mpo.gc.ca/communic/statistics/trade/canadian_trade/export_data/xmkt04_e.htm> (8 August 2006).

With concern for the fishery mounting, on 2 July 1992 the Minster of Fisheries closed the $700 million Newfoundland cod fishery for two years. The moratorium applied to an area from the south and east coasts of Newfoundland's Avalon Peninsula, along the north-eastern coast of Newfoundland and extended north along the entire Labrador coast. The fishing ban put an estimated 20,000 fishermen in almost 400 communities out of work.[44] By early 1997 the Newfoundland cod fishery was just beginning to reopen and continues to be a shadow of what it was before the moratorium.

Canada has three main fisheries in terms of species groupings: groundfish (i.e., cod, haddock, redfish, halibut, pollock); pelagics and other finfish (i.e., salmon, herring, mackerel, tuna, capelin); and shellfish (i.e., lobster, scallops, crab, shrimp, clams). Of these three fisheries, shellfish is the most valuable in terms of landings, at $ 1.7 billion. Groundfish were the second most valuable category, worth $ 267 million. Pelagic landings were worth $ 172 million (all measured in 2004 dollars).[45]

Measured according to the value of species landings, the Atlantic queen crab fishery was the nation's most important in 2004, worth more than $613 million. The Atlantic lobster fishery was the second most valuable, worth $588 million. The Atlantic shrimp fishery was the third most valuable, at $247 million. These three species accounted for $1448 million – almost two-thirds of the value of national landings in 2004.[46]

After the lean years of the mid-1990s, the fishery in Atlantic Canada is starting to show signs of a slow recovery. Although it is unlikely that the loss of the Atlantic cod fishery will ever be replaced, landings are starting to rebound

---

[43] Canada, Department of Fisheries and Oceans, *Canada's Oceans: An Economic Overview and a Guide to Federal Government Activities* Communications Directorate DO, Ottawa, 1987, 13.
[44] "Rage greets fishery closing," *Globe and Mail* (Toronto), 3 July 1992.
[45] Canada, Fisheries and Oceans Canada, *2004 Value of Atlantic & Pacific Coasts Commercial Landings, by Province* 12 May 2006 <http://www.dfo-mpo.gc.ca/communic/statistics/commercial/landings/seafisheries/s2004pv_e.htm> (8 August 2006).
[46] Fisheries and Oceans Canada, *2004 Value of Atlantic & Pacific Coasts Commercial Landings, by Province.*

with the development of non-traditional fisheries and the expansion of foreign markets.

TABLE 3-4

CANADIAN COMMERCIAL FISHERY 1995-2000

	Primary			Aquaculture		
Year	Volume of Landings ('000 tons)	Value of Landings ($ million)	Employment (FTE)	Volume ('000 tons)	Value ($ million)	Employment (FTE)
			National			
1995	861	1,783	32,621	63	326	3,950
1996	927	1,577	27,572	67	330	4,240
1997	986	1,621	24,893	82	361	5,230
1998	1,003	1,578	22,998	87	409	5,550
1999	1,010	1,888	22,243	108	533	6,620
2000	1,016	2,134	21,000	122	573	6,950
			Atlantic Region			
1995	638	1,359	24,529	29	146	1,840
1996	686	1,149	21,481	32	159	2,040
1997	735	1,215	18,847	36	177	2,250
1998	785	1,294	19,005	38	171	2,390
1999	792	1,571	18,353	52	231	3,130
2000	873	1,790	18,500	66	281	3,530

Sources: Canada, Fisheries and Oceans Canada, Statistical Services, Ottawa; Canada, Statistics Canada, *Canadian Aquaculture Production Statistics*, Ottawa.

From a geographer's perspective, the spatial management of the fishing areas off Canada's East Coast appears to be a conglomeration of unrelated grids that vary by regulatory regime. Nationally, regulation of the fishing grounds is the responsibility of Fisheries and Oceans Canada (DFO) for waters under Canadian jurisdiction. This federal department has divided the Atlantic region into four administrative areas by province and has several different geographic grids that are employed for managing separate species.

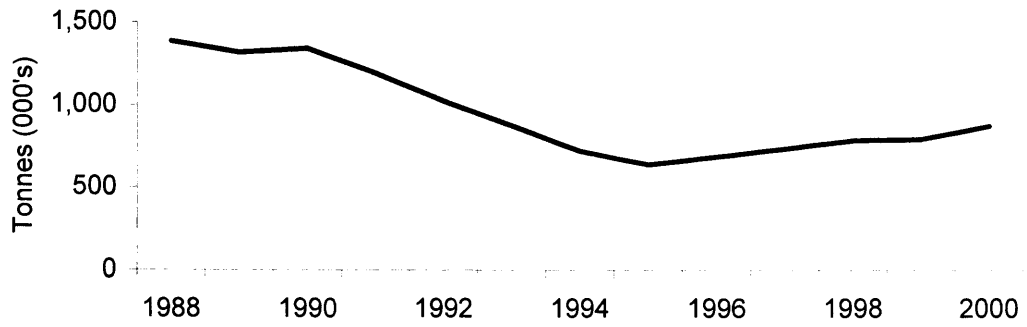


Figure 3-11. Commercial Fishery Annual Landings – Atlantic Canada
Source: Canada, Fisheries and Oceans Canada, Statistical Services, Ottawa.

Overlaid on the DFO national areas is a grid correlating to the other main regulatory body associated with the east coast fishery, the Northwest Atlantic Fishery Organization. NAFO is an international organization that had its genesis when 11 nations met to develop a means to prevent overexploitation of many aquatic species in the northwest Atlantic. The 1980 *NAFO Convention* prescribes a regulatory area that stretches offshore from the northern edge of Baffin Bay to Cape Hatteras, North Carolina.

Figure 3-12 shows the limits of the NAFO regulatory area. The eastern boundary is the 42nd meridian of longitude that runs through the southern tip of Greenland. In accordance with its enabling convention, NAFO exercises jurisdiction for fishery control only outside the areas claimed by the adjoining states, and therefore concentrations of fish generally are much lower in the NAFO area than within the adjoining 200-mile zones of Canada and the United States. However, fish densities are higher in the Flemish Cap area east of St. John's, Newfoundland and in the "Nose and Tail" of the Grand Banks that lie more than 200 miles offshore. NAFO assigns each nation quotas for the major species managed. These include squid, redfish, capelin, American plaice, Atlantic cod, yellowtail flounder, and witch flounder.

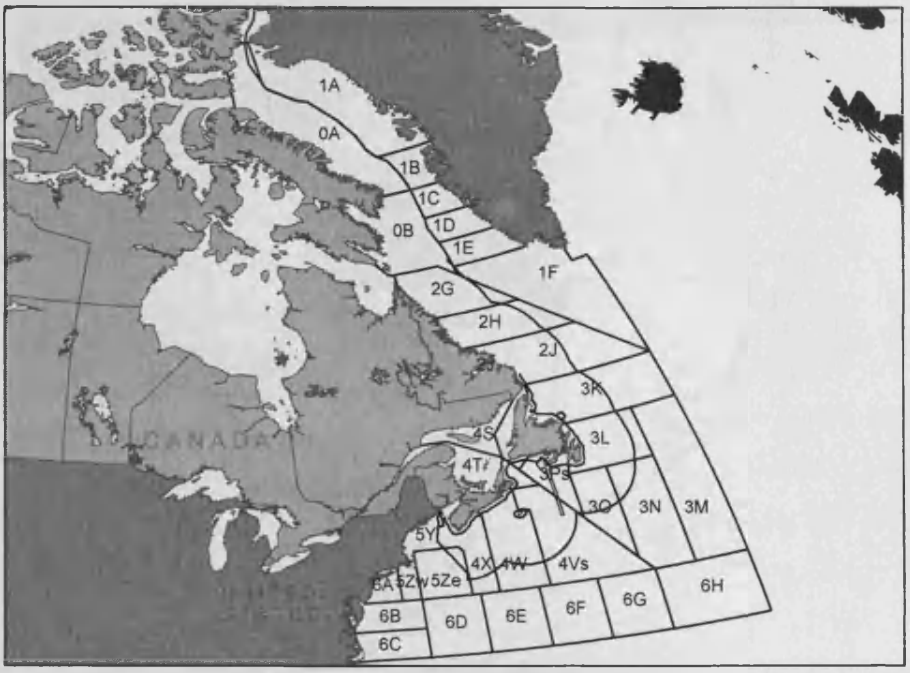


Figure 3-12. NAFO Regulatory Areas – Subareas and Divisions
Source: *NAFO Convention*, Annex III, 1980.

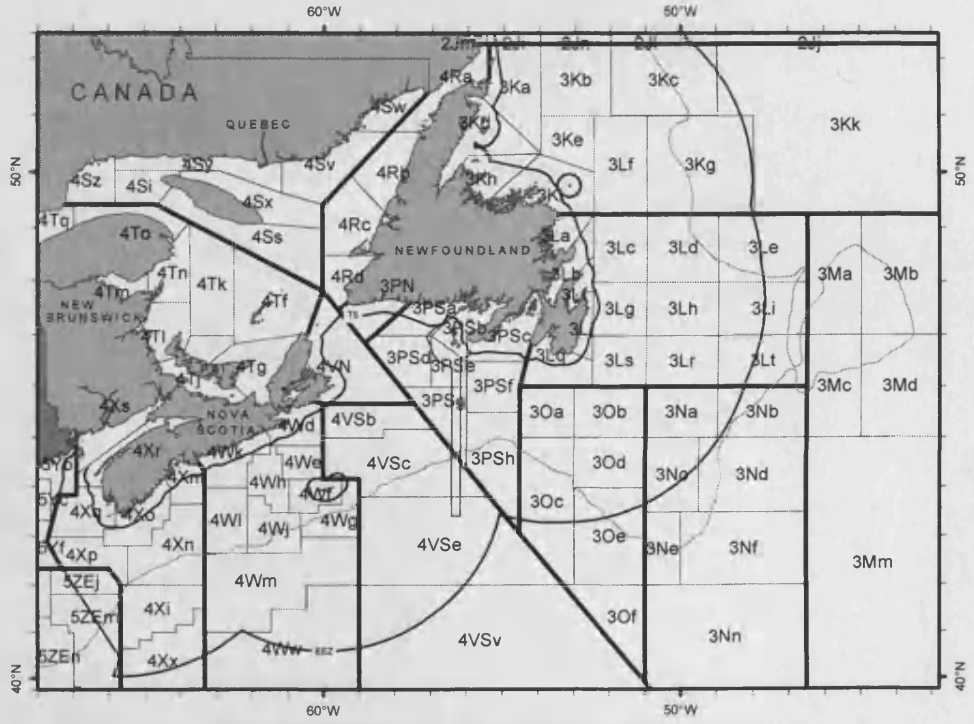


Figure 3-13. NAFO Regulatory Area – Divisions and Subdivisions
Source: *NAFO Convention*, Annex III, 1980.

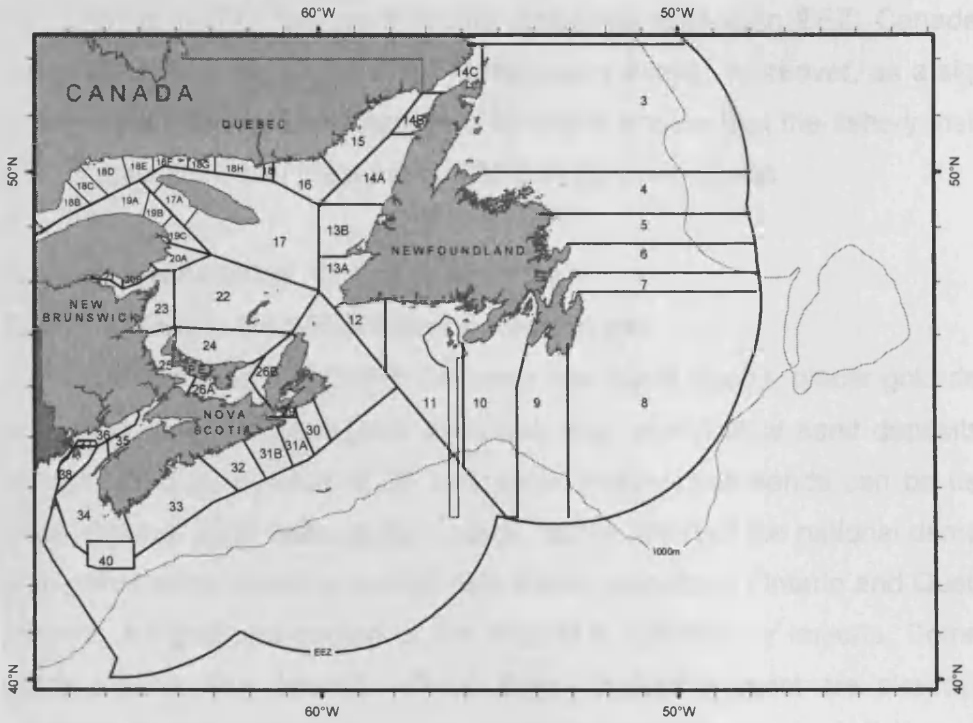


Figure 3-14. Lobster Fishing Areas – Atlantic Canada
Source: Compiled from Fisheries and Oceans Canada data set by HSO Halifax.

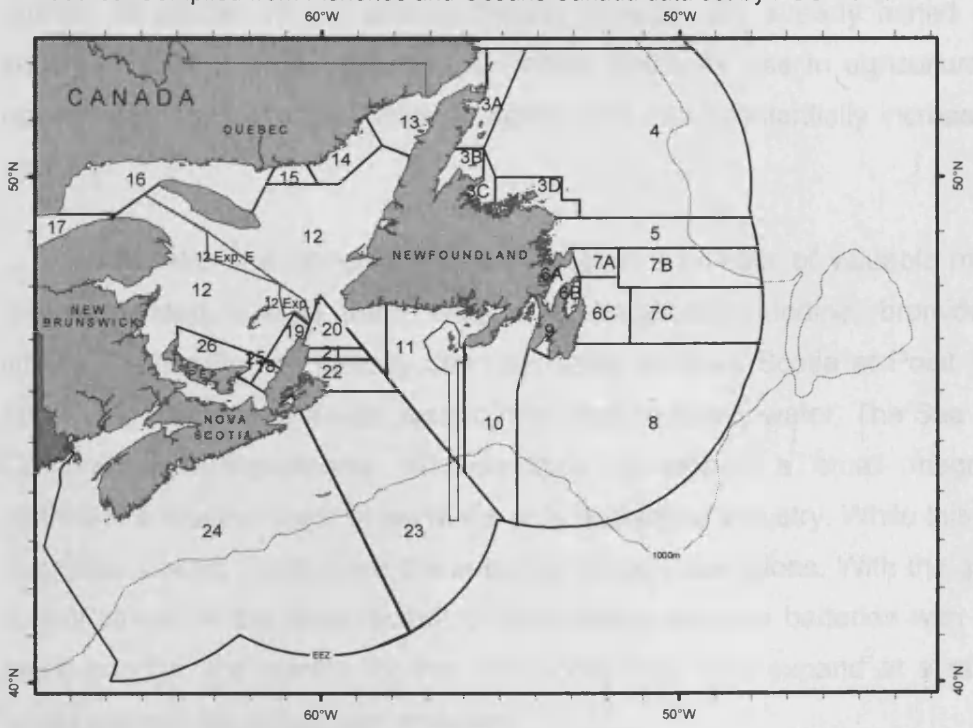


Figure 3-15. Crab Fishing Areas – Atlantic Canada
Source: Compiled from Fisheries and Oceans Canada data set by HSO Halifax.

While NAFO has no authority inside the Canadian EEZ, Canada does report catches in the various NAFO regulatory areas. Moreover, as a signatory to the *NAFO Convention*, Canada is bound to ensure that the fishery inside the EEZ is consistent with the aims of NAFO in the open ocean.

3.3.2 Non-renewable Natural Resources

3.3.2.1 Offshore Non-Fuel Mineral Resources

Off the coasts of British Columbia and Nova Scotia, placer gold deposits with good potential have been identified. High purity silica sand deposits have been located in the Gulf of St. Lawrence. These silica sands can be used for glass making, solar cells, or fibre optics cables. Most of the national demand for high-grade silica sands is located near these deposits in Ontario and Quebec. At present, a significant portion of this market is satisfied by imports. Some high-grade marine clay deposits off the British Columbia coast are already being exploited for the cosmetics industry. Calcium carbonate concentrations exist in a number of places off our shores. Similar deposits are already mined off the coasts of Ireland, Australia and the United States for use in agriculture - the application of calcium carbonate to acidic soils can substantially increase crop yields.

Seawater is a complex solution in which a number of valuable minerals are suspended, among them, deuterium, magnesium, iodine, bromide, and lithium. Deuterium has already been extracted in Nova Scotia at Point Tupper and Glace Bay, where it was used to manufacture heavy water. The Sea Mining Corporation of Aguathuna, Newfoundland developed a small magnesium hydroxide extraction plant to serve the pulp and paper industry. While this facility has since closed, it did prove the potential of such operations. With the growing use of lithium in the manufacture of high energy storage batteries with lithium metal anodes, the market for this commodity may also expand at a rate that would warrant extraction from seawater.[47]

---

[47] Wendy Martin, *Once Upon a Mine: Story of Pre-Confederation Mines on the Island of Newfoundland,* Chapter V: Isle of Iron, Men of Steel, 1983<http://www.heritage.nf.ca environment/mine/ch5p12.html> (14 April 2006).

Many large commercially viable sand and gravel deposits have been identified in the offshore, and could be exploited without danger to the marine environment. Millions of cubic metres of sand and gravel have already been extracted to build over 30 artificial islands in the Canadian Beaufort Sea since 1972 to support oil and gas exploration. Similar projects could supply sand and gravel for construction of artificial islands on Canada's east coast as oil and gas development there continues to progress. Sand and gravel dredged from the ocean bottom may also be used to develop such projects like the Fundy Tidal Power Project, in harbour expansion projects, or for road construction. Seabed extraction of these resources has already been attempted successfully, profitably, and in an ecologically sound manner in the United Kingdom, France and Japan.

These are just some of the minerals that current technologies offer the promise of exploiting. Other more exotic seabed resources like poly-metallic sulphides also occur in Canadian waters, and may yet be harvested when have the ability to safely and economically do so is realized. The three products most likely to be extracted commercially in the short term are sand and gravel, silica sands, and gold.

3.3.2.2 Offshore Hydrocarbons

During the 1980s, extensive oil and gas exploration took place off Canadian coasts. This activity identified significant and extremely valuable reserves of both oil and natural gas. It is estimated that more than 50 percent of Canada's frontier oil reserves lie in Canada's offshore.[48] The following tables provide an indication of the extent of this wealth in oil and gas. Figures 3-16 and 3-17 show the extent of exploration permits and spatial distribution of former well sites. Figure 3-18 shows the location of current wells.

[48] Naval Officers Association of Canada, *A Maritime Policy for Canada* (Ottawa: Naval Officers Association of Canada, 1990), 49.

TABLE 3-5

OFFSHORE PETROCARBON INVENTORY

Region	Oil ('000,000 cums)	Gas ('000,000 cums)
Discovered Resources		
Mackenzie Delta-Beaufort Sea	256.4	322.7
Arctic Islands-Eastern Arctic	65.7	416.4
Newfoundland Offshore	235.2	148.7
Nova Scotia Offshore	23.7	164.7
TOTAL	581.0	1,052.5
Potential Reserves		
West Coast	50.0	270.0
Mackenzie Delta-Beaufort Sea	1,112.0	1,918.0
Arctic Islands-Eastern Arctic	873.0	3,156.0
Hudson Bay	127.0	88.0
Newfoundland Offshore	894.0	1,649.0
Nova Scotia Offshore	318.0	663.0
TOTAL	3,374.0	7,744.0

Source: 1989 Canadian Oil and Gas Lands Administration Annual Report

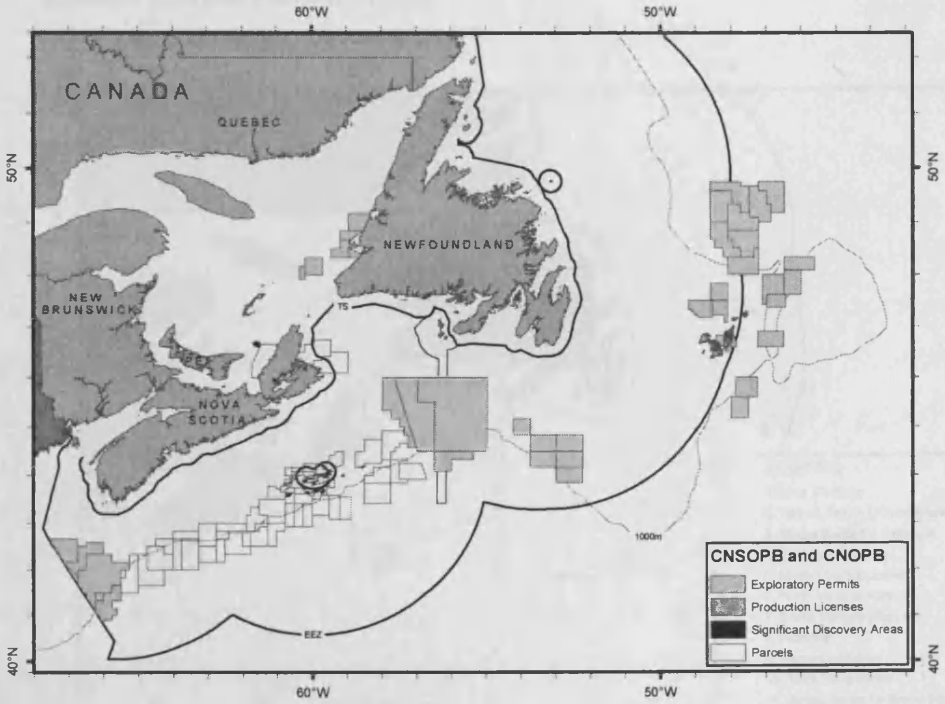


Figure 3-16. Oil and Gas Exploration Lands 2004 – Atlantic Canada
Source: Canada-Nova Scotia Offshore Petroleum Board; Canada-Newfoundland and Labrador Offshore Petroleum Board.

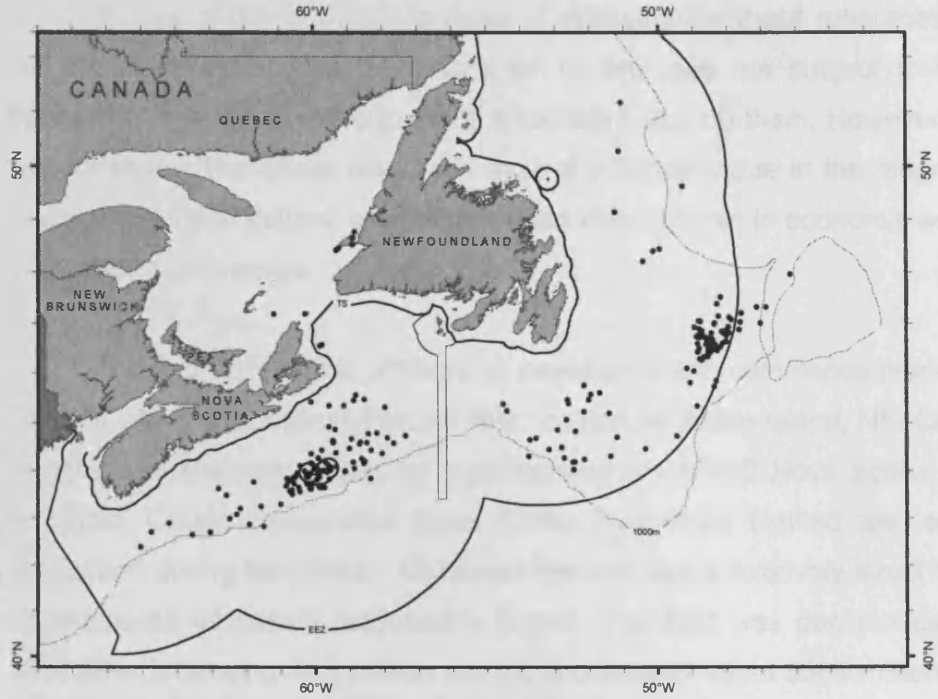


Figure 3-17. Oil and Gas Wells – Past Locations
Source: Canada-Nova Scotia Offshore Petroleum Board; Canada-Newfoundland and Labrador Offshore Petroleum Board.

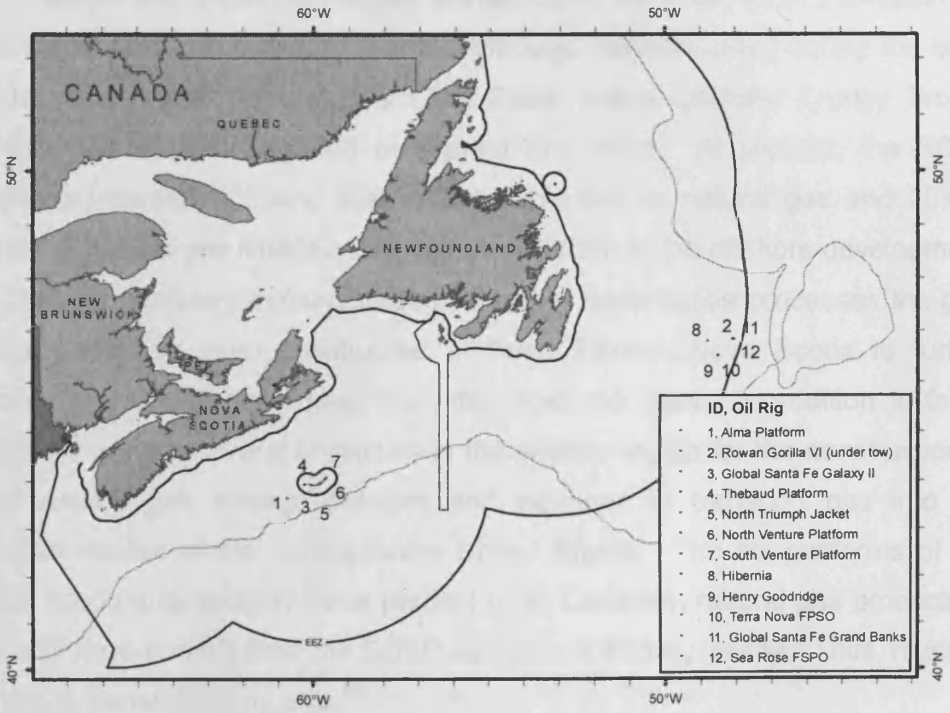


Figure 3-18. Oil and Gas Rigs in 2006
Source: Halifax Joint Rescue Co-ordination Centre, January 2006.

In view of the fact that the costs of extraction for these resources are not yet known, and because the prices for oil and gas are subject to constant fluctuation, it is not possible to place a reliable value on them. However, it goes without saying that these resources have a potential value in the magnitude of multiple billions of dollars, and will generate billions more in economic activity as production commences.

The first commercial offshore oil development to commence production in Canada was the Cohasset-Panuke field, located off Sable Island, NS. Cohasset-Panuke was been developed by a partnership of LASMO Nova Scotia, and the provincial Crown Corporation Nova Scotia Resources Limited and went into production during May 1992. Cohasset-Panuke was a relatively small field with an estimated 49 million recoverable barrels. The field was decommissioned in 1999 after producing 44.5 million barrels and infused about $500 million into the Nova Scotia economy.

Before the Cohasset-Panuke development, there had been interest in the natural gas fields off of Sable Island. Although interest waned during the latter 1980s, for the past several years the Sable Island Offshore Energy Project (SOEP) has seen resurgence of interest and effort. At present, the SOEP produces between 400 and 500 million cubic feet of natural gas and 20,000 barrels of natural gas liquids every day. In addition to the offshore development, the Golboro gas plant in Guysborough County, Nova Scotia processes the gas, and a plant has been constructed at Point Tupper, Nova Scotia to further process the natural gas liquids from the Goldboro plant. In addition to these projects there are several proposals in the Atlantic region for the construction of liquid natural gas storage facilities and pipelines to transport gas into the lucrative market of the north-eastern United States. The six platforms of the SOEP account for roughly three percent of all Canadian natural gas production. The only fixed conduit from the SOEP ashore is a single pipeline. Thus, much of the gas is transported by ship.[49]

[49] ExxonMobil, *Sable Project -Operations* < http://www.soep.com/cgi-bin/getpage?pageid=1/0/0> (9 August 2006).

In 1988, the Canadian and Newfoundland governments signed a $5.2 billion agreement to begin development of the Hibernia oil field. Hibernia was expected to tap between 525 and 650 million barrels of oil, with peak output of about 110,000 barrels per day. The federal government assumed a $2.7 billion stake in the development, with each of four commercial partners committing $1 billion to the project. It had been expected to generate about 14,500 construction jobs, and 1,100 production jobs over an 18 year period and was projected to fill 12 percent of Canada's light oil requirements. The development's future was thrown into doubt in February 1992 when one of the partners, Gulf Canada, decided to withdraw from the project. Between February and October 1992, work on the project was curtailed and daily expenditures of about $3 million were cut in half. The slowdown put about 800 people out of work and delayed production by a year, from 1996 to 1997.

On 9 October 1992, with an announcement on Texaco's involvement in the project imminent, the work slowdown was lifted and oil first flowed in late 1997. By the end of 2005, almost 200,000 barrels were flowing per day from Hibernia, and the development had produced a total of 455.7 million barrels.

Two other substantial oil fields are found in the Newfoundland offshore. The Terra Nova field south of Hibernia went into production in 2002 and flows about 99,000 barrels per day with a total production of 164 million barrels. To the east of Newfoundland is the White Rose Field. This source flows just under 50,000 barrels per day and since has produced 2.5 million barrels from commissioning in November 2005 to the end of the year. Newfoundland oil production accounts for about 15 percent of the total Canadian oil production, approximately 146 million barrels per annum.[50]

Once the oil arrives ashore from the offshore platforms, the three main refineries and terminals in the Atlantic region together produce 473,063 barrels of oil per day. Imperial Oil in Dartmouth, Nova Scotia produces 88, 009 barrels per day, Irving Oil in Saint John, New Brunswick produces 280,011 barrels per

[50] Government of Newfoundland and Labrador, Mines and Energy, *Oil and Gas Report – January 2006* <http://www.nr.gov.nl.ca/mines&en/oil/oil_gas_report_jan06.pdf > (9 August 2006).

day, and North Atlantic Refining in Come-by-Chance, Newfoundland adds 105,043 barrels per day. These three refineries represent approximately 20 percent of the total Canadian refining capacity. They also produce over 70 percent of all Canadian refined petroleum exports, and are a major supplier of gasoline and heating oil to the eastern seaboard of the United States.

Since over 50 percent of the homes in Atlantic region rely on oil for heating purposes, a much higher proportion than elsewhere in Canada, these refineries are critically important domestically as well as to the United States market.

To date, there have been 23 significant discoveries of oil and gas made in the Newfoundland offshore, with the promises of further prospects. The sedimentary basins of the Grand Banks as well as those that form the Laurentian Channel demonstrate great potential for Newfoundland to become a major player in national oil and gas production. Additionally, the basins in the vicinity of Sable Island and further south offshore Nova Scotia indicate that Nova Scotia may one day assume an equally important role. The region is now of national strategic importance as a major producer of oil with a lesser role in natural gas production. Uniquely, all production in the Atlantic region is derived from offshore wells. When combined with the high volume of refining carried out at the three refineries described above, it is clear that, although not as historically visible as the fishery, the hydrocarbon industry is a key element in the economy of Atlantic Canada and, more significantly, the nation as whole.

TABLE 3-6

OIL AND GAS PRODUCTION - ATLANTIC CANADA 1995-2000

Year	No. of Establishments	Production Labour Force (FTE)	Value of Marketable Production ($ million)	Net Cash Expenditures ($ million)	Total Labour Force (FTE)	Total Value of Output* ($ million)
1995	14	106	197.1	1,499.10	2,129	1,696.20
1996	16	106	201.2	1,046.40	1,386	1,247.60
1997	17	75	126.7	1,109.80	1,681	1,236.50
1998	16	300	591	2,282.70	3,540	2,873.70
1999	18	524	1,052.10	2,992.00	4,490	4,044.10
2000	18	1,310	3,103.30	2,161.80	5,910	5,265.10

*Value of marketable production from processing and net cash expenditures on exploration, development, operating costs and royalties.
Source: Statistics Canada, *The Crude Petroleum and Natural Gas Industry (Annuals),* Cat. No. 26-213.

3.3.3 Marine Construction/Ship Repair

The Canadian shipbuilding and ship repair industry contributed more than $200 million to the national GDP and provided work for more than 4,000 people during 2001. Table 3-7 indicates the tonnage and number of ships greater than 100 gross tons that were on order or being built in Canada for the years 1995 - 2000.[51]

During the early 1990s, there were four major Department of National Defence marine projects underway that provided stability to the shipbuilding industry in Canada. The Canadian Patrol Frigate programme, the Tribal Class Update and Modernization programme, the Maritime Coastal Defence Vessel Project and the Towed Array Sonar System had total approved expenditures for just under $12 billion. Once these programmes had completed by the late 1990s, DND's investment in the Canadian shipbuilding industry declined significantly, with a predictable and consequent negative impact. However, the federal government announced recently its intention to procure three joint supply ships to replace the Navy's aging auxiliary replenishment vessels, and should provide a much-needed boost to the industry.

[51] Acton White and Associates, *Economic Study of Canada's Marine and Ocean Industries*, 29 March 2001 <http://strategis.ic.gc.ca/epic/internet/inad-ad.nsf/vwapj/economicstudy.pdf/$file/economicstudy.pdf> (9 August 2006).

TABLE 3-7

CANADIAN MARINE CONSTRUCTION 1995-2000

Year	Building Construction ($ millions)	Oil & Gas Rigs ($ millions)	Marine Works ($ millions)	Total ($ millions)	Value-added ($ millions)	Employment (FTE)
			National			
1995	205.6	1,376.90	355.3	1,937.80	880.8	11,480
1996	226.1	881.4	273.2	1,380.70	617	8,300
1997	213.8	824	259.8	1,297.60	573	7,350
1998	229	2,013.60	302.1	2,544.70	1,125.00	11,580
1999	231.9	2,651.50	332.3	3,215.70	1,406.20	17,400
2000	227.2	1,678.10	342.2	2,247.50	948.3	12,200
			Atlantic Region			
1995	60.9	1,376.90	236.9	1,674.70	801.5	9,640
1996	68.1	881.4	156	1,105.50	530.6	6,390
1997	65.6	824	204.9	1,094.50	525.3	5,810
1998	71.9	2,013.60	226.6	2,312.10	1,109.80	9,960
1999	76.2	2,651.50	255.4	2,983.10	1,431.90	15,800
2000	75.3	1,678.10	261.3	2,014.70	967.1	10,600

Source: Statistics Canada, *Capital Expenditures by Type of Asset, 1992-1996*, Cat. No. 61-223; Public and Private Investment in Canada, Cat. No. 61-205; Statistics Canada, *Capital Expenditures by Type of Asset, (Annuals from 1992)*, Cat. No. 61-223. Statistics Canada, Public and Private Investment in Canada, Cat. No. 61-205.

3.3.4 Marine Transportation

Of the world's industrialized nations, Canada ranks among those most heavily dependent upon trade for its economic well-being, foreign trade generating one quarter of Canada's gross national product, and almost 55 percent of that trade being transported by water.[52] In terms of volume, 99 percent of Canadian trade with nations other than the United States is waterborne.[53]

During 2003, the last year for which complete figures are available, Canadian ports handled almost 307 million tonnes of international cargo. This represented an increase of 8.5 percent over the previous year.[54] Canada has 25 deep-water ports and 650 smaller ports. There are also about 2,200 small craft harbour facilities along Canada's coasts that are used exclusively for the fishery

[52] Canada, Department of Fisheries and Oceans, *Annual Report 1985/86,* Supply and Services Canada, Ottawa, 1986, 21.
[53] NOAC, *A Maritime Policy for Canada*, 142.
[54] *Canada: A Portrait* (Ottawa: Supply and Services Canada, 1991), 161.

or recreational boating.[55] Figure 3-19 shows the major and secondary ports in the Atlantic region.

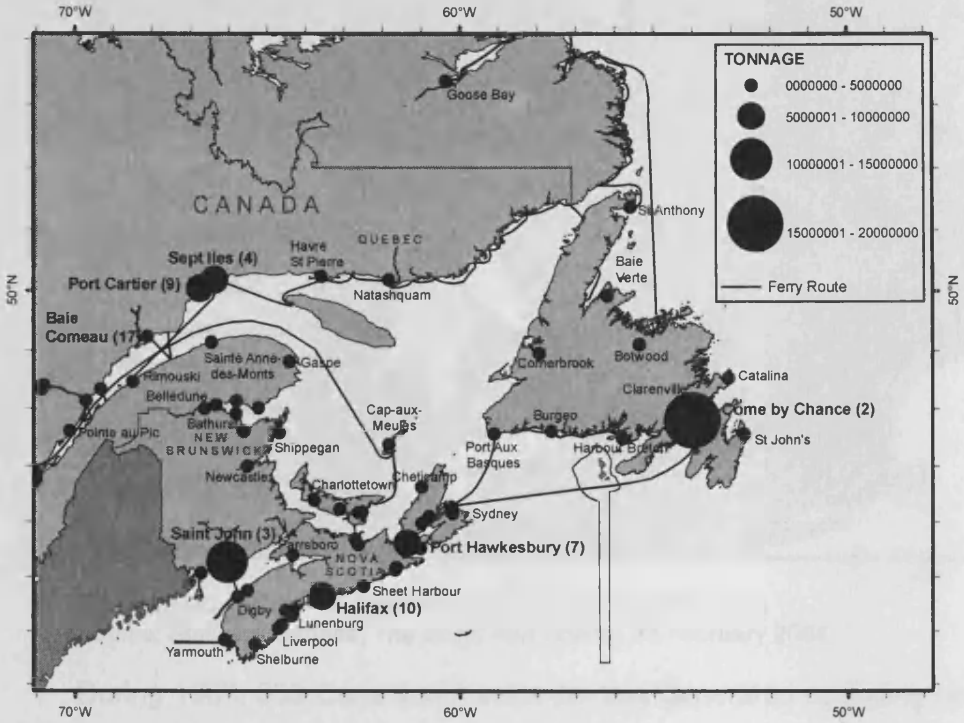


Figure 3-19. Ports and Main Ferries – Atlantic Canada
Source: Statistics Canada, *The Daily: Port activity*, 23 February 2004.

A significant portion of the country's water transport travels through the St. Lawrence Seaway, the world's longest canal system. This system extends over 3,769 kilometres, from the Atlantic Ocean to the western end of Lake Superior, and incorporates a total rise of 177 metres. Bulk cargoes constitute about 85 percent of tonnage moving through the St. Lawrence Seaway. Current estimates call for about 31 million tonnes of cargo to transit the Montreal-Lake Ontario section of the Seaway, with closer to 34 million tonnes moving through the Welland Canal.[56] Figures 3-20 shows the major and secondary ports in the St Lawrence Seaway system.

[55] Canada, Statistics Canada, *The Daily: Port activity*, 4 April 2005 <http://www.statcan.ca/Daily/English/050404/d050404a.htm> (12 April 2006).
[56] 1991 Corpus Almanac & Canadian Sourcebook (Don Mills: Southam Business Information and Communications Group, 1991), 10-12; Great Lakes St. Lawrence Seaway System, Tonnage Information, *Seaway Monthly Traffic Results as of December 31, 2005* <http://www.greatlakes-seaway.com/en/pdf/tonnage2005_en.pdf > (9 August 2006).

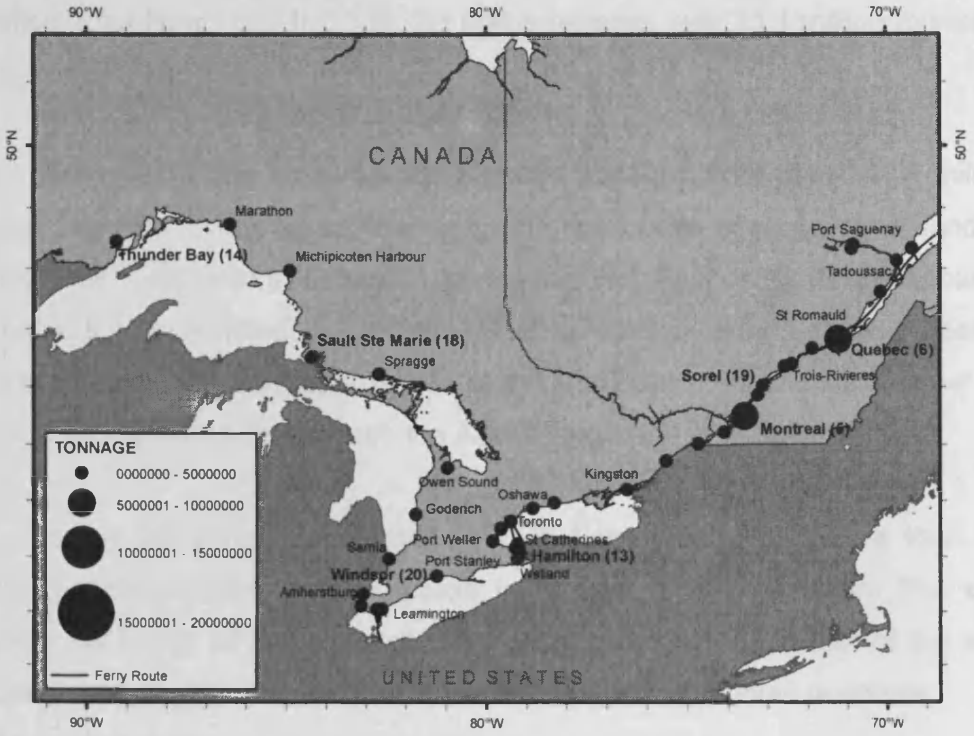


Figure 3-20. Ports – St. Lawrence Seaway and Great Lakes
Source: Statistics Canada, *The Daily: Port activity*, 23 February 2004.

During 1987, 303 Canadian marine carriers generated operating revenues of $2.17 billion. Just over half of that total ($1.12 billion) was earned transporting commodities, with about 15 percent of the total ($307 million) being accounted for by towing services. Ten percent of revenues ($200 million) were generated by charters.[57]

Canada's busiest port is Vancouver. It is also the second largest port in North America, and the largest on the west coast of North or South America. In 2003, Vancouver handled 67.9 million tonnes of cargo, representing 15 percent (by tonnage) of Canadian shipping for that year. Vancouver accounts for roughly half of all of the nation's container traffic. The year 2005 heralded an increase to 76.4 million tonnes handled in Vancouver.[58]

Montreal is the country's leading container traffic port, in terms of tonnage handled, and the second largest container gateway on the Atlantic coast of North

[57] *Canada: A Portrait*, 161-162.
[58] Statistics Canada, *The Daily: Port activity*.

America, after New York. In 2005, the port processed over 11.1 million tonnes of containerized cargo.[59]

During 2003, the country's top 20 ports handled more than 349.8 million tonnes of goods. In the same year 443.0 million tonnes of cargo were handled nation wide.[60] As seen in Table 3-8, all but one of Canada's top 10 ports, based on metric tonnes handled, are located either in Atlantic Canada or are accessed from the Atlantic seaward approaches of the study area. Figure 3-21 shows the major shipping routes that service the Atlantic region.

During the period September 1990 to September 1991, more than 1.2 million people entered or left Canada using marine transportation. The vast majority (761,036) of these travelled by commercial carrier. Most of the total entries or departures (999,197) were recorded by non-Canadian residents.

TABLE 3-8

CANADA'S TOP TEN PORTS IN 2005

Port	Tonnage handled	
Vancouver	76,481,000	
Come-By-Chance	43,694,000	*
Saint John	27,500,000	
Montréal	24,344,000	
Port Hawkesbury	22,927,000	*
Québec	22,500,000	
Sept-Îsles	17,500,000	
Halifax	13,816,000	
Port-Cartier	17,439,000	*
Nanticoke	12,359,511	

* 2005 data not available. 2003 figures used.
Sources: Each Port Authority's Internet statistics page.

[59] Montréal Port Authority, *Statistics: Traffic summary 1995-2005 (metric tonnes)* <http://www.port-montreal.com/site/6_0/ 6_4_11.jsp?lang=en> (12 April 2006).
[60] Statistics Canada, *The Daily: Port activity.*

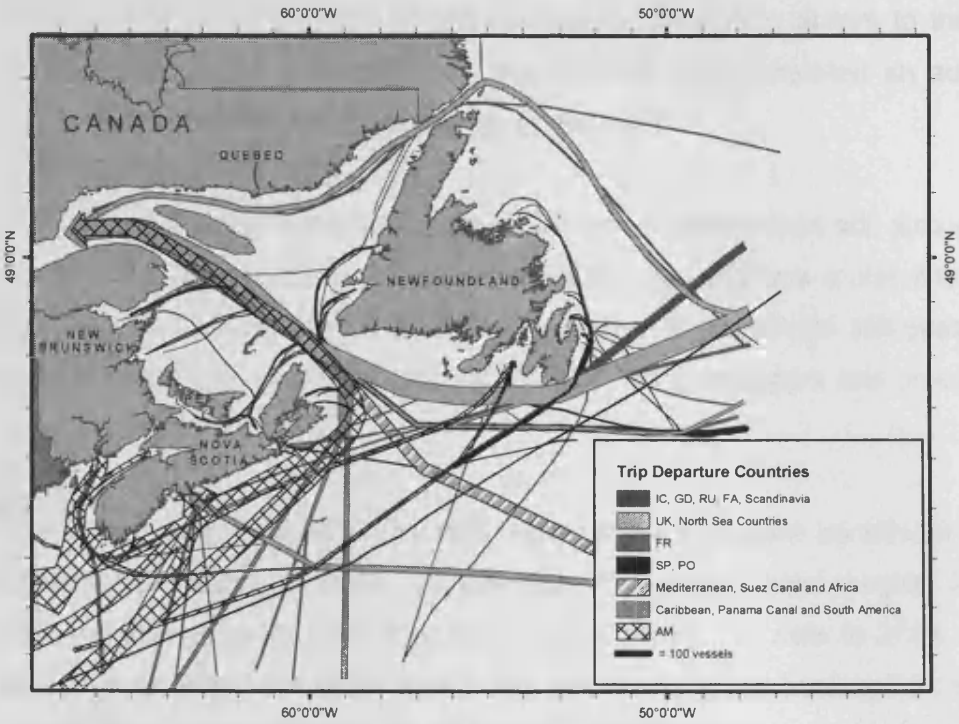


Figure 3-21. Major Shipping Routes in 2000 – Atlantic Canada
Source: Bernard Kelly, *Marine Commercial Vessel Traffic Activity in Canada's Atlantic Region*, Geocentric Mapping Consulting, June 2002.

The international cruise industry has grown at a compound rate of almost 10 percent since 1970, according to the Cruise Lines International Association. This trend is being felt in Canadian ports as cruise ship visits increase and throughout Canada, more than 2 million cruise ship passengers visited the nation in 2005.[61] The Port of Vancouver, hub of the international Alaska Cruise industry, hosted an incredible 910,172 cruise ship passengers in 2005.[62] The cruise industry's local economic impact is enormous. For example, it has been estimated that the direct economic impact of Alaska cruises in 2005 was estimated at $588.5 million, including $341 million in marine services; which encompassed provisioning services, passenger handling and non-cruise transport, and $211 million in tourist spending.[63] Cruise line passengers spend time and money in Vancouver, but they also spend millions on supplementary tours to the British Columbia and Alberta Rocky Mountains, and the Yukon

[61] Association of Canadian Port Authorities, *Industry Information – Canadian Port Industry*, 2005 <http://www.acpa-ports.net/industry/industry.html> (10 August 2006).
[62] Vancouver Port Authority, *2005 Statistical Summary*, 2005 <http://www.portvancouver.com/statistics/ 2005_statistical.html> (12 April 2006).

territory. The cruise industry directly contributed 91 million dollars to the gross domestic product of Greater Vancouver in 2005, and generated an additional $11 million in federal and provincial tax revenues.[64]

On Canada's East Coast, other Canadian destinations are also popular ports of call for the cruise lines. Two decades ago only one cruise line visited Montreal; by 2005 a dozen lines brought 45 cruise ships with 35,359 passengers aboard to the city. In 1991 local expenditures by passengers and cruise ships amounted to $9.4 million.[65]

The cruise industry has also become an important contributor to the economy of Halifax. In 2004, for example, 122 cruise ships carrying 212,834 passengers visited the port. That figure was up from 104 calls in 2003. Further growth is expected in Halifax, which has already received bookings for 89 calls during 2006. Local spending by cruise ships passengers was estimated at $2.25 million during 2005.[66]

The high volume of commercial and fishing traffic in the maritime approaches provides the basic elements for potential collisions at sea. To mitigate this concern, Canada has established 16 compulsory pilotage areas and several Vessel Traffic Management Schemes (VTMS) to coordinate the movement of shipping through key areas in the Atlantic Region. Determination of where compulsory pilotage is required is based on the degree of difficulty and hazard in the approaches and within the port itself , the amount of vessel movement and manoeuvrability and the size of the vessel, the design of wharves, slips, and actual space available for manoeuvring, the nature of cargo embarked, and the preservation of the ecosystem. Pilotage services in Atlantic Canada are provided by the Atlantic Pilotage Authority or, in the case of the Gulf of St Lawrence and the approaches to the St Lawrence River, the Laurentian

---

[63] Vancouver Port Authority, *Port of Vancouver Economic Impact Study*, May 2005 <http://www.portvancouver.com/the_port/docs/Economic_Impact_Study.pdf> (10 August 2006).
[64] Vancouver Port Authority, *Port of Vancouver Economic Impact Study.*
[65] Montréal Port Authority, *Statistics: Cruise traffic 2001-2005* <http://www.portmontreal.com/site/6_0/ 6_4_11.jsp?lang=en> (12 April 2006).
[66] Halifax Port Authority, *The Port of Halifax, Annual Statistics,* 2005 <http://www.portofhalifax.ca/AbsPage.aspx?id=1245&siteid=1&lang=1> (12 April 2006).

Pilotage Authority. Figure 3-22 shows the compulsory pilotage areas in the Atlantic region.

With respect to Vessel Traffic Management Schemes, these areas typically include the approaches to busy ports and seaways, such as Halifax and Saint John, or congested straits and narrows like the Cabot Strait and the St Lawrence Seaway. Under the International Rules for Avoiding Collision at Sea (COLREGs), a government may also establish special routing rules. For example, there is a Canadian modification that requires a vessel making a transatlantic voyage to avoid crossing the Grand Banks north of latitude 43 degrees north to minimize cargo ship traffic across the congested fishing grounds in the shallows of the Grand Banks. Figures 3-23 through 3-30 show the established VTMS regimes in Atlantic Canada.

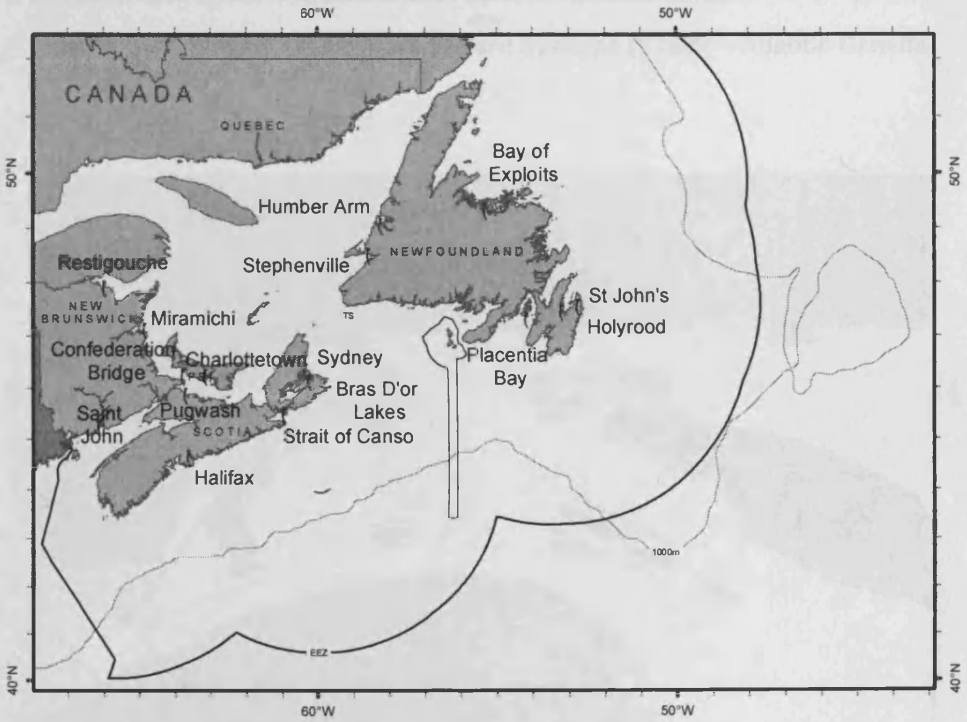


Figure 3-22. Compulsory Pilotage Areas – Atlantic Canada
Source: Transport Canada.

Figure 3-23. Vessel Traffic Management Systems (VTMS) – Atlantic Canada
Source: Transport Canada.

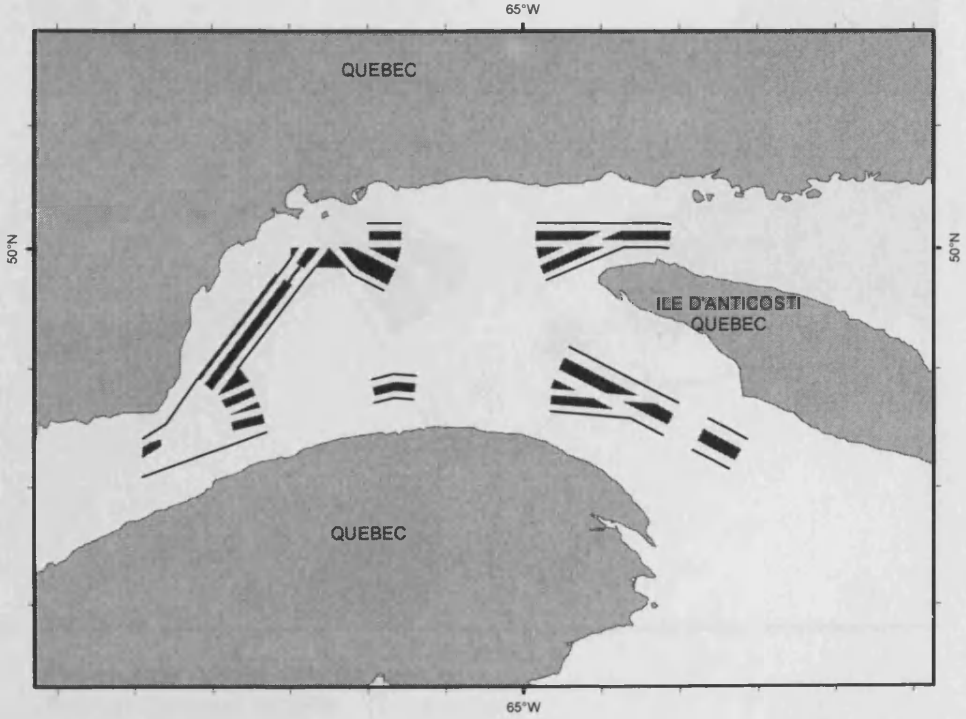


Figure 3-24. VTMS – St Lawrence Seaway
Source: Transport Canada.

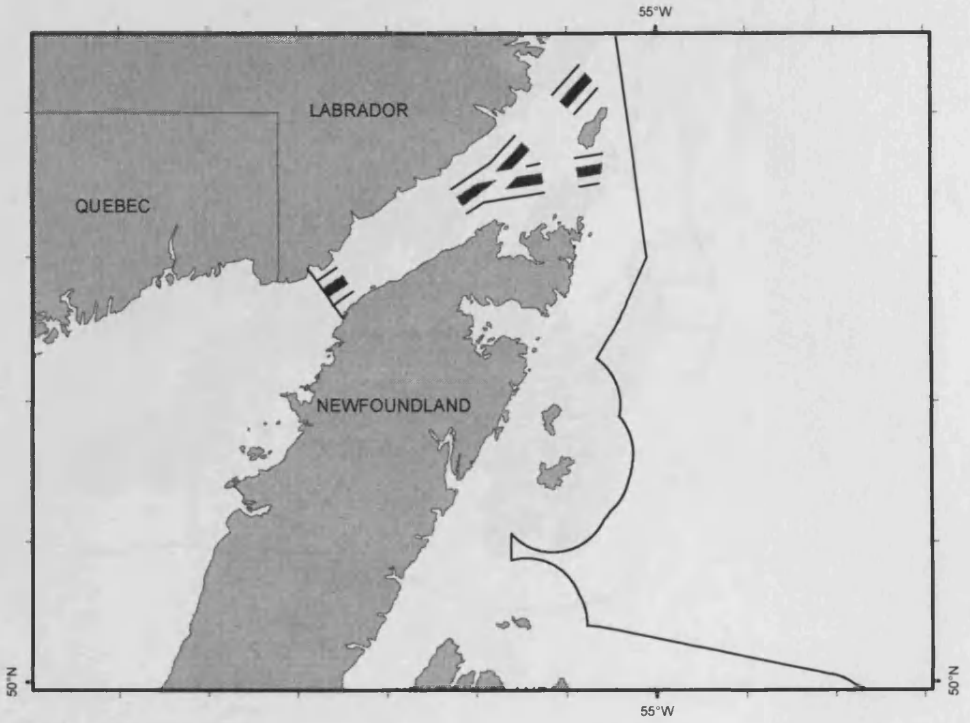


Figure 3-25. VTMS – Belle Isle
Source: Transport Canada.

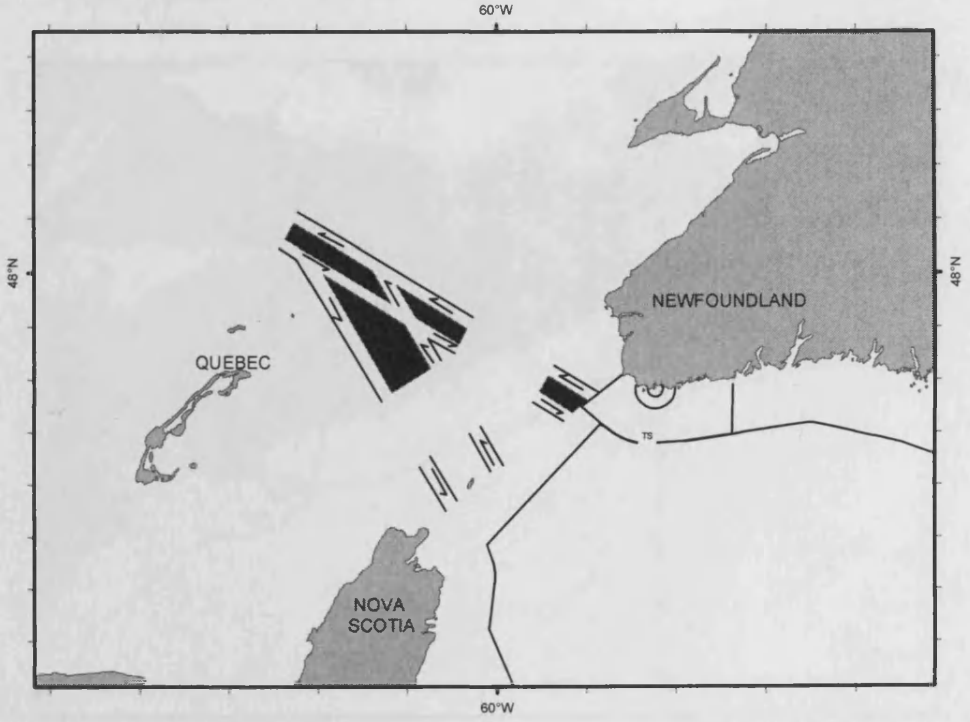


Figure 3-26. VTMS – Cabot Strait
Source: Transport Canada.

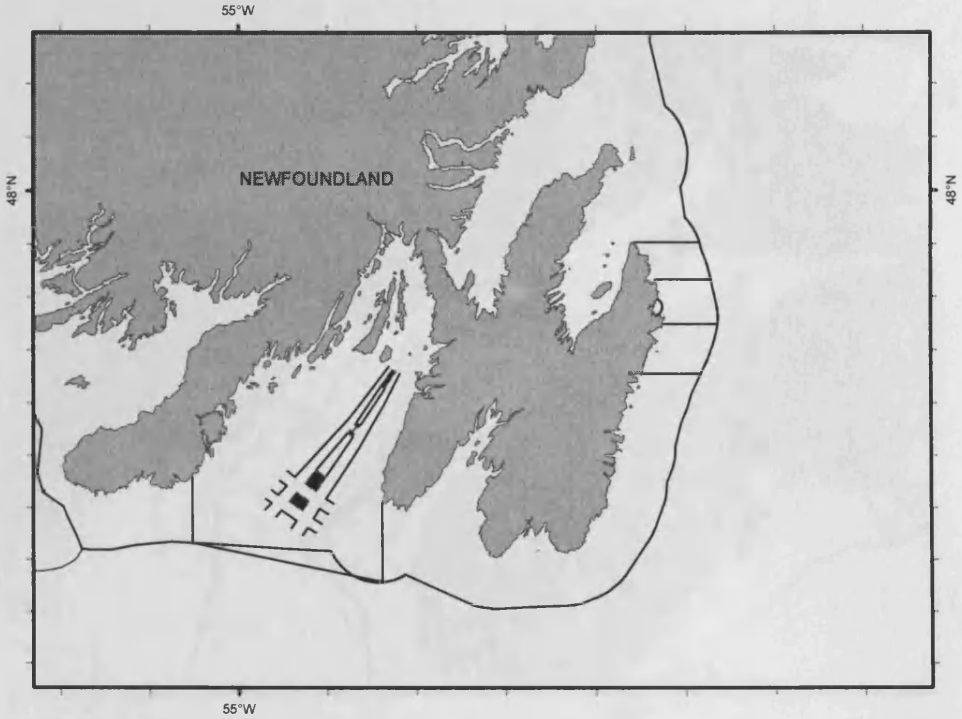


Figure 3-27. VTMS – Placentia
Source: Transport Canada.

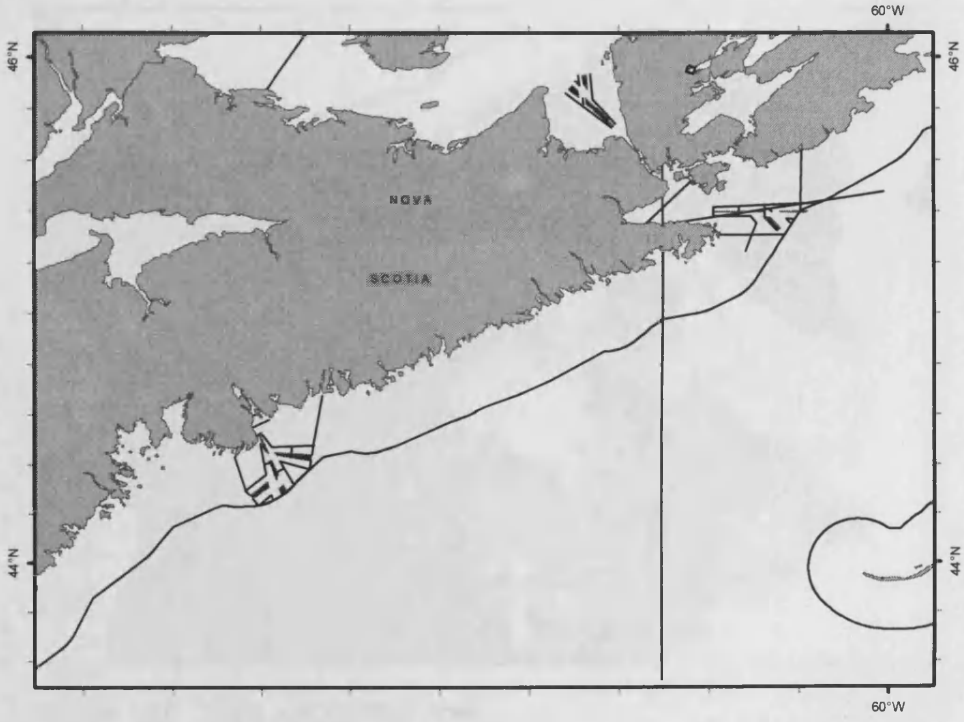


Figure 3-28. VTMS – Halifax and Canso
Source: Transport Canada.

CARDIFF UNIVERSITY
PRIFYSGOL CAERDYDD

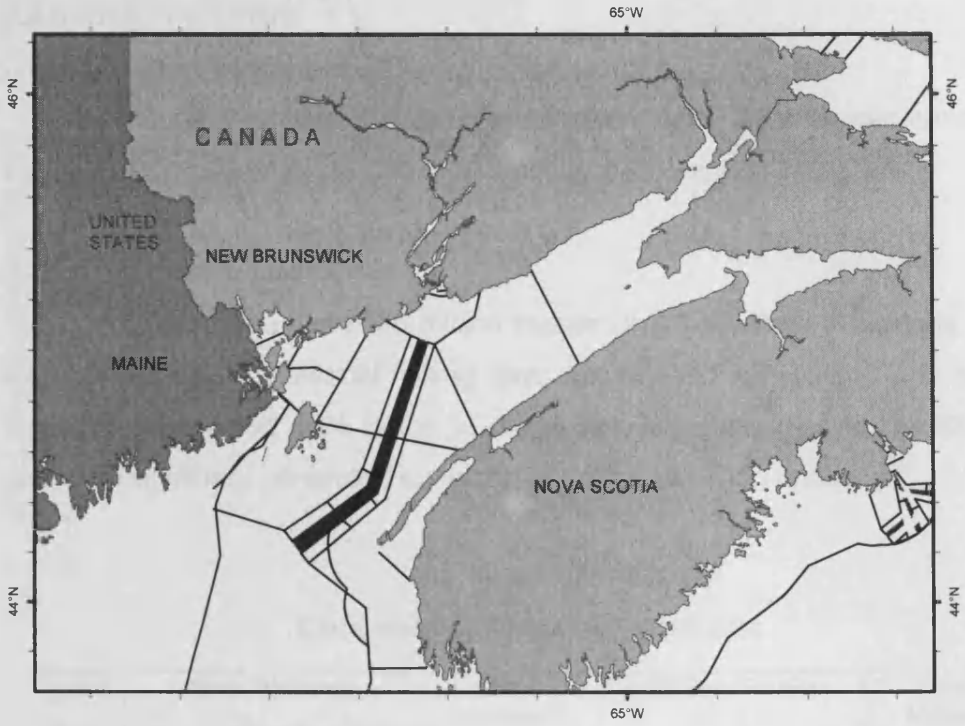


Figure 3-29. VTMS – Bay of Fundy
Source: Transport Canada.

Figure 3-30. VTMS – NORDREG Area
Source: Transport Canada.

3.3.5 Ocean Tourism

3.3.5.1 Ocean Tourism

Although a relatively recent phenomenon, ocean tourism has become an important contributor to the Canadian economy, as seen at Table 3-9.

3.3.5.2 Recreational Fishery

In 2000, there were 3.6 million recreational fishermen in Canada. There were 4.7 million recreational fishing days recorded in salt water. This national industry represented $4.4 billion in direct and investment costs. In 1992, the recreational fishery generated spending of nearly $5 billion annually.[67]

TABLE 3-9

CANADIAN OCEAN TOURISM 1995-2000

Year	Sport Fisheries		Coastal Tourism	Cruise Ship Tourism		Total Marine Tourism ($ millions)
	Number of Anglers ('000)	Direct* Expenditures/ Investment ($ millions)	Revenue /Investment ($ millions)	Number of Visitors ('000)	Visitor ** Expenditures ($ millions)	
			National			
1995	483.4	768.3	273.7	705.5	38	1,080.00
1996	463.6	728.2	294.8	787.2	44.9	1,067.90
1997	441.8	682.2	318.6	946.5	53.4	1,054.20
1998	421.1	639.2	343.8	1,025.90	59.2	1,042.20
1999	401.3	599	365.2	1,148.40	68.8	1,033.00
2000	382.4	561.5	388.5	1,354.80	83	1,033.00
			Atlantic Region			
1995	186.1	234.5	91.3	108.8	6.5	332.3
1996	180.9	210.3	100.4	85.7	6	316.7
1997	171.2	177.2	111.8	130	7.3	296.3
1998	162.5	146.3	133.3	152.8	8.8	288.4
1999	154.3	118.8	149.5	200.8	12	280.3
2000	139.2	95.5	167.3	300.8	18.4	281.2

* Direct expenditures relate to food and lodging, transportation, fishing services, fishing supplies, packages, and other; investments relate to fishing equipment, boating equipment, camping equipment, special vehicles, land-buildings, and other purchases directly related to recreational fishing.
** Estimates based on average spending per trip (same-day visitors to Canada).
Source: DFO, Survey of Recreational Fishing in Canada (1985, 1990, 1995,2000), Ottawa; Transport Canada, Cruise Industry Statistics. Statistics Canada, Tourism Scope, International Travel, Cat. No. 66-201. B.C. Government Annual Tourism Monitor.

[67] Canada, Department of Fisheries and Oceans, Joint Press Release, 29 July 1992.

3.2.6 Conservation and Protection

Of increasing importance is the conservation and protection of the marine environment. In concert with strict pollution control laws, there are controls over the routing of vessels in conjunction with marine environmental interests. Four major conservation or protected areas have been identified in the Atlantic region to provide protection for the marine ecosystem; there are many other minor areas, such as protected nesting grounds in the many islands of the region. A ground-breaking moment in the co-operation between marine industries and environmentalists occurred in 2003 when the shipping lanes in and out of the Bay of Fundy were adjusted to avoid right whale breeding areas. Another right whale protected area was identified in the vicinity of Roseway Bank off southwest Nova Scotia and mariners are asked to avoid transiting through this area.

In 2004, a Maritime Protected Area (MPA) was established at the Sable Gully. As well, a section of Georges Bank was closed to ground fishing in order to protect deep sea coral habitat on the banks. Clearly the dawning of the new millennium has signalled a sea change in the collaboration between those that use the sea for economic gain and those who seek to preserve the marine ecosystems. Figures 3-31 shows the larger conservation areas and Sable Gully MPA. Figure 3-32 shows the new shipping lane that avoids right whale breeding areas superimposed on the former shipping lane in the Bay of Fundy.

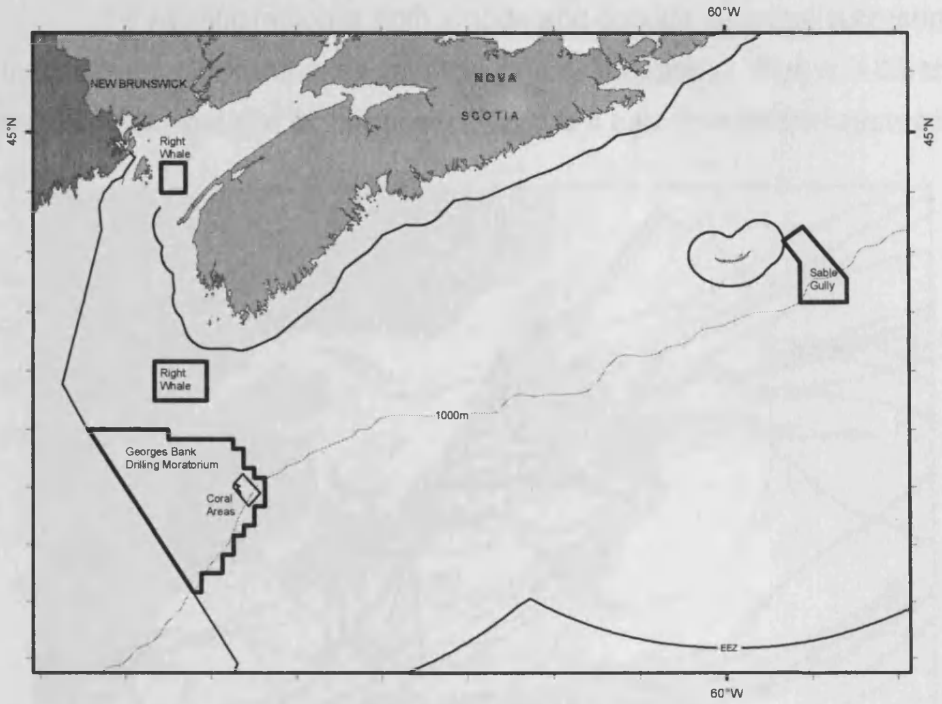


Figure 3-31. Conservation and Marine Protected Areas
Source: Canada-Nova Scotia Offshore Petroleum Board, 2003.

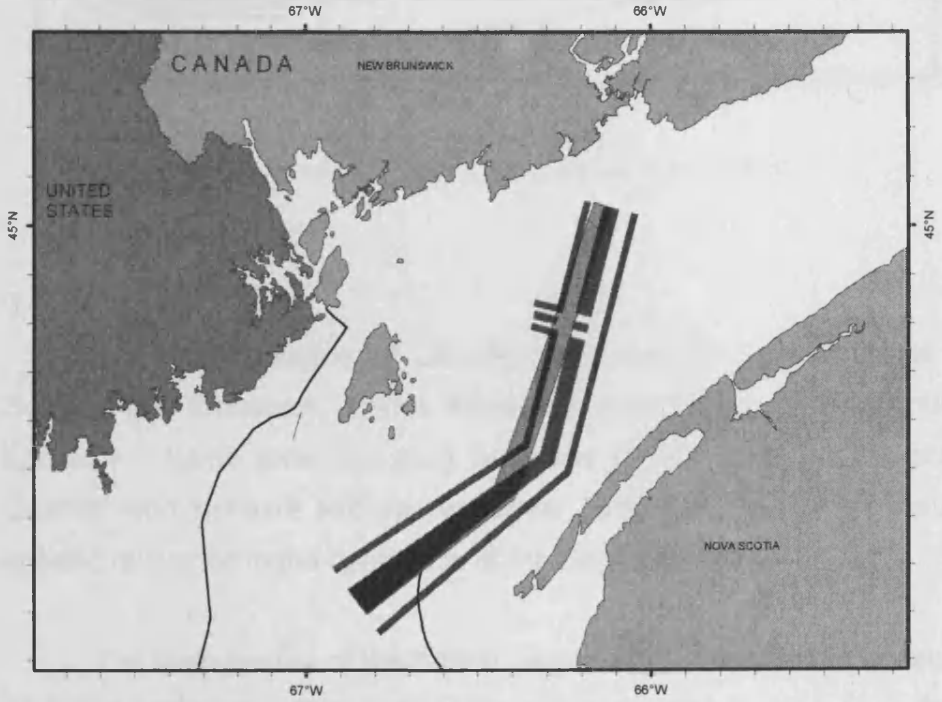


Figure 3-32. Vessel Traffic Separation and Right Whales
Source: Transport Canada, Proposal: Routeing of Ships, Ship Reporting and Related Matters, 2002.

The Atlantic region is both a node and conduit for many submarine cables that connect North America with the rest of the globe. Figure 3-33 shows the major cables that end in, or transect Canada's eastern maritime approaches.

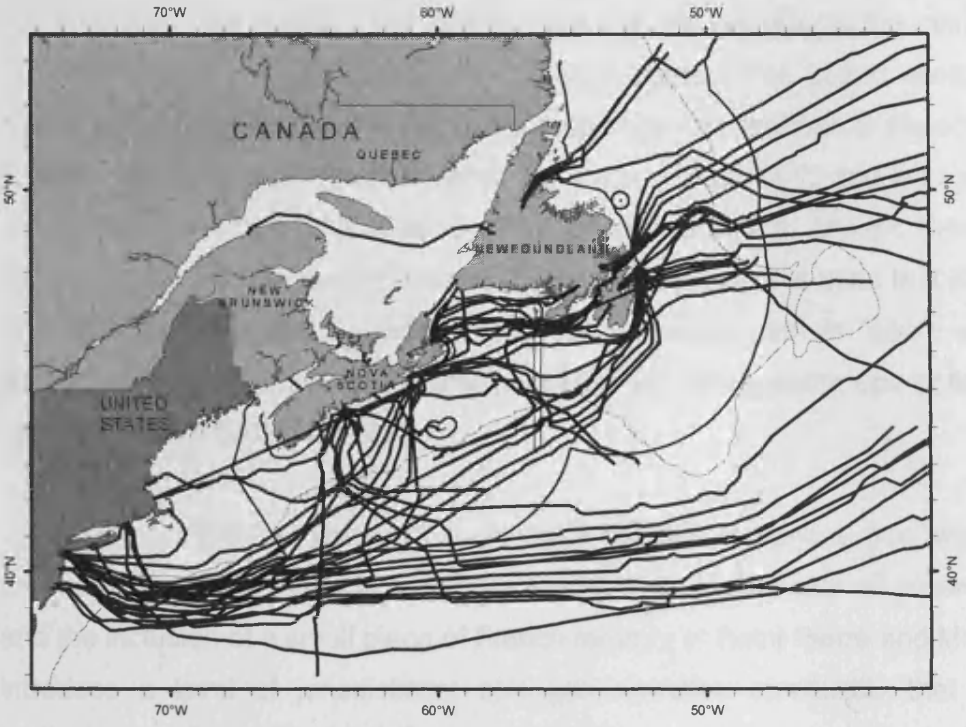


Figure 3-33. Submarine Cables – Atlantic Canada
Source: United States National Imagery and Mapping Agency, 2000.

3.4 Summary

The Atlantic region of Canada comprises the four provinces of Nova Scotia, New Brunswick, Prince Edward Island (PEI) and Newfoundland and Labrador. Some reference may be made in this thesis to the province of Quebec, and Nunavut and the Northwest Territories where their inclusion has specific relevance to the operations of the Canadian Forces.

The main feature of the Atlantic region with its associated ocean zones is its sheer vastness. The total landmass is smaller in area than that of the province of Manitoba, but the physical extent of the region is far larger due to the adjacent maritime zones. The size of the Atlantic region's Exclusive Economic Zone is larger than the landmasses of France, Germany, and Spain combined.

Although vast, the lines of communication in the Atlantic region are quite linear, following the road and rail lines east to west and vice versa. The critical infrastructure tends to be linear as well, with strategic choke points that confer vulnerability to the region. The Atlantic region is the gateway to the markets of central Canada from European and US sea routes. The ocean sectors are critical to the Canadian way of life, generating huge contributions to the economy both domestically and through international trade. Tables 2-10 and 2-11 provide quantitative measures of the value of the ocean sectors to Atlantic Canada in relation to the rest of Canada. However, it should be borne in mind that in terms of "have" and "have not" provinces, the Atlantic region, with its "boom or bust" resource-based economy has traditionally been on the receiving end of financial assistance from central Canada.

From a political perspective, the four different provinces (five when the eastern extent of Quebec is considered) with their three levels of government, and the inclusion of a small piece of French territory at Saint Pierre and Miquelon introduce a level of jurisdictional and administrative complexity that is not replicated on Canada's West Coast where there is only one province adjoining the sea. There is a distinct lack of uniformity as to how the Atlantic region is delimited for regulation of water space, air space, and resource exploitation; multiple grid systems and inconsistent boundaries duplicate responsibility for many of the same areas. Regulatory regimes created by international, national, and provincial bodies and enforced by a plethora of federal and provincial agencies with responsibility for the marine sector, makes it extremely difficult to apply a common framework to the question of maritime security and enforcement. This will be discussed in greater detail in the following chapters.

TABLE 3-10

CANADIAN OCEAN INDUSTRY EMPLOYMENT 1995-2000

Year	Commercial Fisheries	Oil &Gas	Ocean Transport	Tourism	Marine Const.	Mnfg & Services	Govt. Fed & Provincial	Total
				Full Time Equivalents (FTE)				
				National				
1995	55,095	2,129	25,636	11,880	11,480	18,110	34,850	159,180
1996	49,964	1,386	23,626	11,560	8,300	19,010	34,910	147,763
1997	48,491	1,681	22,616	11,280	7,350	19,840	29,910	141,168
1998	47,320	3,540	22,485	11,160	11,580	20,070	29,350	145,505
1999	48,617	4,490	24,044	10,940	17,400	21,100	28,340	154,931
2000	48,110	5,910	25,158	10,560	12,200	21,880	28,150	151,968
				Atlantic Region				
1995	41,681	2,129	12,423	3,650	9,640	9,190	26,070	104,783
1996	38,621	1,386	12,229	3,430	6,390	9,210	26,080	97,346
1997	36,429	1,681	11,107	3,180	5,810	9,320	22,330	89,857
1998	37,256	3,540	11,443	3,080	9,960	9,370	21,640	96,289
1999	38,095	4,490	12,221	2,970	15,800	9,920	21,290	104,786
2000	39,530	5,910	12,227	2,880	10,600	10,300	21,180	102,627

Sources: Tables 3-4, 3-6, 3-7, 3-9.

TABLE 3-11

GROSS VALUE OF OUTPUT OF OCEAN SECTORS, CURRENT DOLLARS 1995 - 2000

Year	Comm. Fisheries	Oil & Gas	Ocean Transport	Ocean Tourism	Marine Construct.	Mnfg & Services	Govt. Federal & Provincial	Total
				($ million)				
				National				
1995	3,300.40	1,696.20	3,823.50	1,080.00	1,937.80	1,694.90	7,149.10	20,681.90
1996	3,052.10	1,247.60	3,387.60	1,067.90	1,380.70	1,822.80	6,271.00	18,229.70
1997	3,100.30	1,236.50	3,184.10	1,054.20	1,297.60	1,965.50	5,549.40	17,387.60
1998	3,281.80	2,873.70	2,968.80	1,042.20	2,544.70	2,037.70	5,137.00	19,885.90
1999	3,738.90	4,044.10	3,127.50	1,033.00	3,215.70	2,243.00	4,887.40	22,289.60
2000	4,037.20	5,265.10	3,073.10	1,033.00	2,247.50	2,380.30	4,685.60	22,721.80
				Atlantic Region				
1995	2,326.40	1,696.20	2,057.20	332.3	1,674.70	802	5,347.60	14,236.40
1996	2,164.90	1,247.60	1,718.60	316.7	1,105.50	859.6	4,685.50	12,098.40
1997	2,328.60	1,236.50	1,504.20	296.3	1,094.50	916.2	4,142.30	11,518.60
1998	2,538.50	2,873.70	1,402.90	288.4	2,312.10	942.6	3,787.50	14,145.70
1999	2,836.60	4,044.10	1,420.00	280.3	2,983.10	1,063.50	3,643.60	16,271.20
2000	3,268.80	5,265.10	1,311.10	281.2	2,014.70	1,111.80	3,507.00	16,759.70

Sources: Tables 3-4, 3-6, 3-7, 3-9.

This chapter has satisfied the objectives of the first of the six themes of inquiry, namely to furnish a geographical description of the study area in a maritime context. Chapter Four will address the first segment of the second research theme, the policy framework in which maritime enforcement in Canada is shaped.

Chapter Four
CANADIAN MARITIME POLICY FRAMEWORK

4.1 Introduction

The previous chapter provided an overview of the marine geography of Canada's Atlantic coast, in order to show the extent of the major ocean-use sectors in the study area, as well as its sheer vastness of scale. The purpose of this chapter is to build upon that foundation by reviewing the policy framework that shapes how the Canadian Navy functions in support of oceans management, safeguarding national security and exercising Canadian sovereignty.

The chapter opens with a simple strategic model to stimulate reflection on Canadian values and goals, leading to identification of Canada's national maritime interests. This is followed by a description of the development of the three key oceans policy initiatives that constitute Canadian oceans governance in 2006. Next, the federal government's *ad hoc* approach to security and defence policy formulation will be examined. It will be shown that, for Canada, the distinction between security and defence policy has been, and continues to be blurred. Within this discussion, the main elements of maritime security, as a component of national security, will be identified and the issue of sovereignty will be reviewed in detail. The concept of sea control, in the context of maritime security will be introduced. This policy examination will establish the relevant elements that influence how the Canadian government applies the policy that, in turn, affects the role of the Canadian Navy.

4.2 National Interests

To better grasp how oceans, security, and defence policy in Canada may have been shaped in the past decades, it is useful to understand what forms the basis of the models from which policy is derived. Don Macnamara and Ann Fitz-Gerald observe that it is usual for strategic planning models to commence with the identification of national values and goals that portray the national interests that a country intends to uphold. These values and goals are considered in the context of issues and trends to develop a strategy that utilizes the human,

technical and fiscal resources available to the nation.[68] American authors William Ascher and William Overholt offer a simple strategic planning model to demonstrate this concept.

Interests	+ Environment	= Strategy
National Values National Goals	Domestic / International • Political • Economic • Technological • Socio-Cultural • Military / Defence	National Policies • Foreign/Diplomatic • Economic • Technological • Economic • Military / Defence

Figure 4-1. A Simple Strategic Model
Source: William Ascher and William H. Overholt, *Strategic Planning and Forecasting* (Toronto: John Wiley and Sons, 1983), as cited in W. D. Macnamara and Ann Fitz-Gerald, "A National Security Framework for Canada," *Policy Matters* 3 (No. 10, October 2002): 1-27.

What this model shows is that the national strategy of a country is a set of policies, the product of understanding the impact that the perceived political, economic, socio-cultural and military environments, both domestic and international, have on the nation's interests. These interests are the country's assets, fundamental values, and its national goals.

While politicians frequently comment about an issue "being in the national interest," there is no clear articulation by the federal government of Canadian national interests. However, it is possible to divine these interests by reviewing the goals outlined in various policy and constitutional documents. For example, the Canadian fundamental values, expressed in a 1995 foreign policy White Paper, are listed as respect for the rule of law, democracy, human rights, and the environment. A similar set of values was incorporated into a Department of National Defence strategic plan. In this document, two additional values were expressed, those being sustainable economic well-being as well as peace, order and good government as defined in the Canadian constitution. Moreover, the foreign policy White Paper included as well specific goals that can be construed

[68] W. D. Macnamara and Ann Fitz-Gerald, "A National Security Framework for Canada," *Policy Matters* 3 (No. 10, October 2002): 1-27.

to be national objectives. These were the promotion of prosperity and employment, the protection of Canadian security within a stable global framework, and projecting Canadian values and culture.[69]

These and other federal policy statements contain variations on the theme of fundamental Canadian values and goals. In summary, the values are democracy (freely elected, representative government), individual freedom (while respecting the rights of others, and social justice (intrinsic value of life). Canadian national goals may vary slightly from time to time, but invariably include security (including sovereignty), prosperity, rule-based international order, national unity, competitiveness, and sustainable development.

4.2.1 Vital and Secondary Interests

Two other terms used in conjunction with "national interests" are worthy of discussion. These terms are "vital" and "secondary" interests. A vital interest is a situation, event or trend that is of sufficient magnitude that it is perceived to threaten the survival or security of the nation. Since the threat is deemed so great, the nation would be prepared to counter it using strong measures including the use of military force. Such a scenario might include a direct attack on national territory, or a threat to national political or economic well-being such as endangered access to the energy supply. In any event, vital interests are those issues for which the state would be willing to go to war. By comparison, secondary interests are those goals that the state would like to attain but for which it would not resort to the use of force.

4.2.2 Canada as a Maritime Nation

What is missing from the Ascher and Overholt model is the role of the seas. A maritime strategy is an essential component of the overall national strategy; however, it is relevant only when addressed in the context of the policy concerns of other areas.

Interests	+ Environment	= Strategy
National Values National Goals	Domestic / International • Political • Economic • Technological • Socio-Cultural • Military / Defence • **Coast / Oceans**	National Policies • Foreign/Diplomatic • Economic • Technological • Economic • Military / Defence • **Maritime / Oceans**

Figure 4-2. A Simple Strategic Model (adapted for maritime interests)

It should be apparent from the previous chapter that Canada, with the longest coastline of any country in the world and bounded by three oceans, is a maritime nation and, thus, should have a coherent maritime strategy. Canada has considerable offshore resources and is a trading nation heavily dependent on the free movement of goods upon the world's oceans. Certainly the composition of Canada's naval forces is in keeping with that of a maritime power, albeit a small one: a general purpose, expeditionary force.

Some scholars suggest that a people's proximity to the sea influences the national character.[70] The Canadian population, concentrated as it has always been in the centre of the country and thus far away from the coasts, has not historically made the link between the use of the seas and economic prosperity. Cynthia Lamson notes that,

> for many Canadians, the oceans are simply beyond reach. Others take the oceans almost for granted and do not comprehend the need for special policy and management measures."[71]

---

[69] Canada, Department of Foreign Affairs and International Trade, *Canada in the World: Canadian Foreign Policy Review* (Ottawa: 1995), 14.; Canada, Department of National Defence, *Shaping the Future of Canadian Defence: A Strategy for 2020* (Ottawa: June 1999), 25.

[70] E.C. Semple, *Influences of Geography and Environment* (New York: Henry Holt, 1911), 282, quoted in J.R.V. Prescott, *The Political Geography of the Oceans*, (London: David & Charles, 1975), 14.

[71] Cynthia Lamson, "Oceans Policy for a Complex World," in *The Sea Has Many Voices: Oceans Policy for a Complex World*, ed. Cynthia Lamson (Montreal: McGill-Queen's University Press, 1994), 6.

As a result, maritime interests have not been at the centre stage of political awareness.

4.2.3 Vital Maritime Interests

In 1991, the Centre for Foreign Policy Studies at Dalhousie University conducted a two-year study of Canada's maritime interests, primarily focussed on sustainable wealth generation and competitiveness. Fred Crickard, who led the study entitled *Canadian Marine Policy and Strategy*, identified the broad fields that a nation must take into account when developing a maritime strategy and applied these fields to the Canadian situation. In doing so, he identified Canada's vital maritime interests. These are:

a. Marine transportation and trade. This interest comprises shipping, shipbuilding, ports, harbours and waterways, search and rescue, and response to marine emergencies;

b. Ocean environment. Protection of habitats, conservation of species, and pollution prevention are the main thrusts of this interest;

c. Resource development. This category includes renewable resources such as fisheries, aqua-culture, and alternatives for generating energy, as well as non-renewable resources such as offshore petroleum and natural gas, minerals, and aggregates;

d. Marine science and technology. Through this vital interest national capabilities in all oceans sectors are enhanced;

e. Maritime security and sovereignty. This interest spans sovereignty, law enforcement, defence, and international stability.[72]

---

[72] M.E. Eames and C. Lamson, eds, *Canadian Marine Policy and Strategy: National Requirements*, (Halifax: Centre for Foreign Policy Studies, Dalhousie University, 1993) as quoted in Fred Crickard, "Canada's ocean and maritime security: A strategic forecast," in *Marine Policy* 19 (No. 4, 1995): 335-342.

Given this brief overview of Canada's broad national values, goals, and vital maritime interests, attention will be turned to how the federal government translates these interests into relevant policy. The first examination is a review of the evolution of oceans policy in Canada.

4.3 Oceans Policy

Throughout its history, Canada traditionally has taken a slow, *ad hoc* and sometimes painful approach to oceans policy development, a process that has been described as a "youthful or hybrid form of resource or environmental policy formulation."[73] Fred Crickard observes that this policy development has occurred "institutionally by sectors under a lead federal agency and is further fragmented by the division of federal-provincial powers."[74] Ronald Crowley and Raymond Bourgeois are less complimentary in their opinion of the Canadian approach:

> There is probably not a single model to explain Canadian oceans policy development. Rather, what used to be called "muddling through" may provide the best explanation of individual commitments to oceans issues and the desire to improve management of our ocean space.[75]

4.3.1 Periods of Policy Development

While the Canadian approach may have been fragmented, according to Crickard there were three distinct periods of national oceans policy-making that correspond roughly to the three decades that make up the 1970s, 1980s, and 1990s.[76] The first period can be categorised as a response to increased offshore hydrocarbon exploration, over-fishing, and marine pollution concerns. During the 1970s, the federal government shifted its foreign policy approach in international affairs towards what would be called today a more "Canada-centric"

---

[73] Lamson, "Oceans Policy for a Complex World," 3.; Douglas Day, "Public Policy and Ocean Management in Canada," *Marine Policy* 19, (No. 4, 1995): 251-256.; Cynthia Lamson, "Prospects: Towards a Three-Ocean, One-Nation Policy," in *The Sea Has Many Voices: Oceans Policy for a Complex World*, ed. Cynthia Lamson (Montreal: McGill-Queen's University Press, 1994), 321.

[74] Fred W. Crickard, "Oceans Policy and Naval Policy 1970 to 1997: Divergent Courses or Making the Rendezvous? The Canadian Experience," in *Summit of the Sea: The United Nations International Year of the Ocean, 1998: Maritime Security Working Papers Number 7/8*, (Halifax: Dalhousie University, 1997): 9.

[75] Ronald W. Crowley and Raymond C. Bourgeois, "The Development of Canada's Ocean Policy," *Oceans '89 Proceedings* (Washington: Marine Technological Society, 1989), 178.

[76] Crickard, "Oceans Policy and Naval Policy 1970 to 1997,"11.

posture. Whereas in the twenty-years previous, when participation in multilateral organizations was seen as an excellent means of extending Canadian influence, in the future foreign policy was to be an extension abroad of Canadian national policy.[77]

It was during this period that Prime Minister Pierre Trudeau introduced "sovereignty" into the federal government's lexicon and placed the protection of sovereignty at the head of security and defence policymakers' agendas. This occurred at a time when an increased awareness of the peaceful use of the oceans began to resonate with the Canadian public, coincident with a number of global marine pollution incidents. Likewise, the transits in 1969 and 1970 of the American vessel *MV Manhattan* through the Northwest Passage turned public attention northward. These challenges to Canadian sovereignty, along with concerns about environmental impact, over fishing on the East Coast, and unprecedented offshore petroleum exploration during an international oil crisis prompted a series of legislative measures. These included the declaration of a 12 nautical mile territorial sea through the *Territorial Sea and Fishing Zones Act*, the introduction of the *Arctic Waters Pollution Prevention Act* in 1972, and the unilateral declaration of a 200 nautical mile Exclusive Fishing Zone in 1977. Some analysts suggest that the latter two initiatives were the key events that signalled Canada's intent to be perceived as a coastal state.[78] Moreover, the federal government tabled a National Oceans Policy in 1973 that sought to guarantee Canadian industry participation in development of offshore resources and promoted key marine science and technology development. Regrettably, little tangible action resulted from this policy; some analysts suggest that it was simply ahead of its time.[79]

By the early 1980s, a decline was registered in hydrocarbon exploration in Canada's maritime zones due to lower world prices for oil and gas in concert with increased costs for their extraction offshore. This second period of oceans policy development saw environmental issues and the demise of fish stocks

---

[77] J.L. Granastein, *Canadian Foreign Policy*, (Toronto: Copp Clark, 1986), 52.
[78] Cynthia Lamson, "Oceans Policy for a Complex World," 6.
[79] Crowley and Bourgeois, "The Development of Canada's Ocean Policy," 172.

supplant oil and gas exploration as the foci for oceans policy makers. By the mid-1980s, government officials realized that increased use of waters of direct interest to Canada called for a public examination rationalization of the diverse policies and regulations that had developed in the various oceans sectors. Responsibility for co-ordinating federal oceans policy was vested in the Minister of Fisheries and Oceans who, in 1987, tabled Canada's first attempt at formulating a national oceans policy, a document titled *Oceans Policy for Canada*. This policy statement focussed on resource management as well as economic and technological opportunities in Canada's maritime zones. It identified 75 ocean-related programs delivered by 14 federal departments at a cost of 1.3 billion dollars.[80] Interestingly, the departments mentioned did not include the Navy, which at the time had a budget of 1.7 billion dollars. *Oceans Policy for Canada* was the first of a number Fisheries and Oceans national policy statements that grappled with resource exploitation and conservation themes but was largely void of consideration for maritime security, a trend that has continued to the present. However, the policy did articulate the need for co-ordination between federal departments with oceans-related mandates, another first.

Also in the mid-1980s, the United States again challenged Canada's claim to sovereignty in the Arctic by sending a Coast Guard ice-breaker, the *USCGC Polar Sea*, through the Northwest Passage in 1985 without prior permission from Canadian authorities. Although the Soviet submarine fleet remained North America's main maritime security threat, some analysts believed the principal challenge to Canadian sovereignty would be by the nation's close ally to the south. On a positive note, these incursions in the Arctic by the United States re-kindled the sovereignty debate concerning Canada's northern waters and focussed public attention on oceans issues.[81]

---

[80] Canada, Department of Fisheries and Oceans, *Canada's Oceans: An Economic Overview and a Guide to Federal Government Activities* Communications Directorate DO, Ottawa, 1987, 54-65.
[81] F.W. Crickard, "Peace and Security in the Arctic, Decision for Canada: Nuclear Powered Submarine and Other Canadian Military Options," *Peace and Security in the Arctic, Decision for Canada* (Ottawa: Canadian Centre for Arms Control and Disarmament, November 1987), 3.; Crowley and Bourgeois, "The Development of Canada's Ocean Policy," 171.

The third period of oceans policy development bore witness to increased emphasis on oceans governance and a shift from technology-based development to a regulatory-based approach to oceans management. With the 1990 fall of the Berlin Wall, defence planners recognized that the main Soviet maritime threat, its vast submarine force, could no longer be sustained and would fall into decline. Non-military threats replaced those of the Soviet empire, and were manifested by increasing over-fishing, marine pollution, narcotics smuggling, and illegal immigration in Canada's maritime zones. A House of Commons committee in 1990 re-defined sovereignty protection to include these non-military threats, and identified the "major challenge confronting Canadian maritime policy" as likely being "the effective control of our coast waters and the 200 mile economic zone."[82]

4.3.2 The *Oceans Act*

The Canadian government became increasingly aware of the oceans as a medium for sustainable wealth generation during the early 1990s. This increased awareness coincided with the coming into effect of the UNCLOS III Convention in 1997. However, more importantly, it was introduction of Canada's *Oceans Act* in the same year that signalled that the government was truly serious about creating relevant policy in the management of Canada's three oceans in a more comprehensive and balanced manner.[83] The *Oceans Act* consolidated a number of extant ocean-related statutes into a single piece of legislation that promoted integrated coastal zone management, and paved the way for Canada's 6 November 2003 ratification of the third United Nations Convention on Law of the Sea. More importantly, a legislative framework was created to support ocean governance in Canada.[84] In 2001, five years after the enactment of the *Oceans Act*, a House of Commons committee found that the legislation had proved to be fundamentally sound.[85]

---

[82] Canada, House of Commons, *Maritime Sovereignty*, Report of the House of Commons Standing Committee on National Defence and Veterans Affairs (Ottawa: November 1990), 2.
[83] Crickard and Herbert, "An Oceans Strategy for the Northwest Atlantic," 27.
[84] Crickard, "Oceans Policy and Naval Policy 1970 to 1997," 26.
[85] Canada, House of Commons, Standing Committee on Fisheries and Oceans. *Report on the Oceans Act*. October, 2001.< http://www.parl.gc.ca/infocomdoc/37/1/FOPO/Studies/Reports/fopo01/07-intro-e.htm#INTRODUCTION> (11 April 2005).

4.3.3 Canada's Ocean Strategy

The *Oceans Act* designated Fisheries and Oceans Canada as the lead department for oceans policy development in this country. After five years of formulation, including a public consultation process, Canada's Ocean Strategy (COS) was formally launched in 2002. The aim of the strategy is to set policy direction for oceans management and it sets out several overarching goals. The first goal is replace the existing fragmented approach to oceans management with a collaborative integrated approach coordinating the 23 federal departments and agencies that have ocean-related policies, legislation or activities. Other goals include expanding working partnerships in the oceans sector, understanding and protecting the marine environment, optimizing the sustainable economic potential of the oceans and positioning Canada as a world leader in oceans management.[86]

More importantly, Canada's Ocean Strategy promotes effective ocean governance, including exercise of national sovereignty and security. The strategy recognizes the fundamental right in international law for Canada to exert sovereignty over its national maritime zones, and confirms that enforcement is key to the protection of Canadian sovereignty and maintenance of maritime order and security. Furthermore, Canada's Ocean Strategy calls for a coordinated system of surveillance and monitoring of Canadian ocean space.[87] However, the document does not prescribe how to effect these surveillance and enforcement requirements, i.e., responsibilities by department, or which agency has the lead.

4.3.4 The Oceans Action Plan

In opening Parliament in the autumn of 2004, Prime Minister Paul Martin announced that "the Government will also move forward on its Oceans Action Plan by maximizing the use and development of oceans technology, establishing a network of marine protected areas, implementing integrated management plans, and enhancing the enforcement of rules governing oceans and fisheries,

---

[86] Canada, Foreign Affairs Canada, *Canada and the Oceans,* 16 November 2004, <http://www.dfait-maeci.gc.ca/sustain/EnvironIssu/canOcean/oceans-enasp> (28 January 2005).
[87] Canada, Fisheries and Oceans Canada, *Canada's Oceans Strategy* (Ottawa: 2002), 17-18.

including rules governing straddling stocks.[88]" Unveiled in May 2005, this plan noted the failure of existing Canadian oceans management methods, due to a fragmented approach to complex issues by public and private sector stakeholders, a general lack of transparency, and a reactive posture to emerging problems rather than adoption of proactive strategies. This failure resulted in declining fish stocks, increased species at risk, and "growing user conflicts."[89]

The Oceans Action Plan comprises the four central pillars of international leadership, sovereignty, and security; integrated oceans management for sustainable development; health of the oceans; and oceans science and technology. With regards to the first pillar, international leadership, sovereignty, and security, the sub-themes here are overseeing the implementation of UN Law of the Sea, oceans governance, maritime security, sovereignty in the Arctic and extension of jurisdiction over the continental shelf. The Oceans Action Plan confirms maritime security as being fundamental to oceans management, and endorses its links to the National Security Policy.[90]

The second pillar, integrated oceans management for sustainable development, is focussed on marine conservation, ecosystem-based and multiple-use oceans management, sustainable development of fisheries and aquaculture, and Aboriginal participation. The third pillar, health of the oceans, concentrates on the establishment of Marine Protected Areas, species at risk issues, pollution prevention, and the streamlining of environmental regulatory processes. The last main thrust of the Oceans Action Plan is oceans science and technology, including championing development of the oceans technology sector, the improvement of Canadian seabed mapping expertise, and ocean mapping for United Nations Law of the Sea purposes.[91]

---

[88] Speech from the Throne: To Open the First Session of the Thirty-Eighth Parliament of Canada, October 5, 2004, p. 13.
[89] Canada, Fisheries and Oceans Canada, *Canada's Oceans Action Plan: For Present and Future Generations,* 27 May 2005, p. 4. <http://www.dfo-mpo.gc.ca/canwaters-eauxcan/oap-pao/pdf/oap_e.pdf> (22 December 2005).
[90] Fisheries and Oceans Canada, *Canada's Oceans Action Plan: For Present and Future Generations,* 6.
[91] Ibid., 5.

The Oceans Action Plan also calls for international partnerships for oceans stewardship, a bilateral council on the Gulf of Maine, adoption of an Arctic Marine Strategic Plan, and continued use of the North Atlantic Fisheries Organization to counter over-fishing. However, as in the case of Canada's Ocean Strategy of 2002, the Oceans Action Plan does not prescribe interdepartmental responsibilities for maritime security, surveillance or enforcement.[92]

The *Oceans Act*, Canada's Oceans Strategy, and the Ocean Action Plan are recent key policy initiatives that indicate that Canadian politicians are starting to recognize that national sovereignty and security are fundamental governmental duties, and that surveillance and monitoring of Canada's offshore estate are important components of these responsibilities. However, what is less clear, from an oceans policy perspective, is where and how those responsibilities are to be co-ordinated within the framework of federal departments with maritime interests. One would reasonably expect that security and defence policy should provide greater clarity to this issue. The next part of this chapter examines exactly that.

4.4 National Security and Defence Policy

It should be noted at the start of this discussion that in the literature, the distinction between the security policy and defence policy is often blurred. Frequently the term security is used to mean defence and vice versa. For the purposes of this thesis, defence policy is deemed to be a sub-set of national security policy. In other words, defence is but one component to providing an umbrella of security for Canadians

The history of security and defence policy development in Canada has not been punctuated with startling epiphanies or tremendous foresight. In fact, up until 2004, no overarching national security policy had been committed to paper, and many political analysts note that Canada's *ad hoc* national security policy-

[92] Ibid., 11-12.

making apparatus had been unable to bring policy coherence within government.[93] One author argues that Canada's fundamental inability to articulate its strategic interests, crucial in the formulation of a coherent security policy, reflects a fundamental lack of strategic culture.[94] This inability has meant that crisis-based management of security and defence has been the norm. A dichotomy exists between the standard rhetoric of many governmental pronouncements on national security, be they written policy statements or public addresses by elected officials, and the actual choices that are made when prioritising and allocating human and fiscal resources to the departments responsible for providing this security.

Several authors suggest that the immense size of Canada, bounded by three oceans, and its proximity to the United States, makes it both indefensible yet largely free from the threat of invasion. These factors are cited by analysts as a partial explanation of why security and defence policy have seldom been high on the government agenda. Douglas Bland, Sean Maloney and Jeff Tasseron suggest that the *de facto* strategy of past Canadian Prime Ministers, perhaps more by design than omission, has been to maintain as little defence structure as the government could get away with. Tasseron also remarks on the "split personality" of Canadian defence policy, in which the elected officials claim security and defence of Canada as the number one priority, yet structure the Armed Forces for international military commitments.[95]

Having noted the rather loose process employed in defence policy development, it is useful to review the main documents that have lead up to Canada's most recent defence policy statement. Following that, the latest development in security policy formulation will be reviewed.

---

[93] Douglas L. Bland and Sean M. Maloney, *Campaigns for International Security: Canada's Defence Policy at the Turn of the Century* (Kingston, ON: McGill-Queen's University Press, 2004), 190-195.; Jeff Tasseron, "Facts and Invariants: The Changing Context of Canadian Defence Policy," *Canadian Military Journal* 4, No. 2 (Summer 2003): 19-30.
[94] Scot Robertson, "Finding a Way: National Security and Defence Policy for a New Liberal Leadership *Policy Options* 25, No. 1 (December 2003/January 2004): 56-61.
[95] George Lindsey et al., "Canada's Security Policies," *Behind the Headlines*, Vol 60, No. 2 (Winter 2002/2003), 1-16; Bland and Maloney, *Canada's Defence Policy at the Turn of the Century,* 193-194.; Tasseron, "Facts and Invariants," 19-30.

From the end of the Second World War until the late 1960s, the primary focus of Canadian foreign policy was to support collective security through the United Nations and other security alliances. The effect of this approach was that defence policy gravitated towards Canadian participation North Atlantic Treaty Association (NATO) and North American Air Defence (NORAD) arrangements.[96] Defence policy aims shifted with the election of Pierre Trudeau in 1968. The new Prime Minister believed that, rather than have "participation" as the key policy objective, foreign and domestic policy both should be driven by national interests, with defence policy flowing directly from foreign policy. Trudeau's understanding of the armed forces was poor, and his perception of their value was even less sophisticated. He rapidly commissioned reviews of defence and foreign policy during a period of increasing inflation that was having negative effects on the Canadian economy.[97]

By 1969, the defence review had been completed and three reports had been tabled by External Affairs, the Department of National Defence, and the House of Commons Standing Committee on External Affairs and National Defence. All of these reports recommended Canada's continued commitment to NATO, a course of action that held little allure for the Prime Minister. With European nations having recovered from the ruin of the Second World War, and a general development of détente between the superpowers, Trudeau reasoned that there was little rationale for continuing the nation's contribution to NATO at existing levels. Trudeau directed that a special report be produced that more accurately reflected his thoughts on the direction in which defence policy should head. The secret report, *Canadian Defence Policy – A Study*, recommended that Canada's commitment to NATO be reduced, and that the military's focus shift more towards domestic roles. *Canadian Defence Policy – A Study* formed the basis for future Cabinet decision-making pertaining to defence.[98]

---

[96] Bruce Thordarson, *Trudeau and Foreign Policy* (Don Mills: Oxford University Press, 1972), 174.; Canada, Department of National Defence, *Defence in the 70s* (Ottawa: Information Canada, 1971), 1.

[97] Pierre Elliott Trudeau, "The Relationship of Defence Policy to Foreign Policy," *Statements and Speeches,* No. 69/8, April 12, 1969.; J.L. Granastein and Robert Bothwell, *Pirouette: Pierre Trudeau and Canadian Foreign Policy* (Toronto: University of Toronto Press, 1990), p.8.; Thordarson, *Trudeau and Foreign Policy*,174.

[98] Denis Stairs, "Pierre Trudeau and the Politics of the Canadian Foreign Policy Review," *Australian Outlook* 26 (No. 3, 1972): 193-196.

In April 1969, Trudeau publicly outlined a different philosophy for defence that held the armed forces were better employed domestically in Canada than in Europe. He continued by outlining the new defence priorities. These were surveillance of Canada's territory and coastlines (sovereignty protection), defence of North America in co-operation with the United States, fulfilment of agree-upon commitments to NATO, and performance of international peacekeeping missions.[99]

Trudeau left no doubt as to which of the defence priorities was most important. In a speech later that month, he opined that, "our first priority is the protection of Canadian sovereignty, in all the dimensions that it means."[100] He then tasked the Minister of National Defence to draft a Defence White Paper that incorporated the shift in priorities. White Papers are policy statements that the Canadian government normally tables to promulgate policy within a specific ministry or sector. They may "codify incremental policy decisions aggregated over time, reaffirm previous commitments, or outline new policy thrusts of the government of the day."[101] Crickard observes that Canadian Defence White Papers are both policy statements as well as force development statements.[102] The White Paper ordered by Trudeau was completed in 1971.

4.4.1 The 1971 Defence White Paper

Prime Minister Trudeau's intent to shift away from NATO-driven defence objectives was articulated in the 1971 Defence White Paper, *Defence in the 70s*. The government, given the assumption that a state of détente existed between East and West, called for the reduction of Canadian military forces in Europe by half, in addition to personnel cuts at home, with concomitant reductions in defence expenditures. *Defence in the 70s* set the priority of the domestic

---

[99] Thordarson, *Trudeau and Foreign Policy*,182.
[100] Trudeau, "The Relationship of Defence Policy to Foreign Policy."
[101] Fred Crickard, "The Role of Maritime Strategy in Ocean Development and Management," in *Canadian Ocean Law and Policy*, ed. David Vanderzwaag (Toronto: Butterworths, 1992), 515.
[102] Force development is the process of determining the operational capabilities required by an armed service from guidance articulated in national strategies and policies. The armed service's organizational, leadership, personnel, training, materiel, and education capability requirements are developed into programs and structure, to accomplish the service's missions and functions.

security, including protection against non-military threats, ahead of bilateral or NATO commitments which had, in the past, been what shaped defence policy development. The 1971 White Paper established the requirement to create military operations centres on the Atlantic and Pacific coasts to collaborate with other government departments on surveillance operations because, as it stated, "National Defence has, however, ultimate responsibility to ensure that overall an adequate Canadian surveillance and control capability exists for the protection of Canadian sovereignty and security."[103]

Three short years after the Defence White Paper, another review was undertaken. This was the 1974 Defence Services Review.

4.4.2 The 1974 Defence Services Review

By the end of 1974, all federal departments were feeling the full effect that double digit inflation had on operating budgets. At the Department of National Defence, major equipment such as tanks, ships and combat aircraft, were either at the end or approaching their useful lives. The Department was under significant pressure to downsize and cut back on expenditures. The Minister of National Defence, Mr. James Richardson, described the situation as follows,

> With no major equipment purchases for almost ten years, and insufficient resources to met day-to-day operational needs, the Canadian Armed Forces were approaching the point where they could no longer carry out effectively the tasks assigned to them, either at home or abroad.[104]

The MND assembled a review committee to determine how the Armed Forces could best achieve its roles and missions within the reduced fiscal environment of the mid-Seventies. In essence, it was a capital acquisition plan with the aim of reversing the rapid decline in Canadian military capability. Fundamental to the committee's recommendation was its assessment that détente rests on the maintenance of a balance of power, and that Canada had benefited from its collective security arrangements with its allies. Thus, in the Defence Services

---

[103] Canada, Department of National Defence, *Defence in the 70s* (Ottawa: Information Canada, 1971), 10.
[104] C.J. Marshall, "Canada's Forces take stock in Defence Structure Review," *International Perspectives* (January/February, 1976): 26.

Review report there was a re-emergence of allied commitments as the key determinant of military force structure. In only three years, sovereignty protection had slipped from the number one priority to be replaced by participation in NATO.[105]

Protection of Canadian sovereignty would not remain on the back burner of federal priorities for long. In 1977, the Canadian government declared a 200 nautical mile exclusive fisheries zone, thereby dramatically increasing the maritime waters over which Canada claimed jurisdiction by several million square kilometres. The federal government was responsible to monitor and enforce this vast area, and the Canadian Navy had a not insignificant role in sovereignty protection within this new maritime zone.

4.4.3 The 1987 Defence White Paper

In 1987, the same year that the Minister of Fisheries and Oceans promulgated *Oceans Policy for Canada*, the Minister of National Defence tabled a new White Paper titled *Challenge and Commitment.* Very much a Cold War document, this policy statement argued that "the first objective of Canada's security policy" was to promote a stable international environment in which Canadian interests and values could prosper. The main thrust of *Challenge and Commitment* was that collective security and deterrence would continue to be supported through Canada's engagement in NATO and NORAD. It called for the defence of domestic territory, largely through an expanded Reserve force, and it reaffirmed the nation's commitment to land and air forces to Central Europe. Moreover, Canada's military would be provided the requisite modern equipment needed to carry out its missions and to maintain credibility through a "steady, predictable, and honest funding program." [106]

While the capabilities of all elements of the armed forces were to be augmented, the maritime forces were the clear winners in this blueprint. Through *Challenge and Commitment*, a Canadian government had tabled for the first time

---

[105] Ibid., 30.
[106] Canada, Department of National Defence, *Challenge and Commitment – A Defence Policy for Canada* (Ottawa: Supply and Services Canada, 1987), 3.

a defence policy statement that portrayed Canada as a maritime nation with vital security and sovereignty interests in three oceans, and portended the creation of a "Three Ocean Navy" concept.

Unfortunately, the Minister of National Defence who had championed the 1987 White Paper left office shortly after its release, and within two years his replacement was also gone. In 1989, a new Minister announced the cancellation of fourteen of the major capital projects that the White Paper had called for, including the project to acquire nuclear–powered submarines for Arctic sovereignty patrols. Within another year, the Berlin Wall toppled, and the rationale behind the 1987 White Paper had been called into question. An election loomed in 1993, and during the campaign it became evident that all of the political parties expected that whatever the election's outcome, the defence budget would be reduced as Canada reaped the "peace dividend" from the end of the Cold War.[107]

4.4.4 The 1994 Defence Review and Defence White Paper

In 1994 the new Liberal Minister of National Defence announced a defence policy review. The Minister promulgated a "Minister's Guidance" document that specified the scope of the review, and it became clear that the exercise was designed to shift the focus of defence policy away from its Cold War emphasis towards a policy that was more internationalist. Included in the "Minister's Guidance" were a suggested range of tasks that the Armed Forces could be expected to undertake. These included those normally associated with sovereignty protection, i.e. actions to support enforcement against illegal fishing, drug smuggling, human trafficking, and pollution. As well, the Canadian Forces could expect to support search and rescue operations and provide humanitarian aid. The guidance also included military support to both NATO and continental defence in co-operation with the United States.

---

[107] Claire Turenne Sjolander, Cashing in on the 'Peace Divident': National Defence in the Post-Cold War World," Gene Swimmer, ed. *How Ottawa spends 1996-97: Life under the Knife* (Ottawa: Carleton University Press, 1995), 253.

The review committee issued its report in October 1994. Titled *Security in a Changing World*, the report recommended a number of policy positions. Foremost, the report recommended establishing the protection of sovereignty as the fundamental role of the Armed Forces. Moreover, it advocated a continued partnership with the United States in the defence of North America, and considered continued participation in NORAD as essential. *Security in a Changing World*, recommended that Canada retain membership in the NATO Alliance, and that the nation continue to participate in United Nations and other multinational peacekeeping missions. Also, for the first time, the report suggested that Canadian security pay more attention to the Pacific coast.[108]

The 1994 Defence White Paper was released one month following the tabling of the Special Joint Committee's report. It was the first Defence White Paper published in the post-Cold War era. While the document very much reflected the government's stated aim of reduced defence spending, it nevertheless reiterated the requirement for the Canadian Forces to deal with sovereignty challenges. To address sovereignty protection, the White Paper listed several naval roles that included rendering assistance to other government departments in achieving national goals such as environmental protection, disaster relief, drug interdiction, and fisheries protection, as well the continued maintenance of a search and rescue capability. Moreover, the 1994 White Paper charged the Navy with demonstrating, on a regular basis, the ability to monitor and control activity within the nation's maritime zones. The 1994 Defence White Paper would be the only defence policy document to serve Canadian defence community for over a decade.

Before examining the development of a much overdue security policy, the following points are offered to recap Canadian defence policy development post-World War II. Since the mid-sixties Defence White Papers have followed a simple basic template. Indeed, they contained some reference to strategic assessment, but were largely devoid of meaningful choices for defence.[109]

---

[108] Canada, House of Commons, Security in a Changing World: The Report of the Special Joint Committee on Canada's Defence Policy (Ottawa: 1994), 33.
[109] Bland and Maloney, *Canada's Defence Policy at the Turn of the Century,* 193-194.

Bland and Maloney assert that these "copy-cat" White Papers reflected the strategic stalemate of the Cold War. They further argue that, traditionally, the armed forces have been viewed by politicians as a burden to the taxpayer, and the development of defence policy in Canada has been more about fitting it in around other policy objectives rather than prioritizing defence goals so that they can mutually support other policy themes.[110]

The lack of an established mechanism for national security operations in Canada has been recognized for some time. The responsibility for various aspects of national security has rested with several federal departments and agencies, with *ad hoc* coordination of issues being the norm. In the past, Bland and Maloney, as well as other analysts, have called for shifts in policy, organization and procedures to facilitate an adequate state of security. Specifically, they argued for the federal government to articulate a broad definition of national security and to introduce an overarching national security policy. As well, they suggested that the federal government develop the means to bring together under the aegis of a national security policy the diverse organs of government charged with security tasks. Their third recommendation was that responsibility for national security planning and operations be vested in a single minister ostensibly so that redundancies in staffing and delays in decision-making could be reduced.[111] For over 20 years, analysts criticised successive Canadian governments for failing to produce an overarching security policy, and it took until 2005, four full years after the attacks on North American soil at the World Trade Center, for such a policy to be realized.

4.4.5 The National Security Policy

The creation of a new federal department, known as Public Safety and Emergency Preparedness Canada (PSEPC), and the concomitant appointment on 12 December 2003 of Anne McLellan as the department's responsible Minister were the first major federal initiatives to address the coordination issue. Then, in April 2004, the federal government tabled *Securing an Open Society: Canada's National Security Policy*. This document attempts to set policy

[110] Ibid.

direction in an integrated fashion for effective multiple agency threat assessment, protection and prevention capabilities, and effective consequence management. The core national security interests articulated are protecting Canada and the safety and security of Canadians at home and abroad, ensuring that Canada is not a base for threats to its allies, and contributing to international security.[112]

The National Security Policy breaks down the security conundrum into six key areas. These are in the domains of intelligence, emergency planning and management, public health, transport security, border security, and international security. For the purposes of this thesis, two of these are germane. In terms of intelligence, the policy speaks to increasing capabilities for intelligence collection, applying greater focus to security intelligence and, most importantly, creating a new integrated threat assessment centre.[113] If executed, these initiatives will enhance the Navy's ability to filter and act upon relevant information. The second area of interest to the Navy is transport security. In this section, the National Security Policy calls for an improvement to Canadian marine security by means of a six-point plan.[114]

Maritime security, as a component of national security, can be defined as the compilation of practices that a nation observes to protect its maritime interests abroad, along its coasts, and in its maritime approaches. It concerns how the nation deals with maritime commerce (ports and shipping), resource exploitation (offshore platforms and fishing), and national interests in international waters and foreign ports.[115]

Officials for Transport Canada suggest that the requisite activities that constitute a national maritime security system can be categorized into four general themes. The first is domain awareness. In developing this awareness,

---

[111] Ibid., 200-201.
[112] Canada, Privy Council Office, *Securing an Open Society: Canada's National Security Policy* (Ottawa: 2004), 5.
[113] Ibid.,15-20.
[114] Ibid., 38-39.
[115] Peter Avis, "Comparing National Approaches to Maritime Security in the Post 9/11 Era" (M.A. thesis, Carleton University, 2004), 3.

surveillance information from sensors and other inputs is fused with intelligence collected to produce both an analysis and an understandable picture of the marine and air traffic as well as other activities in a coastal state's maritime zones. Successful domain awareness is the result of close coordination between domestic and international military, intelligence and law enforcement agencies, and the proof of success occurs when authorities are focussing attention on the right threats "in the right areas at the right time" on a routine basis.[116] Domain awareness is largely a proactive preventative activity.

The second element of a marine security system is safeguarding. This term refers to measures taken to protect the marine infrastructure against physical harm. Safeguarding also includes efforts taken to prevent criminals or terrorists from gaining access to North America or any part of the marine transportation system.

Responsiveness is the third maritime security component. This reactive activity pertains to enforcement efforts undertaken by a coastal state to intercept and apprehend criminals, terrorists, or other threats to national security. All appropriate police and military forces, and mandated security agencies form part of this activity.

The final requisite theme in an effective system is collaboration. This element is integral to the afore-mentioned maritime security activities. Collaboration can be viewed as an "enabler" activity for all components of security.[117] Collaboration entails effective sharing, both horizontal and vertical, of information among bodies vested with security mandates and, in terms of action, includes coordination, cooperation and acting in a unified manner on security issues. Collaboration is largely a proactive preventative activity whose importance to successful maritime security cannot be overstated.[118]

---

[116] Ibid.,13.
[117] Ibid.
[118] Canada, Transport Canada, *Enhancing the Security of Canada's Marine Transportation System* (Ottawa: Interdepartmental Marine Security Working Group, 2004), 3.

The marine security plan described in *Securing an Open Society* sets out to enhance coordination by designating lead agency status among the various departments and agencies with security mandates. For example, the Minister of Transport has become the designated lead for marine security policy co-ordination and the Minister of Public Safety and Emergency Preparedness will retain the lead for enforcement and policing. In a new development, the Minister of National Defence has been assigned the lead for the "coordination of on-water response to a marine threat or a developing crisis in our Exclusive Economic Zone and along our coasts."[119]

Another element of the six-part plan is the establishment of naval-led Marine Security Operations Centres (MSOC) at various locations in the country that will house representatives from the Royal Canadian Mounted Police, Canadian Coast Guard, Fisheries and Oceans Canada, Transport Canada, the Canadian Border Security Agency, and the United States Coast Guard. The purpose of these centres will be to capitalize on in-house interagency staffing to detect, assess, and respond to marine security threats.[120] MSOCs went into operation in Halifax and Esquimalt in 2005, and a similar centre is being planned for the Great Lakes region, most likely to be situated at Niagara-on-the-Lake, Ontario.

The marine security plan also calls for increased patrols at sea, ostensibly to "better position . . . to intervene, interdict, and board ships that may pose threats to Canada."[121] In addition, aerial surveillance by Fisheries and Oceans Canada in conjunction with DND is identified as an element requiring further effort. Increased co-operation with the United States is a stated objective of the plan, as well as strengthening the security of marine ports and facilities.[122]

The sixth component of the plan is designed to address the inability of the three government fleets to pass intelligence, surveillance, and common operating picture data electronically to one another and to shore authorities. The

---

[119] Privy Council Office, *Securing an Open Society*, 38.
[120] Ibid., 38-39.
[121] Ibid., 39.

DND-led Maritime Information Management and Data Exchange (MIMDEX) project was established to rectify this gap in capability. The project uses multi-agency legacy IT systems to link marine-related information into a common picture.[123]

As a policy document, *Securing an Open Society* succeeds in identifying clear priorities for harmonizing security in the post-911 environment. Top-level bureaucrats will find sufficient fodder within the policy to justify expenditures to programs that transcend departmental mandates. However, the shortcomings of this policy are three-fold. First, it struggles to remain a strategic-level document, and in almost every section reads like a report card for the current government, citing successes achieved and expenditures made to date for various initiatives. No reference is made to future expenditure, so it is difficult to gauge what the level of commitment might be to security issues in the future when governments will undoubtedly be under pressure for greater spending on social programs. Second, there is little mention of existing gaps in the current framework of security policies and processes, making it problematic to determine how current practices will tie into a cogent long-term strategy. Third, *Securing an Open Society* leaves the role of the Canadian Forces in national security largely unarticulated, except for passing mention in relation to maritime security.

A basic understanding of the components of maritime security is necessary to understand how it is dealt with in Canada, and what role the Navy plays in its maintenance. The next few paragraphs will examine maritime security and the issue of sovereignty in greater detail.

4.4.6 Maritime Sovereignty

In the area in which oceans, defence and security issues trisect, certain themes reappear and are common to all three policy objectives, namely maintenance of sovereignty, surveillance, and enforcement. The first term,

---

[122] Ibid.

[123] There are officially only two government fleets, those of Fisheries and Oceans Canada and the Navy. Although the Canadian Coast Guard is administered by DFO and its ships are painted in the same colour scheme, for all intents and purposes its corporate culture and operating practices make it a separate fleet.

sovereignty, is worthy of further discussion since the concept is often confused with the terms security and defence.

In the international system, sovereignty has come to mean the legal identity of a state. Within international law, it is recognized that sovereign states by right are permitted to exercise exclusive jurisdiction within their borders. In other words, sovereignty "signifies the capacity to make authoritative decisions with regard to the people and resources within the territory of the state."[124] This right includes ocean areas claimed as a nation's territory. In 1990, the Standing Committee on National Defence and Veterans Affairs (SCONDVA) developed a definition of Canadian sovereignty as a benchmark for their study on maritime sovereignty. SCONDVA defines sovereignty as:

> the prevention of trespass, the provision of services and the enforcement of national and international law with Canadian territory, waters and airspace.[125]

Vice-Admiral Gary Garnett observes that sovereignty is perceived generally to mean "supreme dominion, authority or rule" within the bounds of territorial limits.[126] In the maritime context in Law of the Sea, territorial limits means the waters of the territorial seas. However, Garnett also notes that with the evolution of international Law of the Sea, and its consequent establishment of a regime of different zones in which coastal states are afforded different rights, perhaps a broader definition of maritime sovereignty is in order.[127] As codified by the UN Convention on Law of the Sea (UNCLOS) III, and pursuant to Canada's *Oceans Act* of 1996, the maritime offshore "real estate" of Canada is divided into three distinct zones, as described in Chapter Three. These zones are the territorial waters from the coast or baseline out to 12 nautical miles, the contiguous zone from 12 to 24 nautical miles, and the exclusive economic zone

---

[124] *Report of the International Commission on Intervention and State Sovereignty: The Responsibility to Protect*, by Gareth Evans and Mohamed Sahnoun, co-chairs (Ottawa: International Development Research Centre, 2001), 12.
[125] Canada. House of Commons. *Report of the Standing Committee on National Defence and Veterans Affairs: Maritime Sovereignty.* November, 1990, 5.
[126] Gary L. Garnett. "The Navy's Role in the Protection of National Sovereignty." In *An Oceans Management Strategy for the Northwest Atlantic in the 21st Century: The Niobe Papers; Volume 9*, edited by Peter T. Haydon and Gregory L. Witol (Halifax: The Naval Officers Association of Canada, 1998), 2.

that extends to 200 nautical miles from shore. Under both international law and the *Oceans Act*, Canada's sovereign rights diminish with increased distance from the coastline as depicted in Figure 4-3. Garnett points out that this situation stands in contrast to land-based sovereignty. In the terrestrial context, he notes that well-defined boundaries clearly delineate the limits of a state's sovereignty. Thus, he proposes that Canada's maritime sovereignty should permit the nation "to enforce internationally recognized jurisdictions and enjoy acknowledged national prerogatives in a nation's various coastal zones."[128]

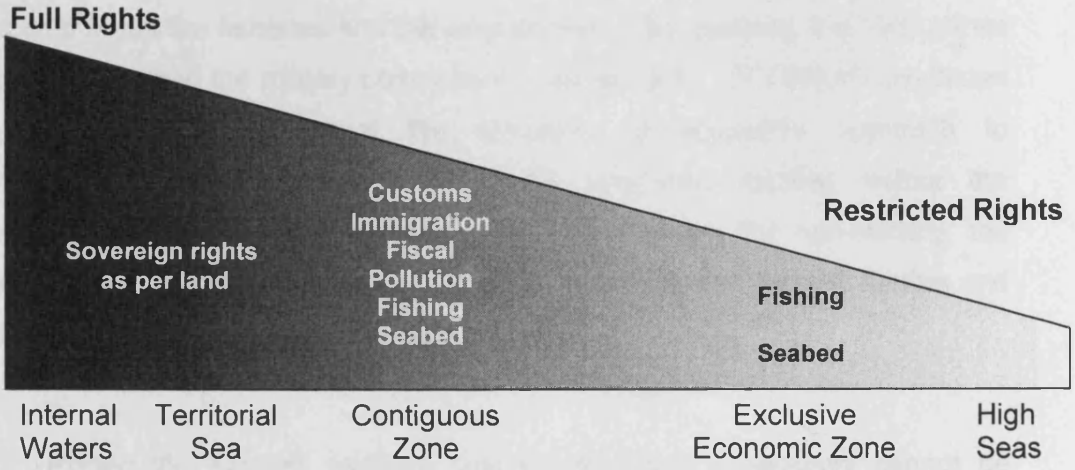


Figure 4-3. Rights of Coastal States in Offshore Zones
Sources: Figure drawn from text of United Nations, *United Nations Convention on the Law of the Sea*, 10 Dec 1982, Parts II and V; and *Oceans Act*, R.S.C. 1996, c31, s.4 – 16.

A vital element of sovereignty is the willingness of a nation to protect its maritime zones against hostile acts or violations of domestic law. Nations that make claims of sovereignty yet do not demonstrate what Garnett terms "sea control" of their offshore estate can find their claims challenged on a legal basis. Put another way, "state sovereignty implies responsibility, and the primary responsibility . . . lies with the state itself."[129] As Peter Haydon highlights, if Canadian laws are broken, a response must be initiated and executed by Canadians. It is a Canadian responsibility. He further stresses that not maintaining the capability to control all activities within a state's coastal zones is

---

[127] Ibid., 3.
[128] Ibid.
[129] Evans and Sahnoun, *Responsibility to Protect*, xi.

"tacit acceptance that others may use them as they please without regard or respect for the law. This is an abrogation of sovereignty.[130]

The Senate Committee on National Security and Defence (SCONSAD) remarked that both the 1971 and 1987 Defence White Papers spoke to the necessity of maintaining Canadian sovereignty, but stressed the civilian and military components differently. The 1971 White Paper articulated sovereignty to a greater degree in non-military or quasi-military terms, clearly influenced by concerns about the fisheries and the environment. By contrast, the 1987 White Paper emphasized the military component of sovereignty. SCONSAD concludes in *Maritime Sovereignty* that the Canadian government's approach to sovereignty protection requires, as Martin Shadwick testified before the Committee, "a hybrid approach that takes into account the non-military, the quasi-military, and the military requirements . . . a well-thought-out, flexible and multi-tasked approach to maritime sovereignty."[131]

Robert W. Timbrell cautions that security and sovereignty cannot be considered the same entity:

> Sovereignty is not the same as security. Without security, sovereignty cannot mean very much . . . It would be possible for Canada to lose a large measure of sovereignty without increased danger of invasion, destruction, or loss of territory. Moreover, some of the sources that threaten our sovereignty could be our strongest allies for the preservation of security. Whereas our security is bound up with that of our allies, our sovereignty is our own problem, to be defended by ourselves alone.[132]

Douglas Bland agrees, although he asserts that tasks aimed at dealing with violations of sovereign territory cannot be separated from those performed

---

[130] Peter Haydon, "Canadian Naval Requirements for the 21st Century," Council for Canadian Security in the 21st Century, 29 April 2002, <http://www.ccs21.org/ccspapers/papers/haydon-naval.htm> (2 February 2005).
[131] House of Commons, *Maritime Sovereignty*, 5.
[132] Address by Rear-Admiral R.W. Timbrell to the Royal United Services Institute, Victoria, B.C. 21 March 179 as quoted by in Tasseron, "Facts and Invariants,"20.

in the defence of North America.[133] Bland cautions against confusing military defence tasks with those whose purpose is to maintain legal sovereignty. He contends that the use of military forces to exert sovereignty is not an efficient use of federal resources, particularly when there is no military threat, and there are other, better-suited departments or agencies present that can represent Canadian interests in this regard. Further, he argues that in the post-9/11 period when there is heightened concern about the threat of terrorism, the military should not become the lead agency in domestic situations.[134]

Bland is absolutely correct in his assertion that maintaining sovereignty is not exclusively a military activity; indeed, the Royal Canadian Mounted Police, the Canadian Coast Guard, and Fisheries and Oceans Canada bear the brunt of the sovereignty responsibility. But the Navy, and the Air Force when acting on the Navy's behalf, should not be constrained from showing the flag whenever defence and sovereignty missions overlap, or other government departments are unable to maintain an appropriate presence for whatever the reason.

Although without question a nation's laws can be enforced at sea by civilian agencies, effective law enforcement relies on the deterrent effect that sufficient force can be brought to bear to compel compliance. Canadian non-military maritime agencies cannot provide this requisite criterion and cannot meet force with force in the event of an aggressive challenge to national security.[135] Thus law enforcement at sea in Canada relies on the backing of the Navy to provide credible armed force because only the armed forces have the authority and legal justification to use violence in a major way in support of policy.

A sovereign coastal state must know what is going on above, below, and at the surface of its waters. This understanding includes not just the human spectre, but encompasses a complete awareness of the marine biosphere,

---

[133] Douglas L. Bland and Sean M. Maloney, *Defence Policy for the World Order Era: The First Steps – Reconstitution and Transformation* (Kingston, ON: McGill-Queen's University Press, 2004), p.204.
[134] Ibid., 204-205.

geography, climatology and oceanography of the offshore estate.[136] Moreover, in order to exercise full sovereignty, a nation must be able to control the human activities in the waters under its jurisdiction. This requirement is termed sea control.

Sea control of a nation's offshore estate can be achieved through surveillance, monitoring, and response.[137] In the maritime context, surveillance requires current knowledge of who is on, above, or below the waters and implies the maintenance of an infrastructure capable of detecting and reporting situations of interest in the maritime zones. In *Competitiveness and Security*, the 1985 Green Paper on External Affairs noted that,

> Control over our national territory, airspace, and coastal waters is essential, both for the assertion of our sovereignty and for preservation of our security. To be effective, control requires a surveillance and detection system able to provide an continuing picture of activities on land, in the air, and at sea. . . Most countries exert such control as a matter of routine. In our case, it is a daunting task, considering the length of our coastlines, the vastness of our territory, the hostility of our climate, and the disproportionately small size of our population.[138]

Monitoring is the second element of domestic sea control. It refers to active observation of the maritime domain through locating, identifying, tracking and inspecting human activities in the water column and super-adjacent airspace. Monitoring is an unmistakable expression of the government's will and authority in the area of jurisdiction. The action that a state takes to respond to incidents that threaten national security or sovereignty or, in other words, an action that forces compliance with domestic and international laws, regulations and standards is known as enforcement.[139]

---

[135] Amphion, "Do We Really Need a Navy?" *Maritime Affairs* (January, 1997):12.
[136] Garnett. "The Navy's Role in the Protection of National Sovereignty," 3.
[137] Crickard and Herbert. "An Oceans Strategy for the Northwest Atlantic," 42.
[138] Canada, Secretary of State for Foreign Affairs, *Competitiveness and Security* (Ottawa: Minister of Supply and Services, 1985), 85.
[139] Amphion, "Do We Really Need a Navy?" 11; Peter Haydon, "Why Do We Need a Navy?" Naval Officers Association of British Columbia <http://www.noabc.com/default~area ~docread~docid~141.htm> (29 March 2005).

The third element of sea control of the offshore estate is response. Crickard and Herbert propose basic areas of marine activity that nations must control if they are to be taken seriously as coastal states.[140] These areas include the management of renewable and non-renewable marine resources, the protection and preservation of the marine environment, the maintenance of maritime sovereignty and prevention of illegal activity, and the maintenance of marine safety. These areas, according to Crickard and Herbert, require responses through the use of operational, legal, political, and non-government resources. Operational responses refer to the wide range of personnel, equipment, and platforms as well as command and control infrastructure used to exercise jurisdiction at sea. Legal responses are the national system of laws, regulations, standards and procedures applicable to the coastal state's jurisdiction. They may also be regional or international treaties that have been incorporated into the state's legal system. The nature of political responses can be intra-governmental, inter-departmental and inter-agency, as well as being regional or international in dimension. The non-government responses refer to the active participation of key stakeholders, such as industry, user groups, coastal communities, NGOs, and aboriginal groups in such a way as to promote sustainable oceans use and management. The mix of responses used by a nation depends upon its unique requirements and the resources at its disposal.[141]

4.5 Whither Surveillance Policy?

As discussed earlier in this chapter, the need for surveillance of Canada's maritime zones is present in oceans, defence, and security policy frameworks. What is fascinating, though, is that until the promulgation of the National Security Policy in 2004, there has been virtually no articulation of the responsibility by any particular federal department for this surveillance requirement, except in defence

---

[140] Fred W. Crickard, Bruce Donaldson, Iain Stewart and Jeremy Conway, *An Integrated Approach to Maritime Enforcement*, (Halifax: Centre for Foreign Policy Studies, Dalhousie University, 1992) as quoted in Fred W. Crickard and Glen J/ Herbert. "An Oceans Strategy for the Northwest Atlantic: Applications to Maritime Enforcement." In *An Oceans Management Strategy for the Northwest Atlantic in the 21st Century: The Niobe Papers; Volume 9*, edited by Peter T. Haydon and Gregory L. Witol (Halifax: The Naval Officers Association of Canada, 1998): 39.

[141] Crickard and Herbert. "An Oceans Strategy for the Northwest Atlantic," 41.

policy documents. A 2003 study commissioned by the Department of National of National Defence to identify and evaluate national surveillance requirements determined that, despite over 50 studies and papers over the past decade, it was not possible to identify documents that referred to a national surveillance strategy.[142]

Indeed, through this lack of government direction, the Canadian Forces and the Navy in particular, have become *the de facto* co-ordinators of maritime surveillance for the federal government. While there is little in terms of policy guidance that explains with any precision the Navy's responsibility towards maritime surveillance, it is possible to deduce a significant role based on federal statutes and military defence plans, and Memoranda of Understanding between federal departments.

The *Constitution Act* of 1867 asserts that it is lawful for the Queen to make laws for the peace, order, and good government of Canada in relation to all matters not assigned exclusively to the legislatures of the provinces. The Act goes on to decree that Parliament's authority extends to all matters concerning the regulation of trade and commerce; militia, military and naval service, and defence; beacons, buoys, and lighthouses; navigation and shipping; sea coast and inland fisheries. The *Constitution Act* also classifies shipping lines, railways, and canals, whether connecting the provinces or extending beyond the limits of the provinces "to be for the general advantage of Canada" and thus fall under the jurisdiction of Parliament.[143]

As a minister of the crown, the Minister of National Defence has a duty to support all parliamentary acts. Thus, there is an implied departmental obligation to identify maritime sovereignty and security elements embedded within all federal acts and regulations. As such, the Navy has an obligation to be prepared

---

[142] Canada, Department of National Defence, National Defence Headquarters, 1150-1 (JFC3-3-3) *National Surveillance Policy*. 20 January 2003.
[143] *Constitution Act,* 1867, s. 91, 92.

to conduct maritime surveillance and control in support of prevention and enforcement. Federal statutes that imply a maritime surveillance role for the Navy are the *Oceans Act*, which was covered in greater detail earlier in the chapter, the *Fisheries Act*, the *Arctic Waters Pollution Prevention Act*, the *Coastal Fisheries Protection Act,* and the *National Defence Act*.

While there has little in government policy that speaks directly to the requirement for federal departments and agencies to conduct surveillance, the 1994 Defence White Paper did provide guidelines for the Canadian Forces in the broadest sense. The White Paper stated that "the provision of surveillance and control is an integral part of the Forces' activities in Canada . . . the Forces must maintain and exercise the basic navy, army, and air force skills to ensure effective control over our territory, airspace, and maritime approaches."[144] This statement is strategic direction to Canada's military to provide surveillance, albeit undefined, for the basic purposes of defence. However, to maintain a military capability, the capability must be developed and practised on a regular basis or the capability is lost. Thus, this statement in the White Paper implies that surveillance should be a routine operation and an explicit task for the Canadian Forces.

The 1994 White Paper asserted that, while the military may not be the lead agency for surveillance of areas Canadian jurisdiction, the Armed Forces may possess unique capability beyond that of civilian departments. The White Paper stated that,

> Responsibility for many of the Government's activities in the surveillance and control of Canadian territory, airspace, and maritime areas of jurisdiction lies with civilian agencies such as the Department of Transport. The Canadian Forces, however, make a valuable contribution to this demanding task, which often requires capabilities of greater readiness and reach than those available to civilian agencies.[145]

---

[144] Canada, Department of National Defence, *1994 White Paper on Defence*, "Chapter 4 - Protection of Canada," 23 December 2002 <http://www.forces.gc.ca/admpol/eng/doc/5116_e.htm> (12 August 2006).

The diversity of the surveillance and control expected of the Armed Forces is captured in the following 1994 White Paper extracts,

> The Department of National Defence and the Department of Transport now participate in a comprehensive federal effort, led by the Department of Fisheries and Oceans. The Canadian Forces will devote a significant number of flying hours and ship days to fishery patrols . . . NORAD has a role in counter-narcotic monitoring and surveillance. This is an ancillary mission to which the capabilities of our maritime and land forces have also been applied . . . the Department of National Defence has concluded a memorandum of understanding with the Department of the Environment with respect to the use of the Canadian Forces in environmental surveillance . . . as the Forces carry out their routine surveillance missions, they will seek to identify and report potential and actual environmental problems.[146]

These passages refer to an obligation to support other government departments in accordance with existing Memoranda of Understanding, as well as expressing the explicit task of environmental surveillance as a secondary mission on an opportunity basis and not requiring a specific mission. To facilitate what is outlined requires a means of exchanging surveillance information exchange between departments and furnishes justification for maintaining an accurate and comprehensive recognised maritime picture.

The 1994 Defence White Paper also directed that the Armed Forces be able to respond to threats to sovereignty beyond 200 nautical miles and implied that the military should establish connectivity with other nations and authorities to share information beyond national maritime zones. The outer limit of this response was neither defined nor addressed in any other governing documentation.[147]

Having established surveillance of maritime zones and approaches as a legitimate government task, there remains one major policy document to be discussed. It was left for the end of this chapter because it is the federal

---

[145] Ibid.
[146] Ibid.

government's most recent articulation of defence policy, and incorporates elements of previous defence statements and the 2005 National Security Policy. This document, known within government as the 2005 Defence Policy Statement, was developed using a different, more holistic approach to policy formulation than has been employed in the past.

4.6 The 2005 Defence Policy Statement

In April of 2005, the government unveiled a new International Policy Statement, *A Role of Pride and Influence in the World*, that comprised four mutually-reinforcing documents that addressed foreign affairs, defence, development, and trade.[148] The main thrust of the defence document, called the Defence Policy Statement (DPS), echoes the central theme of *A Role of Pride and Influence in the World* that being reinvigoration of Canada's international role. In the DPS, this reinvigoration manifests itself as a reinvestment in a Canadian expeditionary military capability. The DPS directs much of Canada's effort to be focussed on "failed or failing states," where Canadian troops are to be prepared to conduct "three-block war" operations. This term, first coined by senior American military commanders, describes a situation in which combat, peace support, and humanitarian operations take place within a confined geographical space. This shift in emphasis reflects the appraisal that threats to security are more likely to come from non-state actors and terrorist groups or due to political instability in struggling countries, rather than the state versus state conflicts.

While there are noteworthy changes in this most recent document, much remains from previous defence statements. The Canadian Forces retain three principal roles: the defence of Canada, the defence of North America in co-operation with the United States, and contribution to international security.[149] However, the DPS acknowledges weaknesses of previous policies when it states that,

---

[147] Ibid.
[148] The current buzzword used in the Canadian government and its bureaucracy is "three D's and C." These stand for "diplomacy, defence, development and commerce."
[149] Canada, Foreign Affairs and International Trade Canada, *A Role of Pride and Influence in the World: Defence,* (Ottawa: April 2005), 2.

> greater emphasis must be placed on the defence of Canada and North America than in the past. This must be the Canadian Forces' first priority. Current threats demand that we pay increased attention to the safety and security of our citizens at home, the most fundamental responsibility of any government.[150]

The Defence Policy Statement is ambitious in both scope and scale, calling for a major restructuring of the Canadian Forces, adoption of the concept of Canada as a theatre of operations, and the establishment of a separate "Canada Command" for command and control of domestic operations. Moreover, the DPS calls for the generation of a Standing Contingency Task Force to respond to threats domestically and abroad.

Of significance to the Navy is the Defence Policy Statement's pledge to increase surveillance of Canadian territory and areas of maritime jurisdiction, including the near-ice and ice-fee regions of the Arctic. Greater co-operation between civil authorities at all levels of government is called for in order to improve information and intelligence collection, analysis, and integration. The DPS reiterates commitments outlined in the National Security Policy. For the Navy, these responsibilities comprise the 6-point maritime security plan, and include taking the lead in the co-ordination of responses to developing on-water threats, as well as employing better use of maritime radars to develop a "common maritime picture". The DPS calls for increased support to other government departments in "protecting endangered fish stocks, monitoring illegal drug and immigration activity, conducting environmental surveillance, and carrying out search and rescue operations."[151]

The 2005 Defence Policy Statement component of *A Role of Pride and Influence in the World* has been described by one analyst as "the most integrated, even thoughtful, approach to Canada's relations with the rest of the world in recent memory."[152] While this may be true, it is too early to tell whether the DPS will cause the requisite government framework to be established for

---

[150] Ibid.
[151] Ibid., 17-19.
[152] David Rudd, *Canada's New Defence Policy*. Canadian Institute for Strategic Studies <http://www.ciss.ca/Comment_Newpolicy.htm> (5 August 2006).

effective, relevant and responsive operations in support of Canadian maritime security and sovereignty.

4.7 Summary

Although Canada has existed as a sovereign state for almost 140 years, there has been no clear articulation by successive governments of what are Canadian national interests. Federal policy statements have tended to cite Canadian values and goals, the most commonly stated being democracy, individual freedom and social justice. In the absence of clear political guidance at the strategic level, Canadian policy makers have taken an *ad hoc* and "stove-piped" approach to development of oceans, security, and defence policies. It has only been post-911 that Canada has produced overarching oceans strategy and national security documents.

This somewhat muddled policy development process has seen the evolution of oceans policy over three decades that produced three key initiatives: the *Oceans Act* of 1997, *Canada's Oceans Strategy* of 2002, and *Canada's Oceans Action Plan* of 2005. These initiatives signal the federal government's recognition at last that national sovereignty and security are integral but they fall short of prescribing a cogent means for coordination among federal departments with maritime responsibilities. The *Oceans Act* struck into Canadian law the maritime zones set forth by UNCLOS III, and provided federal government departments the legal authority for enforcement in these zones.

National security and national defence are two related but separate obligations of any government. Although defence is a sub-set of national security, the terms that are often used interchangeably, leading to confusion and lack of clarity of purpose. While Canadian governments have consistently delivered periodic policy documents in the form of Defence White Papers and Defence Policy Statements, it was not until 2005 that a National Security Policy was introduced.

A key priority of the Defence White Papers of the past 40 years has been protection of Canadian sovereignty. However, maintaining sovereignty is not

exclusively a military activity; indeed, the Royal Canadian Mounted Police, the Canadian Coast Guard, and Fisheries and Oceans Canada bear the brunt of the responsibility for sovereignty protection. But the Navy, and the Air Force when acting on the Navy's behalf, should not be constrained from showing the flag whenever defence and sovereignty missions overlap, or other government departments are unable to maintain an appropriate presence for whatever the reason.

In the area in which oceans, defence and security issues trisect, certain themes reappear and are common to all three policy objectives, namely maintenance of sovereignty, surveillance, and enforcement.

In many cases, tasks aimed at dealing with violations of sovereign territory cannot be separated from those performed in the defence of Canada. In much the same manner that the terms security and defence have become misused, the concepts of security and sovereignty can be difficult to differentiate, and often one term is used to mean the other. Moreover, in the post-911 era, the distinction between security and defence has become blurred.

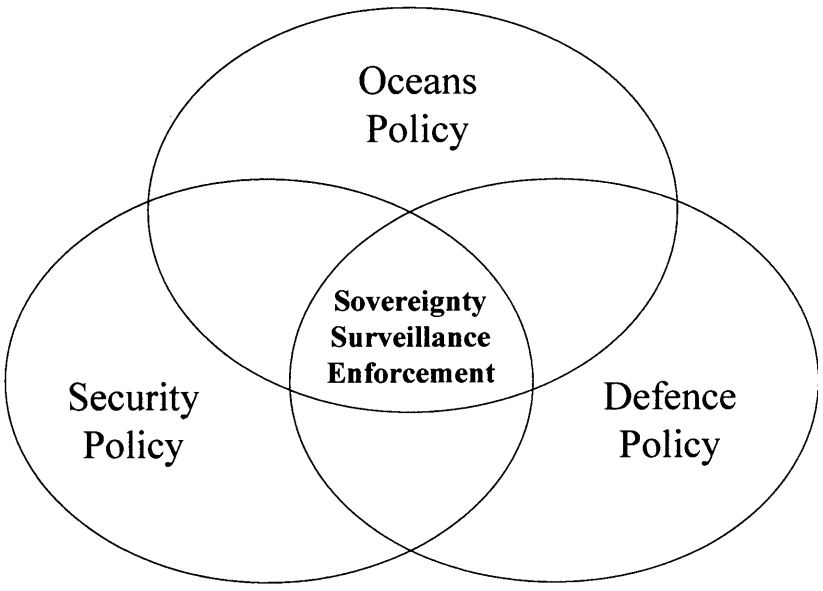


Figure 4-4. Trisection of Policy Objectives

In many cases, tasks aimed at dealing with violations of sovereign territory cannot be separated from those performed in the defence of Canada. In much the same manner that the terms security and defence have become misused, the concepts of security and sovereignty can be difficult to differentiate, and often one term is used to mean the other. Moreover, in the post-911 era, the distinction between security and defence has become blurred.

The requirement for surveillance of Canada's maritime zones is present in oceans, defence, and security policy frameworks. However, there is no national surveillance policy that articulates priorities or how surveillance is to be co-ordinated by government. Individual federal departments are guided to some extent by their enabling statutes for their own surveillance interests, but there is no overarching concept for surveillance. Some defence policy documents charge the Armed Forces to be ready to conduct surveillance for defence purposes, but no federal body is mandated to co-ordinate surveillance efforts on behalf of the government.

There are basic areas of marine activity that nations must control if they are to be taken seriously as coastal states.[153] These areas include the management of renewable and non-renewable marine resources, the protection and preservation of the marine environment, the maintenance of maritime sovereignty and prevention of illegal activity, and the maintenance of marine safety. These areas, according to Crickard and Herbert, require responses through the use of operational, legal, political, and non-government resources. The graphic at the end of this chapter summarises, in tabular form, the main maritime challenges and responses that Canada has endured for the past 40 years.[154]

The most relevant strategic policy documents that enable maritime enforcement operations to be conducted in Canadian maritime zones and approaches are the *Oceans Act*, *Canada's Ocean Strategy*, the *Ocean Action Plan*, the *National Security Policy,* and the 2005 *Defence Policy Statement*.

---

[153] Crickard, et al, *An Integrated Approach to Maritime Enforcement*, 39.

This chapter has addressed the first segment of the second research theme, the policy and regulatory framework. The next chapter will continue this key theme by examining those federal departments responsible for enforcement tasks and the mandates prescribed in the above noted Acts.

[154] Crickard, "Oceans Policy and Naval Policy 1970 to 1997," 12, 16, 22.

	Challenge		Response	
Period	**External Factors**	**Themes Doctrine**	**Policy Response**	**National Strategy**
1970s	UNCLOS III Process	Coastal State	Canadians & Foreign Policy 1969	Oceans Frontier Development Strategy
Oceans	Foreign Fishing	Fisheries Protection	LOS Convention 1982	
	Offshore Oil & Gas	Energy Self Sufficiency	EFZ 1977	
	Arctic Marine Environment	Sovereignty	1973 Oceans Policy for Canada	
Defence / Naval	East/West relations	Détente	1971 Defence White Paper	NATO Sea Lines of Communication Strat
1980s	Declining fish stocks	Oceans Mgt	1987 Oceans Policy	Marine Resource & Environmental Conservation and Protection Strategy
Oceans	Falling oil prices	Conservation & Protection	Departmental co-ordination	
	Multiple Oceans Use		1990 Green Plan	Three Ocean Navy
Defence / Naval	Return of Cold War	Global Collective Security	1987 Defence White Paper, 1989 Budget	SACLANT CONMAROPS
1990s	Global Economy	International Competitiveness	1994 Canada in the World	Decentralization (Oil and Gas) Privatization (Marine Transportation
	Global Environment Agenda 21	National Debt Reduction		
Oceans	LOS Convention 1995	Oceans Mgt	1997 *Oceans Act*	Interdepartmental Co-ordination (IPCRC 1990)
	Regional Conflicts	Conservation & Protection	1996 National Marine Policy	Oceans Strategy 1997
Defence / Naval	Collapse of Communism	Peace Support Ops	Maritime Sovereignty 1990	National Sea Control Strategy
	Agenda for Peace	Combined & Joint Doctrine	1994 Defence White Paper	Naval Vision 1994 Adjusting Course 1997

Figure 4-5. Maritime Challenges and Responses 1970 - Present

Chapter Five
REGULATORY FRAMEWORK FOR MARITIME ENFORCEMENT

5.1 Introduction

The last chapter examined how Canadian oceans, security, defence and surveillance policies shape the strategic environment in which the Canadian Navy fulfils a full range of roles at sea and ashore. The aim of this chapter is to build upon this examination by narrowing the focus to describe the principal Canadian regulatory and advisory bodies implicated in oceans management, in particular those concerned with maritime security and enforcement issues. This chapter identifies the mandates, jurisdictions, and general capabilities of the key federal departments with responsibility for oceans management, and either direct or indirect links to maritime enforcement. It does not treat how the federal agencies interact and co-operate in the current security environment. That will be discussed in detail in Chapter Six.

To establish the strategic setting for the discussion, the government bodies that have oceans management responsibilities will be introduced and their mandates and capabilities described. Included in this examination are joint federal-provincial agencies as well as various councils that have only indirect influence on maritime enforcement. Their inclusion in the discussion is important to comprehend the mosaic that forms the oceans governance structure in Canada, and how bodies lacking direct enforcement authority may influence security and enforcement activities.

While it is clear that the naval contribution to maritime enforcement is the main theme to this dissertation, the description in this chapter of the Navy's organisation and capabilities is provided following those of all other federal departments and agencies. This order was chosen for two reasons. First and foremost, the Canadian Forces, of which the Navy is a component, has no legal mandate to enforce Canadian law; the Armed Forces act only in support of those government bodies that are so enabled by federal statute. Thus, it is useful to understand the other government departments' roles and capabilities and, more importantly, their lack of capability, to place the naval contribution

into perspective. Second, if the naval structure were to be discussed at the outset, reference would be made of support provided to specific departments, such as DFO and the RCMP. Since the organisation and capabilities of these other federal bodies would not yet have been examined, it would be difficult to put into context how the Navy's contribution helps to "fill in the gaps" of the government's enforcement framework.

The federal setting and examination of those bodies with primary responsibilities for enforcement will be followed by the introduction three important Memoranda of Understanding between the Canadian Forces and other federal government departments. These are discussed in the latter half of the chapter. Having been introduced to departmental mandates and capabilities, the reader will be better able to understand how the MOUs address the limitations of the affected departments. The chapter will conclude with a discussion of the legal framework for the use of Canadian military forces for domestic operations.

5.2 The Federal Setting

As can be seen in Tables 4-1 and 5-2, there are a plethora of government ministries, departments, agencies and councils at two levels of government as well as a host of non-government organisations that have vested interest in oceans governance. Although actual regulatory responsibilities of these bodies tend to be constrained exclusively to those laid down by their individual enabling statutes or charters, many of the bodies operate in an advisory capacity to other agencies, a capacity that spans multiple maritime sectors. Within the study area, the regulatory framework can be described by the following three categories:

a. Joint federal-provincial agencies and departments;
b. Federal agencies and departments;
c. Provincial agencies and departments.

Of these, the federal departments and agencies have the greatest interaction with the Navy. Transport Canada, Fisheries and Oceans Canada, the Canadian

Coast Guard, and the Royal Canadian Mounted Police interact largely with shore-based naval assets for routine day-to-day operations. Other departments such Environment Canada, and the Canadian Security and Intelligence Service engage with the Navy as various situations warrant co-operation. While the Atlantic provinces have a limited part to play in maritime enforcement, the emphasis of inter-departmental co-operation is primarily at the federal level. It is the relationships at this level that will be discussed in this chapter.

TABLE 5-1

CANADIAN GOVERNMENT BODIES WITH OCEANS GOVERNANCE RESPONSIBILITIES

Ministries and Departments	Independent Government Agencies	Advisory Councils	Judicial and other bodies
• Fisheries and Oceans Canada • Canadian Coast Guard • Transport Canada • Public Safety Canada • Royal Canadian Mounted Police • Environment Canada • Natural Resources Canada • Dept of National Defence • Dept of Foreign Affairs and International Trade • Indian and Northern Affairs Canada • Canadian International Development Agency	• Canada Border Services Agency • Canada Revenue Agency • Canadian Environmental Assessment Agency • Canadian Transportation Agency • Transportation Safety Board • Atlantic Pilotage Authority • Pacific Pilotage Authority • Canada-Newfoundland Offshore Petroleum Board • Canada-Nova Scotia Offshore Petroleum Board	• Federal Regional Councils: - Nova Scotia - Newfoundland - New Brunswick - Prince Edward Island - Quebec - British Columbia - Yukon Territory - Nunavut Territory - Northwest Territories • Canadian Council of Ministers of the Environment • Canadian Marine Advisory Council • Fisheries Resource Conservation Council	• Justice Canada • International Development Research Centre

The principal tasks that these federal regulatory and advisory bodies undertake in support of Canada's oceans management are surveillance and monitoring activities related to exercising national sovereignty, developing situational awareness of the maritime domain, and control of the sea approaches to ensure territorial security. Under these overarching aims, surveillance, monitoring and enforcement activities are conducted that pertain

to the conservation and protection of marine resources, the enforcement of customs, immigration, marine transportation, and other domestic laws and international agreements. As well, many of these bodies play a role in managing scientific research activities aimed at improving the understanding of the marine environment and its resources.

With greater emphasis being given to potential sea-borne terrorism in the post-9/11 environment, government departments have begun to view enforcement as a component of the broader issue of marine security. Thus, whereas in the past, a department might not have had a stated marine enforcement role, there may be, at present, an implied function under the umbrella of "marine security."

The Navy's interaction with NGOs for the purposes of marine enforcement is virtually non-existent. Table 5-2 is included only to highlight the broad spectrum of special interest groups concerned with Canadian oceans management issues. As well, there is little operational linkage between the Navy and the four provincial governments in the Atlantic region, so these relationships will not be addressed in this thesis, except for two joint federal-provincial agencies that deal with offshore hydrocarbon exploitation.

TABLE 5-2

NON-GOVERNMENT ORGANIZATIONS WITH OCEANS GOVERNANCE INTERESTS

- Alliance for Marine Remote Sensing Association
- Aquatic Ecosystem Health & Management Society
- Assembly of First Nations
- Atlantic Coastal Action Plan
- Atlantic Coastal Zone Steering Committee
- Bay of Fundy Ecosystem Partnership
- Bay of Fundy Marine Resource Centre
- Canadian Arctic Resource Centre
- Canadian Centre for Marine Communications
- Canadian Circumpolar Institute
- Canadian Climate Impacts and Adaptation Research Network
- Canadian Geophysical Union
- Canadian International Development Agency
- Canadian International Development Series
- Canadian Meteorological and Oceanographic Society
- Canadian Responsible Fisheries Federation
- Centre for Marine Bio-diversity
- Climate Action Network Canada
- Coastal Education and Research Foundation
- Coastal Zone Canada Association
- Cree Regional Authority
- Fishermen and Scientists Research Society
- Geoconnections Discovery Portal
- Huntsman Marine Science Centre
- International Arctic Science Committee
- International Association of Hydrological Sciences
- International Institute of Fisheries Economics & Trade
- International Marine Mammal Association Inc
- International Ocean Institute
- Kivalliq Inuit Association
- Living Oceans Society
- Marine Law Institute
- Nunavut Research Institute
- Ocean Innovation Conference Series
- Ocean Management Research Network
- Ocean Technology Network
- Partnership for Observation of the Global Oceans
- Sierra Club
- World Wildlife Fund

5.2.1 Joint Federal-Provincial Agencies – Offshore Petroleum Boards

There are two joint petroleum boards in place, on behalf of the Government of Canada and the Governments of Nova Scotia, and Newfoundland and Labrador, to regulate exploration and resource extraction in Atlantic Canada's offshore regions. The geographic area that these Boards regulate is shown at Figure 5-1.

The Canada-Newfoundland Offshore Petroleum Board (CNOPB) was created in March 1987, when the *Canada-Newfoundland Atlantic Accord*

Implementation Act received royal assent, and was further affirmed by provincial statute, the *Canada-Newfoundland Atlantic Accord Implementation Newfoundland and Labrador Act* of 1990. Seven persons comprise the CNOPB: three are federally-appointed members, three are provincially-appointed members, and a Chairperson is appointed jointly by both levels of government.[155]

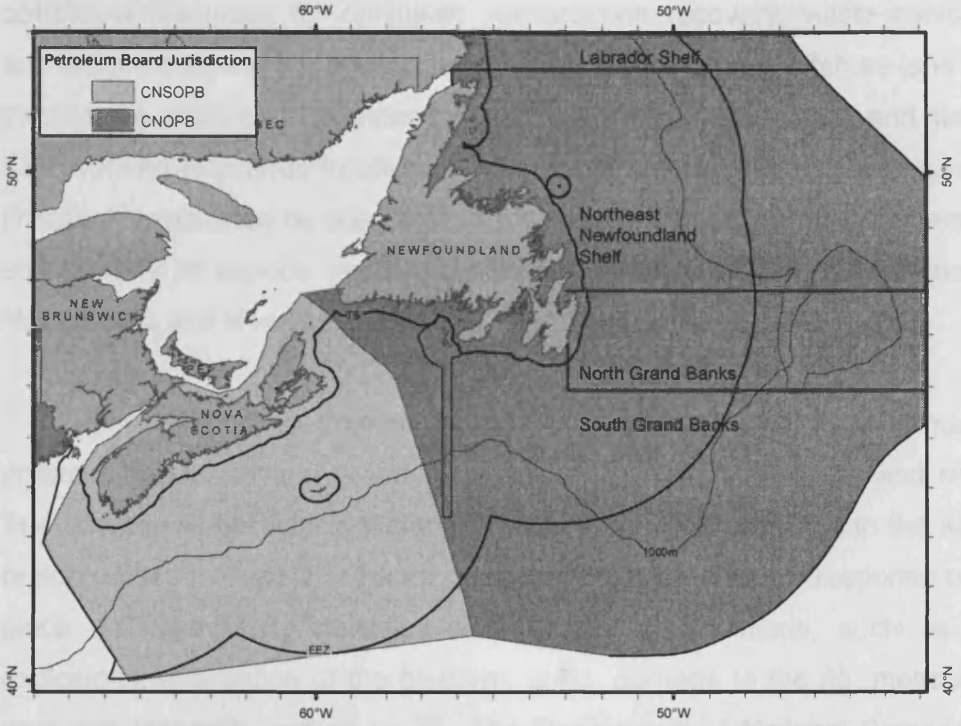


Figure 5-1. Offshore Petroleum Board Jurisdiction – Atlantic Canada
Source: Canada-Nova Scotia Offshore Petroleum Board; Canada-Newfoundland and Labrador Offshore Petroleum Board.

The Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) was established in 1990 by the enactment of both the federal *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* and the provincial *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act.* The CNSOPB is slightly smaller than the CNOPB, consisting of only five individuals: two are federally-appointed members, two

[155] *Canada-Newfoundland Offshore Atlantic Accord Implementation Act*, S.C. 1987, c. 3, s. 9, and *Canada-Newfoundland Offshore Atlantic Accord Implementation Newfoundland and Labrador Act,* R.N.S.L. 1990, c. 2, s. 9.

are provincially-appointed members and, as in the other board, the Chairperson is appointed jointly by the federal and provincial governments.[156]

Reporting jointly to the federal Minister of Natural Resources and to the each respective provincial energy ministers, the two boards have similar responsibilities. First and foremost, the boards manage and conserve offshore petroleum resources for optimised hydrocarbon recovery, waste avoidance, and the protection of the environment. The boards manage offshore land rights through the issuance of licences for exploration and development, and maintain safe working standards in offshore operations. In addition, the boards ensure statutory compliance by operators in matters of contracting, procurement, and employment to provide economic benefits to Canada and the provinces of Nova Scotia and Newfoundland.[157]

The offshore petroleum boards are relevant to Canadian maritime enforcement for several reasons. First among these is search and rescue. The boards will not approve any offshore oil and gas operation in the Atlantic region unless the operator has a comprehensive emergency response plan in place. These plans must cover a variety of situations, such as fires, explosions, evacuation of the platform, spills, damage to the rig, measures to deal with icebergs, and so on.[158] The Department of National Defence also maintains agreements with offshore platforms to act as fuelling bases for military helicopters, thereby extending the range of search and rescue aircraft by at least 150 nautical miles. The Halifax Joint Rescue Coordination Centre

---

[156] *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act*, S.C. 1988, c. 28, s. 9, and *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act*, S.N.S. 1987, c. 3, s. 9.

[157] Canada-Newfoundland Offshore Petroleum Board, *C-NOPB Overview*, 9 December 2003, <http://www.cnopb.nfnet.com/general/media/mediaen.htm> (14 December 2003) and Canada-Nova Scotia Offshore Petroleum Board, *CNSOPB Overviews*, <http://www.cnsopb.ns.ca/Generalinfo/overviews.html> (14 December 2003).

[158] The1982 sinking of the exploratory offshore drilling platform *Ocean Ranger* in the Hibernia oil field, with the loss of 84 lives, predated the creation of the CNOPB and CNSOPB. The investigation into the tragedy made 136 recommendations, including the creation of a National Search and Rescue Secretariat, major changes to both search and rescue and offshore exploration practices, particularly as they pertain to safety and training standards for workers, improvements to lifeboats and launching systems, and provision of survival suits to employees. See Canada, Royal Commission on the Ocean Ranger Marine Disaster (Canada), *Hearings - Royal Commission on the Ocean Ranger Marine Disaster (Canada)*. (Ottawa: The Royal Commission, 1984-1985).

hosts regular oil and gas seminars to promote exchange of information and best practices. The CNOPB and CNSOPB maintain routine contact with Maritime Forces Atlantic Headquarters for the passage of information concerning proposed exploratory activities in the offshore. This information forms another important input to the Navy's surveillance picture. Lastly, the Boards can provide expert advice to military and police forces on the physical security of offshore platforms from criminal and terrorist attack.

5.2.2 Federal Regional Councils

Federal Regional Councils came into being during the early 1980s, primarily to allow senior public sector managers to better co-ordinate regional economic development initiatives. Over the past twenty years, issues for discussion at these meetings have increased in scope, and the councils have become an excellent forum for networking and sharing of information on a broad spectrum of federal initiatives ranging from public service renewal to improving program effectiveness and service delivery. This has taken on greater importance during a decade of budgetary cutbacks and a consequent emphasis within the Public Service on "horizontal co-operation" in policy development and program delivery.[159]

Federal regional councils are made up of the most senior bureaucrats in each of the federal departments or agencies represented in each province. The actual size of each council varies by province, but normally will be between 20 to 50 persons. Federal councils provide a forum for generating support to departments with lead agency status regionally for issues such as economic development, aboriginal, youth and rural issues, as well as implementation of oceans policy. Also, these councils are viewed frequently by non-federal parties as being the single conduit through which all federal departments can be engaged on a particular issue.[160] However, none of the federal regional councils have executive authority to implement action items. A council relies

---

[159] Luc Juillet, *A Report prepared for the Federal Regional Councils and the Treasury Board Secretariat,* 1 October 2000, <http://www.tbs-sct.gc.ca/frc-cfr/bkgrd-contexte/horizontality_e.asp> (15 December 2003).

[160] Canada, Treasury Board of Canada Secretariat, *The Role of Regional Councils*, 8 January 1999 <http://www.tbs-sct.gc.ca/frc-cfr/bkgrd-contexte/role_e.asp> (14 December 2003).

on the volunteer nature of its members to progress within their respective departments agreed-upon initiatives, few of which pertain to maritime security and enforcement.

Although all four Atlantic provinces maintain their respective federal regional councils, from the Navy's perspective, the 53-member Nova Scotia Federal Council (NSFC) is pre-eminent. This is largely because the Commander, Maritime Forces Atlantic is a member of this body, along with his Army counterpart, Commander Land Forces Atlantic Area. More importantly though, the NFSC sponsors a sub-committee that provides a forum for discussion of security and enforcement issues affecting Atlantic Canada. It is through the NSFC Security Committee that real improvement to working-level intergovernmental co-operation has been made. This will be discussed in greater detail later in Chapter Six. With regard to the other Atlantic federal regional councils, the Navy also participates as a member of the New Brunswick Federal Council Security Committee, but not in Prince Edward Island or Newfoundland, although potential naval participation in the latter was discussed in 2003.

In 2006 another interdepartmental security committee was established in the Atlantic Region. Known as the Atlantic Region Security Committee, it meets to address issues of national and provincial security with implications for Atlantic Canada as a whole, linking closely to provincial and national activities. Clearly, it is similar to the NSFC Security Committee in that it is comprised of federal officials representing departments with security, intelligence, and law enforcement roles. However, what is different about this committee is that provincial departments have seats at the table. Commander MARLANT, in his capacity as Commander Joint Task Force Atlantic is a member of this committee as are the Deputy Ministers of the New Brunswick Department of Public Safety, Nova Scotia Attorney-General, Newfoundland Attorney-General, Prince Edward Island Attorney-General, as well as the Royal Canadian Mounted Police Atlantic Region. Additionally, the Regional Directors General for the Canadian Security and Intelligence Service (CSIS), Canadian Border Services Agency (CBSA), Transport Canada (TC), Public Safety and

Emergency Preparedness Canada (PSEPC), Health Canada, and Justice Canada are represented, as are the Assistant Commissioners of the Newfoundland and Maritimes regions of the Canadian Coast Guard. The objectives of the Atlantic Region Security Committee are to align inter-agency policy and priorities, progress intergovernmental communication protocols, carry out strategic co-ordination of joint exercises and, most importantly, to develop a common understanding of the security threat environment.

5.2.3 Canadian Council of Ministers of the Environment (CCME)

The need for intergovernmental co-ordination of pan-jurisdictional environmental issues resulted in the establishment over a decade ago of the Canadian Council of Ministers of the Environment. The council consists of 14 ministers from federal, provincial, and territorial governments, and it meets on a yearly basis to determine national priorities for work on environmental policies. Common vision, objectives, and partnering principles are contained in the CCME-sponsored *Canada-wide Accord on Environmental Harmonization.* Pursuant to this accord, several sub-agreements have been derived, such as the *Inspections and Enforcement Sub-agreement,* endorsed in 2001.[161]

CCME's work is aimed at the establishment of national environmental standards, maintenance of scientific data upon which sound environmental decisions can be based, strategic management of inter-jurisdictional matters, and the harmonization of environmental assessment and review procedures among its members.[162] While the CCME plays a vital role in fostering co-operation between different levels of government, and co-ordinating action on environmental policy development, the council has no executive authority to implement or enforce legislation. Rather, it is incumbent upon ministries in each jurisdiction to determine whether CCME proposals will be adopted.

---

[161] Canadian Council of Ministers of the Environment, *About CCME*, 26 November 2003, <http://www.ccme.ca/about/whatwedo.html> (16 December 2003).
[162] Canadian Council of Ministers of the Environment, *Statement of Interjurisdictional Coopereration on Environmental Matters*, 26 November 2003, <http://www.ccme.ca/assets/pdf/stmt_intrjrsdctnl_cprtn_envt_matters_e.pdf> (16 December 2003).

CCME has no direct role to maritime enforcement as it pertains to the Navy; any relevance is of a tertiary nature.

5.2.4 Atlantic Canada Opportunities Agency (ACOA)

Created in 1987, the Atlantic Canada Opportunities Agency is tasked to promote the economic development of the Atlantic provinces "through policy, program and project development and implementation and through advocacy of the interests of Atlantic Canada in national economic policy, program and project development and implementation.[163]" Essentially, ACOA encourages entrepreneurship, with a focus on small to medium businesses, champions Atlantic Canada to national and international companies as a desirable location for setting up business, and is a portal through which business development grants are obtained.

Although ACOA's mandate extends to Atlantic Canada's coastal zones, in practice there is only indirect relevance to maritime enforcement activities, and this pertains to non-military federal departments.

5.2.5 Atlantic Pilotage Association (APA)

The term "pilotage" in its nautical sense usually refers to the control of a vessel through restricted waters unfamiliar to the vessel's master, carried out by a local mariner certified to conduct this high standard of navigation. Since 1972 in the Atlantic region, pilotage has been regulated by a Crown Corporation known as the Atlantic Pilotage Authority. Deriving its authority from the *Pilotage Act*, and reporting to the Minister of Transport, the Atlantic Pilotage Authority has responsibility for the training, licensing and dispatching of pilots, establishing compulsory pilotage areas, prescribing the classes of vessels requiring compulsory pilotage, and other responsibilities

[163] *Atlantic Canada Opportunities Act,* R.S.C. 1985, c.41, s.12. See also Canada, Atlantic Canada Opportunities Agency, *Welcome to ACOA*, 4 December 2003, <http://www.acoa.ca/e/index.shtml> (15 December 2003).

concerning terms of employment for pilots.[164] A similar authority exists on Canada's west coast for the regulation of pilotage in Pacific waters.[165]

As depicted in Figure 3-22, there are 16 compulsory pilotage areas in the Atlantic provinces. The criteria that the Atlantic Pilotage Authority uses to determine whether a port or passage should be a compulsory pilotage area pertain to the degree of difficulty for navigation and the hazards in the particular area, the amount of vessel traffic, the degree of maneuverability and size of vessels using the area, environmental considerations, and the nature of the cargo being carried.[166]

Departments with enforcement mandates have a vested interest in maintaining good liaison with the Atlantic Pilotage Association, in view of the cumulative hours that pilots spend aboard merchant vessels. They are additional sets of "eyes on the water," and are in a position to notify appropriate authorities of suspicious activity or potential threats to security. The naval officer appointed as the Queen's Harbour Master is the Navy's official liaison with the Atlantic Pilotage Authority.

5.2.6 Canadian Environmental Assessment Agency (CEAA)

Created in 1994 under the *Canadian Environmental Assessment Act*, the Canadian Environmental Assessment Agency is the federal body vested with the responsibility for promoting environmental assessment as a planning tool for environmental protection and sustainment. Operating completely independently from other federal departments including Environment Canada, the CEAA reports to, and advises the federal Minister of the Environment, administers and promotes compliance with the *Canadian Environmental Assessment Act* and sound environmental assessment processes, and provides opportunities for public participation in this process. The intent of the Act is to ensure that projects are carried out in a precautionary manner, that

---

[164] *Pilotage Act,* R.S.C. 1985, c.P-14, s.20.
[165] Canada, Pacific Pilotage Authority Canada, *Welcome to the Pacific Pilotage Authority Website*, <http://www.ppa.gc.ca/english/index.html> (14 December 2003).
[166] Canada, Atlantic Pilotage Authority, *Atlantic Region Pilot Areas*, <http://www.atlanticpilotage.com/main/content/charts.htm> (14 December 2003).

sustainable development is promoted, and that there is co-ordinated action between jurisdictions to prevent adverse environmental impact.[167] The Navy has no direct or indirect interaction with this agency.

5.2.7 Canadian Transportation Agency (CTA)

Following the disbanding of the National Transportation Agency, Canadian Transportation Agency was created in 1996 through the passing of the *Canada Transportation Act*. With a staff of roughly 270, the CTA consists of seven members who make decisions on economic issues pertaining to federally-regulated rail, air, and marine transportation modes. In addition to serving as a dispute resolution authority, the CTA has the powers of a superior court to exercise its authority. From a maritime perspective, the CTA has responsibilities under *the Coastal Trade Act*, the *St. Lawrence Seaway Act*, the *Pilotage Act*, and the *Shipping Conferences Exemptions Act*. The CTA evaluates the fairness of tariffs, tolls, and fees in the various transportation sectors, and determines whether they are in the public's best interest. In consultation with other federal departments, the CTA exercises regulatory responsibility for authorizing the use of foreign vessels in Canadian waters, while protecting the interests of Canadian-registered shipping. The Navy has no direct or indirect interaction with this agency.

5.2.8 Canadian Transportation Accident Investigation and Safety Board

Known by its short title, the Transportation Safety Board (TSB), this organ was established in 1990 through the *Canadian Transportation Accident Investigation and Safety Board Act* as an independent body to investigate transportation "occurrences" in federally-regulated air, rail, and marine modes of transportation. The TSB's mandate also calls for it to identify, report, and make recommendations on public safety deficiencies uncovered during investigations.[168] A staff of 220 people support the five members appointed to the Board, who report to Parliament through the President of the Queen's Privy Council. When the TSB investigates an accident, no other government

[167] *Canadian Environmental Assessment Act*, R.S.C. 1992, c.37, as am. R.S.C. 1994, c.46, s.4.

department except the Royal Canadian Mounted Police and the Department of National Defence may investigate for the purposes of making findings or determining cause.

From a maritime perspective, the TSB has jurisdiction in Canadian internal and territorial waters, and in the Exclusive Economic Zone above the continental shelf for marine occurrences related to resource exploitation. The TSB is required also to investigate any marine occurrence involving a ship registered or licenced in Canada, whether the incident took place in Canada or abroad. The Navy has only limited dealings with TSB, except in rare and unusual circumstances. One such example was the case of flight Swissair 111, a commercial passenger aircraft that crashed into Canadian territorial waters very close to the Nova Scotia coast. In this case, what started as a search and rescue effort, with the Navy as the lead agency, rapidly became a salvage operation, followed by an accident investigation. Lead agency status shifted four times between four federal departments or agencies in a matter of days.

5.3 Federal Departments – Primary Responsibility for Enforcement

The first part of this chapter dealt with those bodies that have committee or agency status within the federal framework. While these bodies contribute to oceans management in the Atlantic region, their relationship to maritime enforcement is largely indirect. The next part of this thesis will examine those federal departments and agencies that have direct maritime enforcement functions.

5.3.1 Fisheries and Oceans Canada (DFO)

Under Canada's Oceans Strategy, Fisheries and Oceans Canada is designated as the lead federal agency for oceans-related policy. Deriving its authority from the *Oceans Act*, DFO's departmental responsibilities cover a wide range of ocean activities. This mandate includes fisheries management and research in coastal and inland waters, fisheries economic development,

---

[168] *Canadian Transportation Accident Investigation and Safety Board Act*, R.S.C. 1989, c. 3, s. 7. See also Canada, Transportation Safety Board of Canada, *Mandate*, 18 September 2002, <http://www.tsb.gc.ca/en/common/mandate.asp> (18 December 2003).

international fisheries negotiations, fisheries enforcement, oceanographic research, hydrographic surveying and charting, and the development and administration of fishing and recreation harbours. To execute the above mandate, DFO has access to over 1200 small craft across Canada. As well, the department charters a limited number of aircraft and relies on the ship and helicopter resources of the Canadian Coast Guard. Three of the aircraft are equipped with sophisticated sensor suites that provide DFO with a significant maritime surveillance capability.[169] Their use in surveillance and fisheries enforcement will be discussed in greater detail in Chapter Seven.

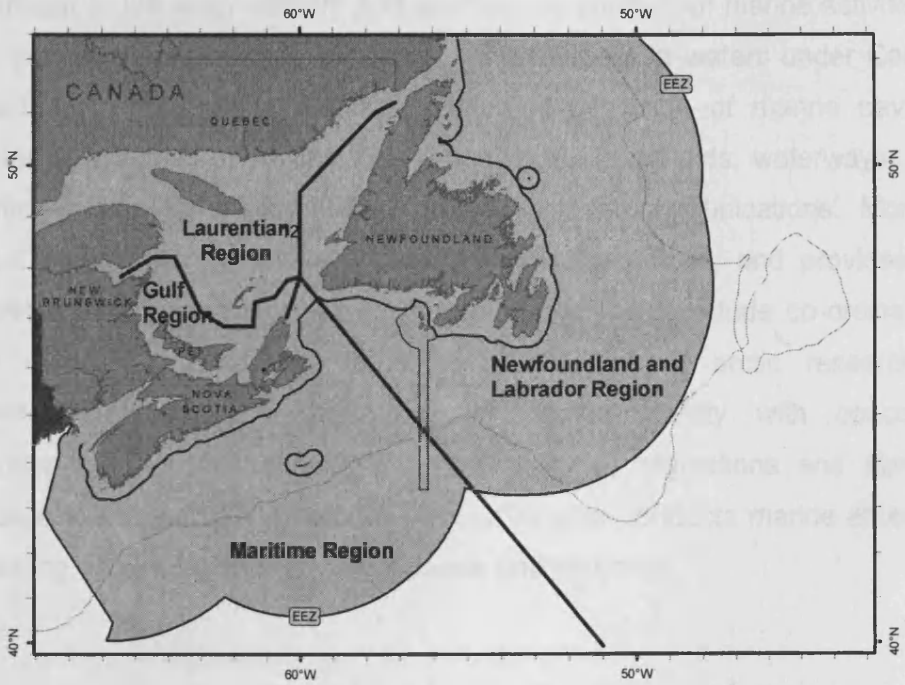


Figure 5-2. Jurisdictions – Fisheries and Oceans Canada
Source: Fisheries and Oceans Canada; *Oceans Act*; *Fisheries Act*.

Under the *Fisheries Act*, the jurisdiction of DFO extends to the 200 nautical mile EEZ for national fisheries enforcement. As well, on behalf of the North Atlantic Fisheries Organization (NAFO), DFO Conservation and Protection officers act as NAFO inspectors beyond the 200 mile limit in waters managed by NAFO. DFO has divided the Atlantic maritime zones into four

[169] The Beech King aircraft chartered from Provincial Air Lines (PAL) are equipped with a modern pulse-compressed radar, originally designed for detecting submarine periscopes, as well as an integrated onboard geographic information system.

administrative regions: Quebec, Gulf, Newfoundland, and Maritimes.[170] DFO's legislative and administrative jurisdictions are depicted in Figure 5-2.

5.3.2 Canadian Coast Guard (CCG)

As a result of federal department restructuring in 1995, in addition to its scientific and oceans management mandate, DFO also has taken the Canadian Coast Guard under its umbrella. The overall mandate of the CCG is to ensure the provision of operational policies and programs for the use of water transportation interests. In the execution of this goal, the CCG provides oversight to the safe, efficient and economical conduct of marine activities and the protection of quality of the marine environment in waters under Canadian jurisdiction. The CCG mandate stipulates provision of marine navigation systems, including short and long range navigational aids, waterways, vessel traffic services, safety and public correspondence communications. Moreover, the CCG monitors potentially hazardous ice conditions, and provides route assistance through ice-infested waters. Other tasks include co-ordination of the re-supply of northern settlements, support of arctic research and development, and the promotion of boating safety with concomitant development, promulgation and enforcement of regulations and standards relative to marine transportation. The CCG also conducts marine emergency planning as well as pollution surveillance and clean-up.

The Canadian Coast Guard's Marine Communications and Traffic Services (MCTS) are a key component of the enhanced vessel traffic and identification security effort. MCTS centres monitor communications traffic and obtain commercial vessel data as vessels enter Canadian waters. Certain of Canada's waterways are operated as vessel traffic zones requiring reporting of movements within a zone. This is a responsive surveillance program that has the ability to alert authorities to deviations from accepted norms.

[170] Formerly known as Scotia-Fundy Region.

In organizational terms, the Canadian Coast Guard is deemed to be a "Special Operating Agency" within Fisheries and Oceans Canada. Drawing upon authority vested by the *Oceans Act* and *Canada Shipping Act*, Canadian Coast Guard jurisdiction extends to 200 nautical miles for issues of safety at sea, vessel traffic management, and marine environmental response. For search and rescue purposes the CCG operates in some parts of the maritime approaches beyond the 200 nautical mile EEZ in separate internationally-agreed upon SAR zones as depicted in Figures 3-9 and 3-10 of Chapter Three. Administratively, the CCG has divided the Atlantic maritime zones into three general regions: Quebec, Newfoundland and Labrador, and Maritimes. The Arctic is administered through a regional headquarters in Sarnia, Ontario.

Figure 5-3. Jurisdictions – Canadian Coast Guard
Source: Transport Canada; *Oceans Act; Canada Shipping Act.*

DFO/CCG marine assets include 32 aircraft and 108 vessels that are employed in icebreaking, tending and maintenance of navigation aids, search and rescue, fisheries enforcement, environmental monitoring and response, and channel sounding. In addition, the Canadian Coast Guard operates a number of smaller vessels and craft including 29 inshore rescue boats. The following tables depict the vessel and aircraft assets available to DFO and the CCG.

The Canadian Coast Guard's responsibilities for the marine SAR component of the national SAR program include the detection of marine incidents and, in conjunction with DND, the co-ordination, control, and conduct of SAR operations in marine SAR situations within Canadian areas of federal responsibility. In addition, the CCG provides marine resources, i.e., vessels and aircraft to help with air SAR operations, as necessary. The Canadian Coast Guard also oversees the activities of the Canadian Coast Guard Auxiliary, a volunteer organisation that assists in responding to marine SAR incidents.

TABLE 5-3

DFO / CCG VESSEL FLEET

Vessel Type	Number
Watchkeeping Vessels	
Heavy Gulf Icebreaker	2
Medium Gulf/River Icebreaker	3
Major Navaids Tender/Light Icebreaker	9
Medium Navaids Tender/Light Icebreaker	2
Medium Navaids Tender/Ice Strengthened	5
Shallow Draft River Navaids Tender	3
Ice-Strengthened Multi-task Patrol Cutter	1
Offshore Multi-task Patrol Cutter	3
Intermediate Multi-task Patrol Cutter	4
Offshore Fisheries Research Trawler	4
Offshore Research/Survey Vessel	2
Coastal Research/Survey Vessel	2
Total	41
Non-Watchkeeping Vessels	
Small Navaids Tender	6
Inshore Fisheries Research Trawler	8
Multi-Hull Survey Vessel	3
Specialised Program Vessel	3
Research Barge	1
Small Multi-task Ice Strengthened Cutter	1
Small Multi-task Cutter	11
Small Multi-task Patrol Vessel	3
Hovercraft	3
High Endurance Lifeboat	12
Multi-task Lifeboat	7
Multi-task Utility Craft	9
Total	67
Total Vessels	108

TABLE 5-4

DFO / CCG AIRCRAFT FLEET

Aircraft Type	Number
Sikorsky S-61	1
Bell 212	4
Bell 206L	4
Bell 206L-1	2
MBB BO-105	16
Dash 8 (TC Charter)	1
Twin Otter (TC Charter)	1
Beech King Air (PAL Charter)	3
Total Aircraft	32

The Canadian Hydrographic Service (CHS) provides an integral role in the collection, analysis and publication of charting and seabed data within Canadian waters. This information is a prerequisite to a number of national marine security activities.

The CCG icebreaker fleet is a primary provider of the Canadian presence north of 60 degrees latitude as well as providing a visible, significant federal presence in southern Canadian waters.[171] As well, CCG ships undertaking Conservation and Protection missions for DFO provide a federal presence at the 200-mile economic zone perimeter, and provide an opportunity for collateral surveillance contribution.

On a day-to-day basis, the CCG works in concert with Navy and Air Force to direct marine research and rescue operations from the three Joint Rescue Co-ordination Centres. The establishment and employment of Canadian Marine Rescue Auxiliary organisations under the oversight of the Canadian Coast Guard enhance this commitment.[172] As well, the Navy and the CCG work together to share information pertinent to developing situational

[171] For practical purposes, most federal departments use the latitude 60 degrees North to delineate "the Canadian North" or "the Arctic" for jurisdictional purposes, rather than the actual Arctic circle. This latitude corresponds with the southernmost latitude of the political boundaries of the Yukon and Northwest Territories.

awareness of merchant vessel activity and marine pollution monitoring in the Atlantic maritime approaches, as well as formulating inter-agency contingency plans. A permanent CCG liaison officer works at the Maritime Security Operations Centre in addition to the CCG officers assigned to the Joint Rescue Co-ordination Centre.

5.5.3 Transport Canada (TC)

Transport Canada is the federal department charged with regulatory responsibility for safety and security of rail, marine, road and air transportation systems in Canada. The department is responsible for enforcing transportation policies, regulations and standards through inspection, monitoring and performance measurement of the various transportation systems. Transport Canada also has a role in elements of marine infrastructure and the transportation of dangerous goods and cargo. Moreover, the department is mandated to operate continuously a national situation centre to monitor air, marine and surface traffic within or near Canada, in order to provide a warning of and an early response to terrorist acts.

Transport Canada's Marine Safety division develops and enforces regulations and legislation for the construction, operation, and maintenance of commercial vessels, offshore drilling rigs, and air cushion vehicles. The division also is responsible for the qualification, and examination of officers and crews of merchant and government vessels. As well, the Marine Safety division maintains a Canadian ship registry, and licenses small commercial vessels. In addition to overseeing pilotage matters described earlier in this chapter, Transport Canada maintains vessel traffic management and separation systems for prevention of collision in the maritime approaches to Canadian ports and waterways.

Transport Canada has a major role the prevention of ship-source

[172] The Canadian Marine Rescue Auxiliary is a network of individuals such as commercial fishermen or citizens in possession of recreational boats who can be called upon to provide volunteer search and rescue services in localised area searches.

pollution, deriving its authority to prosecute from the *Canada Shipping Act*, the *Migratory Birds Convention Act*, the *Canadian Environmental Protection Act*, the *Fisheries Act*, and the *Arctic Waters Pollution Act*. The department also maintains a port state control program for inspection of foreign vessels operating in Canadian waters. This program exists to ensure compliance with various international maritime conventions such as the International Convention for Safety of Life at Sea (SOLAS), the International Convention for the Prevention of Pollution from Ships, the Convention on the International Regulations for Preventing Collisions at Sea, and many others.

In response to the 2001 terrorist attacks on North American soil, Transport Canada was assigned responsibility for the oversight and development of policies, legislation, regulations, standards, and procedures for marine security. In 2004, this was reiterated in the National Security Policy and is codified in the *Marine Transportation Security Act*. The Act further provides the Minister of Transport with the statutory authority to formulate confidential security measures or request security rules for all vessel operators or marine facilities in Canada, and generally to require the implementation of security measures in all sectors of Canada's marine industry.

Transport Canada owns and operates particular sections of the marine transportation system such as certain public ports and provides an oversight role for Canada Port Authorities. Transport Canada also appoints Enforcement Officers for the purposes of the *Canada Marine Act* and designates Port Traffic Control Officials also under the *Canada Marine Act*.

The *Canada Shipping Act* extends Transport Canada's jurisdiction for enforcement beyond the 12 nautical mile territorial sea to the 200 nautical mile EEZ. For the purposes of administration, Transport Canada divides itself into three regions. Transport Canada's legislative and administrative jurisdictions are depicted at Figure 5-4.

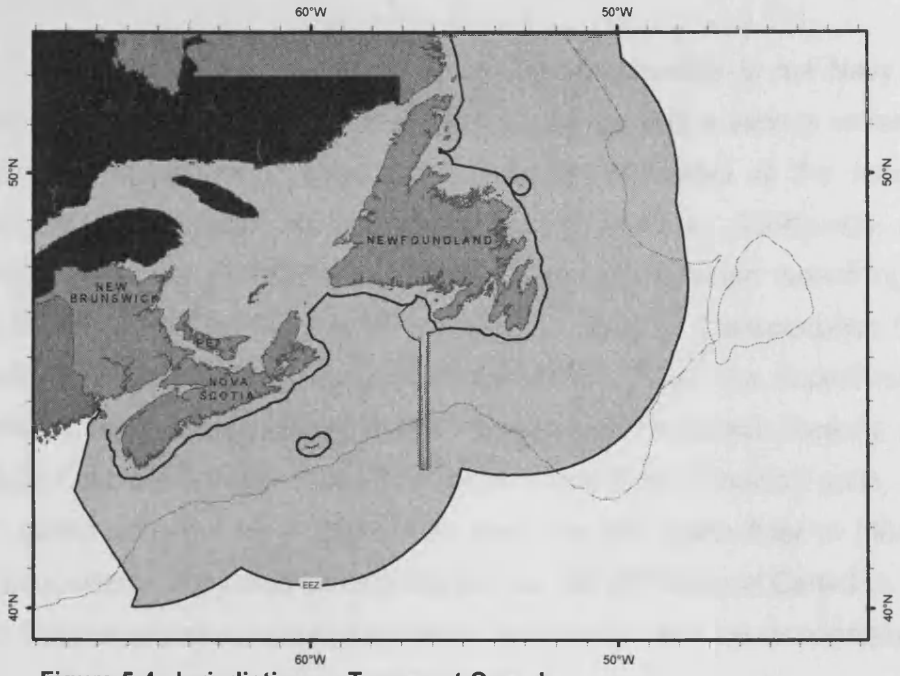


Figure 5-4. Jurisdictions – Transport Canada
Source: Transport Canada; *Oceans Act; Canada Shipping Act.*

Transport Canada operates three Dash 8 aircraft fitted with integrated sensor suites for pollution detection and monitoring. In addition, the department employs one Provincial Airlines surveillance aircraft contracted by DFO, but made available through a bilateral MOU. Through the Integrated Satellite Tracking of Polluters project (I-STOP),Transport Canada has pioneered the use of RADARSAT imagery for the detection and prosecution of marine polluters.[173]

The relationship between the Navy and Transport Canada has changed since the promulgation of the National Security Policy. Prior to 2004, there was limited interaction between the Navy and Transport Canada at a regional level. However, since the establishment of the Marine Security Operations Centre construct, Transport Canada has developed a new relationship with the Navy, much closer than that of the other government departments that are represented at the MSOCs.[174]

---

[173] RADARSAT is a Canadian satellite fitted with synthetic aperture radar used for capturing data for environmental and natural resource purposes.
[174] Interview with Captain(N) Bruce Belliveau, Assistant Chief of Staff Plans and Operations, Maritime Forces Atlantic, 2 March 2007.

On a day-to-day basis, Transport Canada provides to the Navy a data feed from the automated INNAV system employed by the various vessel traffic management systems. This forms a large component of the recognized maritime picture developed by the Navy at the MSOCs. Additionally, contact data derived from I-STOP and Transport Canada's pollution monitoring flights are added to the Navy's overall surveillance picture. Transportation Canada background analysts are present in the MSOC, and the department also provides senior personnel to process Pre-arrival Information Reports (PAIR), the 96-hour pre-arrival notices from ships inbound to Canadian ports. These TC personnel work on a permanent basis on the watch floor in MARLANT Headquarters. They also co-ordinate the activity of Transport Canada's Dash 7 and Dash 8 aircraft conducting maritime surveillance and ice reconnaissance.

At the national level, both departments collaborate through various working bodies, such as the Interdepartmental Maritime Security Working Group, in order to formulate inter-agency marine security policy and contingency plans.

5.3.4 Public Safety Canada (PSC)

Public Safety Canada, formerly Public Safety and Emergency Preparedness Canada, is a relatively new department that was introduced in the post-9/11 security environment. It can best be described as an amalgamation of the former Office of Critical Infrastructure Protection and Emergency Preparedness (OCIPEP) and the Solicitor General.[175]

OCIPEP was a relatively short-lived department charged with leading a comprehensive and new national approach to protecting Canada's critical infrastructure, as well as becoming the government's primary agency for ensuring national civil emergency preparedness for all manner of

[175] The new PSC portfolio also included the responsibilities of the National Crime Prevention Centre, but this entity will not be discussed further as it is not germane to maritime enforcement.

emergencies.[176] The mandate of OCIPEP was to maximise emergency preparedness and response to natural disaster and security emergencies by providing leadership in improving connections to provincial and territorial Emergency Measures Organisations as well as among all three levels of government. Created on 5 February 2001, OCIPEP was subsumed into PSEPC in 2004.

Prior to 2003, the Solicitor General was the Minister responsible for the protection of the public and "the maintenance of a just, peaceful and safe society."[177] The powers, duties, and functions of the Solicitor General included all matters over which Parliament had jurisdiction that related to prisons or reformatories, parole, and law enforcement, and that were not assigned by law to other departments or agencies. More importantly, responsibility for the internal security of Canada with respect to threats to the security of Canada and security offences including terrorist activities rested with the Solicitor General's department through the national police force, the Royal Canadian Mounted Police, and the Canadian Security Intelligence Service.

In 2003, the Minister of Public Safety and Emergency Preparedness assumed the majority of the responsibilities formerly held by the Solicitor General. The *Department of Public Safety and Emergency Preparedness Act* directs the Minister to co-ordinate the activities of Royal Canadian Mounted Police, the Canada Border Services Agency (CBSA), the Canadian Security Intelligence Service (CSIS), the Canadian Firearms Centre, the Correctional Service of Canada and the National Parole Board in the domains of crime prevention, law enforcement, corrections (prisons), emergency measures, and national security.[178] The Minister of Public Safety and Emergency Preparedness is also the lead minister in counter-terrorism and counter-drug

---

[176] Elements of critical infrastructure are, for example, key physical and cyber components of the energy and utilities, communications, services, transportation, safety and government sectors.
[177] Canada, Solicitor General, *1997/98 Estimates, Part III: Expenditure Plan*, Ottawa, 1998. p.7.
[178] *Department of Public Safety and Emergency Preparedness Act*, R.S.C. 2005 c.10. Sections 2 and 5; Canada, Public Safety and Emergency Preparedness Canada, *What We Do*, 28 July 2006 <http://www.psepc.gc.ca/abt/wwd/index-en.asp> (2 January 2007).

issues. These responsibilities are fulfilled through the activities of the Royal Canadian Mounted Police and the Canadian Security Intelligence Service.

PSC's responsibility for national security is within the 12 nautical mile territorial sea; however, through its co-ordinating function with the RCMP, CBSA and CSIS, it indirectly has influence over security matters extending to the 200 nautical mile EEZ. For the purposes of administration, PSC divides itself into regions that correspond with provincial land boundaries. PSC's legislative and administrative jurisdictions are depicted at Figure 5-5.

In view of its main function as a shore-based co-ordinating body, PSC maintains no marine vessels or aircraft. National security and enforcement actions are undertaken by federal departments that have the appropriate physical resources for maritime response.

On a routine basis, the Canadian Navy has little direct involvement with PSC except for limited interaction as part of ongoing contingency planning. This is due largely to the fact that PSC was established after the MSOC concept was agreed upon by the federal partners. Consequently, the department was not included in the concept or the funding for it. Moreover, PSC does not have a specifically mandated marine security operations or response role. However, during emergencies, natural or otherwise, the Navy becomes very much involved with PSC through the Maritime Operations Centre and the municipal and provincial Emergency Measures Operations Centres (EMOC). In addition, there is considerable day-to-day interaction between the Navy and three of the agencies or services that report to the Minister of Public Safety and Emergency Preparedness, namely the RCMP, CSIS, and CBSA.

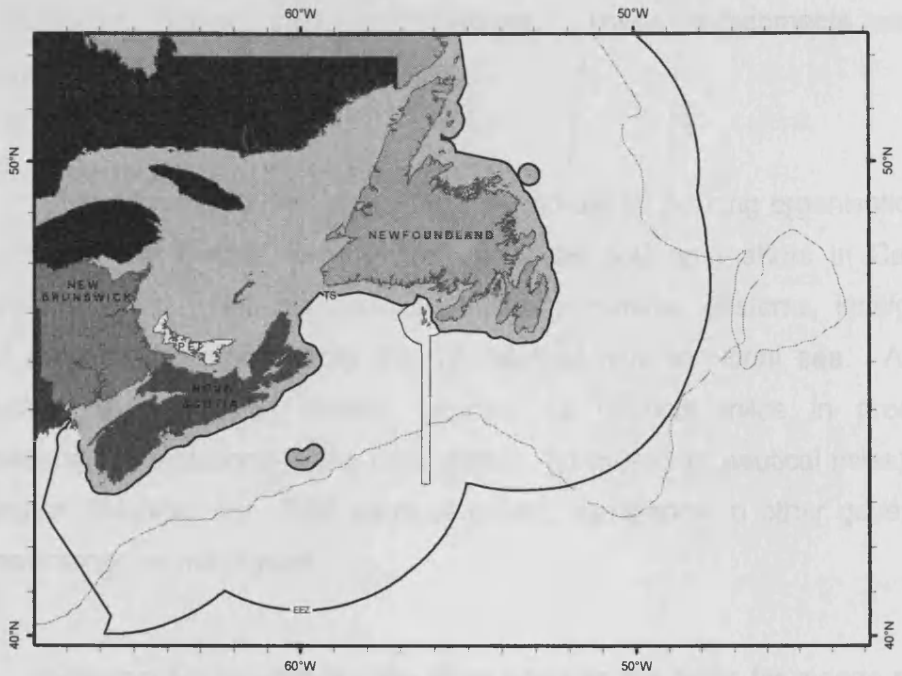


Figure 5-5. Jurisdictions – Public Safety Canada
Source: Public Security and Emergency Preparedness Canada.

5.3.5 Royal Canadian Mounted Police (RCMP)

The RCMP is Canada's national police force. Its authority is vested in Chapter 18 of the *Royal Canadian Mounted Police Act* and, reporting to the Minister of Public Safety and Emergency Preparedness, the RCMP is mandated to enforce laws, prevent crime, and maintain good order and security throughout Canada. There are no federal statutes for which the RCMP has sole enforcement responsibility; the *Royal Canadian Mounted Police Act and Regulations* provides the authority for RCMP members to enforce any Act of Parliament. While enforcement responsibilities differ with each federal act, these enforcement duties are generally divided between the RCMP and the respective federal department or agency that maintains expertise in a particular field.

The RCMP also provides contract police services to all provinces (except Ontario and Quebec), the Yukon and Northwest Territories, Nunavut and, under separate municipal agreements, police services to over 200 municipalities and 165 Aboriginal communities. The RCMP has over 750

detachments located throughout Canada. These detachments range in strength from 1 to 250 personnel.[179]

Although the RCMP is primarily a land-based policing organisation, it is responsible for certain federal and provincial policing matters in Canada's maritime zones. This responsibility includes criminal, customs, immigration, and drug enforcement within the 12 nautical mile territorial sea. As well, policing responsibilities extend beyond 12 nautical miles in prescribed situations, i.e. violations to the *Immigration Act* (out to 24 nautical miles) or the *Canada Shipping Act* (200 nautical miles), assistance to other government departments, or hot pursuit.

Criminal Code offences are often used as the basis for marine security incidents and investigations. The RCMP is not the police force of jurisdiction at the major international container ports at Vancouver, Fraser Valley (New Westminster), Montreal, Saint John, Halifax or Windsor; these ports are policed by municipal police services. However, the RCMP is the police force of jurisdiction at some smaller ports. Protective responsibilities also arise in designated ports during times of tension. The RCMP did not assume the duties and responsibilities of the disbanded Ports Police.

From an administrative standpoint, each province forms a separate RCMP Division, designated by a letter from A through to O. The RCMP divisions in the Atlantic region are H Division (Nova Scotia and PEI), B Division (Newfoundland), C Division (Quebec) and J Division (New Brunswick.) The RCMP's legislative and administrative jurisdictions are depicted at Figure 5-6.

The RCMP's dedicated Marine Division was disbanded in 1970, but its various marine assets were transferred to other sections within the RCMP. At

[179] Canada, Royal Canadian Mounted Police, *Marine Services*, 14 November 2006 <http://www.rcmp-grc.gc.ca/marine/marine_e.htm> (30 December 2006). See also Canada, Royal Canadian Mounted Police, *About the RCMP*, 11 October 2006 <http://www.rcmp.ca/about/index_e.htm> (24 December 2006).

present, the force employs a variety of small boats, as well as fixed and rotary wing aircraft to carry out its maritime operations. The largest of these small vessels is the catamaran patrol boat *INKSTER*. At 19.75 metres in length, it is roughly 2 metres longer than the remaining four Commissioner-class catamaran patrol boats. The catamarans are operated with 4-person double crews to provide 24/7 patrol and response capability and boast sustained speeds in excess of 25 knots. Four of the five catamarans are based on the West Coast; the sole Atlantic-based RCMP catamaran is the *SIMMONDS*, deployed out of Marystown, Newfoundland. In addition to the catamarans, the RCMP makes extensive use of numerous rigid hull inflatable boats (RHIB) on both coasts and in the inland waterways. Most common are the 5.3 and 7.3 metre vessels that are capable of speeds in excess of 30 and 40 knots respectively.[180]

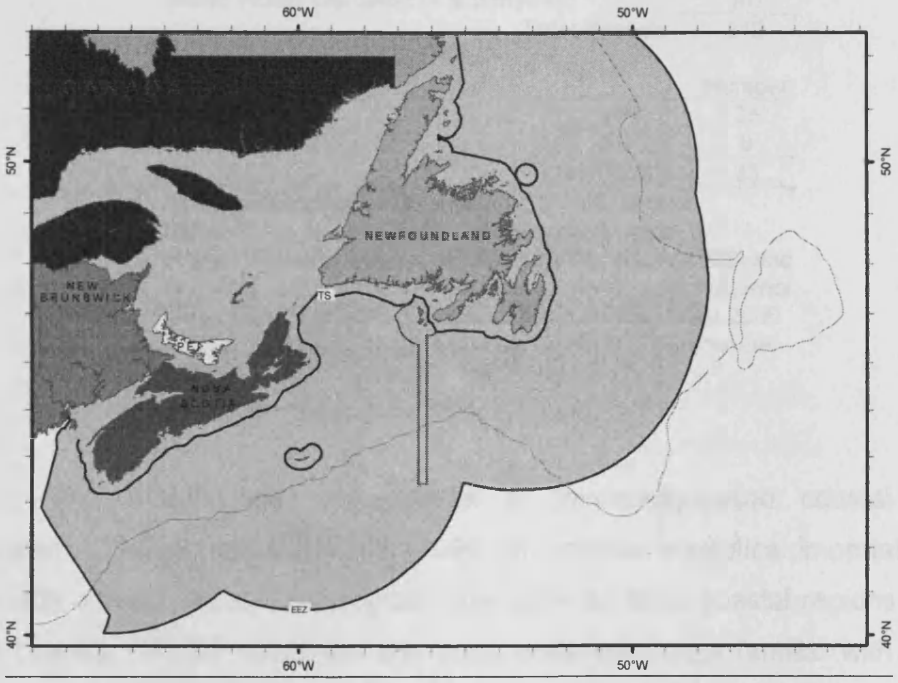


Figure 5-6. Jurisdictions – Royal Canadian Mounted Police
Source: Royal Canadian Mounted Police; *Oceans Act*; *Criminal Code of Canada*.

The RCMP also operates an Air Services Branch that primarily supports the transport of personnel, be they Emergency Response Teams, prisoners, or

[180] Canada, Royal Canadian Mounted Police, *West Coast Marine Detachment*, 24 March 2003 <http:// members.shaw.ca/rcmpwcmd/Photogallery.htm> (30 December 2006).

members on administrative or operational duties. RCMP aircraft have a limited search and rescue capability, but are capable of surveillance and monitoring of land-oriented activity. However, RCMP aircraft lack the sophisticated sensor suites necessary for effective maritime surveillance and, unlike the DFO chartered aircraft, they are not used in that capacity except in situations in which the targets of interest are localised already. In the Atlantic region, the RCMP maintains aircraft and Air Services support at Moncton, New Brunswick; Goose Bay, Labrador; and Iqaluit, Nunavut.

TABLE 5-5

RCMP VESSELS AND AIRCRAFT

Vessel Type	Number
Patrol Vessel (> 9.2 metres)	5
Inland Water Transport (< 9.2 metres)	307
Total Vessels	312

Aircraft Type	Number
Fixed Wing	25
Helicopters	8
Total Aircraft	33

Source: Royal Canadian Mounted Police, *Marine Services*, 14 November 2006 <http://www.rcmp-grc.gc.ca/marine/marine_e.htm> (30 December 2006) and Royal Canadian Mounted Police, *Air Services: A snapshot of our people, places and equipment*, 14 November 2006 <http://www.rcmp-grc.gc.ca/air/air_e.htm> (30 December 2006).

The RCMP also co-ordinates a community-based coastal watch program. Launched initially in 1996 to counter narcotics importation on Canada's West Coast, the program now extends to all coastal regions across the country. RCMP members and community volunteers familiar with normal marine activity meet regularly to disseminate information pertaining to on-water or coastal activities. The program educates individuals what to look for in terms of suspicious or illegal activity, and trains them how to effectively transmit this information to the appropriate law enforcement agency. The program solicits participation from recreational boaters, professional mariners, fishermen, fuel dock attendants, vessel brokers, or anyone who lives or works near the water.

Some operations to counter criminal, customs, immigration, and narcotics violations require armed boardings by RCMP Emergency Response Teams. While the RCMP maintains a large number of vessels to exercise its mandateupon the water, in some cases the RCMP require vessels larger than those in the RCMP inventory in order to accommodate their ERTs or require speed and co-ercive force the the RCMP boats do not possess. When the RCMP requires larger vessel support to its law enforcement operations, the force must rely on other government department assets, specifically those of DND and DFO/CCG.

On a day-to-day basis, the Navy and the RCMP work together to share information and intelligence pertinent to developing situational awareness and assessment of marine-oriented national security threats as well as formulating inter-agency contingency plans. The RCMP maintains a representative at the Maritime Security Operations Centre housed at the regional naval headquarters in Halifax. This representative is a conduit to the RCMP's Divisional Emergency Operations Centres (DEOC), staffed as required, and the National Operations Centre (NOC) staffed 24 hours/7 days a week.

5.3.6 Canadian Security Intelligence Service (CSIS)

The Canadian Security Intelligence Service was established on 16 July 1984 as a separate intelligence organization from its parent, the RCMP Security Service. Deriving its authority from the *Canadian Security Intelligence Service Act*, CSIS collects, analyses, and retains information and intelligence that is suspected of constituting a threat to the security of Canada, and advises the government in relation to these matters. CSIS considers the main threats to Canada to be terrorism, the proliferation of weapons of mass destruction, espionage, foreign interference and cyber-tampering that affects critical infrastructure. CSIS also provides security assessments, on request, to all federal departments and agencies.

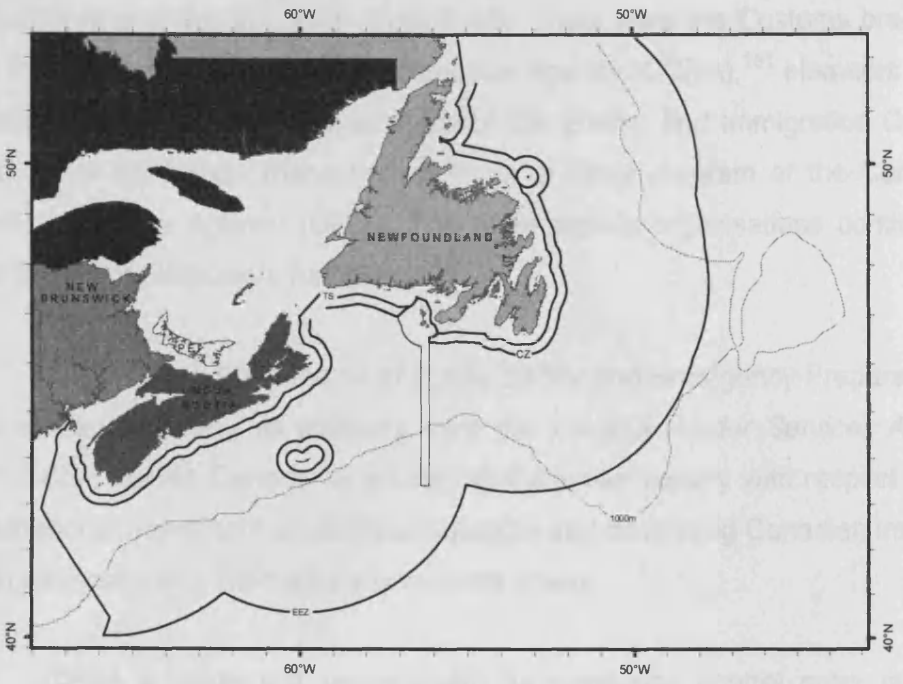


Figure 5-7. Jurisdictions – Canadian Security Intelligence Service

CSIS maintains close links with Canadian Forces intelligence officers and, in the naval context, with the Maritime Security Operations Centres located in Halifax and Esquimalt. CSIS has no capability to deploy into the Canadian maritime zones; intelligence collection, analysis, and sharing is almost exclusively a shore-based activity. As in the case of PSEPC, CSIS was not included in the MSOC concept or nor the funding set aside for it. Moreover, CSIS does not have a specifically-mandated marine security operations or response role as outlined in its enabling statute or the National Security Policy. Administratively, CSIS divides itself into regions that reflect provincial land boundaries as depicted at Figure 5-7. CSIS has no marine vessels or aircraft.

5.3.7 Canada Border Services Agency (CBSA)

The Canada Border Services Agency was created on 12 December 2003 as part of the same process that established its parent department, PSA (formerly PSEPC in 2003). CBSA is similar to PSA in that it is an amalgamation of previous departments and agencies. However, unlike PSA, the Canada Border Services Agency did not wholly subsume the legacy organisations. Rather, CBSA integrated the border functions of one federal

department and two agencies. Specifically, these were the Customs branch of the former Canada Customs and Revenue Agency (CCRA),[181] elements of the intelligence and enforcement services of Citizenship and Immigration Canada (CIC), and the Import Inspection at Ports of Entry program of the Canadian Food Inspection Agency (CFIA). The three legacy organisations continue to fulfil their other important functions.

Reporting to the Minister of Public Safety and Emergency Preparedness Canada and drawing its authority from the *Canada Border Services Agency Act*, CBSA serves Canada by protecting Canadian society with respect to the international movement of goods and people and advancing Canadian interests both nationally and internationally in these areas.

CBSA is tasked with responsibility for monitoring, control, entry, revenue collection and enforcement (goods, conveyances and persons), at Canada's ports and designated points of entry. The Port of Entry Control section of CBSA provides guidance and support to local offices concerning examination procedures aimed at granting entry to persons determined to be admissible and refusing entry to those unable to comply with the requirements of the *Immigration Act* and regulations.

While most activities are restricted to port areas, some activities require other departments or private sector groups to provide support at sea. CBSA's jurisdiction is limited, for customs issues as specified in the *Customs Act*, to the 12 nautical mile territorial sea in accordance with the *Territorial Sea and Fishing Zones Act*. However, the *Customs & Excise Offshore Application Act* extends jurisdiction beyond the 12 nautical mile territorial sea to the outer edge of the continental shelf or 200 nautical miles, whichever is greater. Its impact is limited to the offshore, non-living, natural resource industries. All equipment,

[181] The *Canada Customs and Revenue Act* was renamed the *Canada Revenue Agency Act* in 2005. With this change, CCRA became the Canada Revenue Agency. With the its customs functions transferred to CBSA, Canada Revenue Agency now focuses on its principal role as the main revenue collector for the Government of Canada through income and business taxes, and other revenue streams.

ships, drilling vessels *et cetera*, operating in the defined area are subject to Canadian Customs & Excise laws and regulations.

For the purposes of administration, CBSA divides itself into regions that correspond with provincial land borders. CBSA's legislative and administrative jurisdictions are depicted at Figure 5-8.

CBSA capabilities include expertise and specialised equipment for rummaging vessels and expertise in collection and evaluation of maritime shipping information related to international trade. In addition, CBSA has expanded its programs to include the Container Security Initiative (CSI), a multi-national program that protects containerised shipping from exploitation or disruption by non-state actors.

CBSA deploys employees to foreign ports in co-operation with host nation officials so that cargo containers destined for Canada can be pre-screened and examined prior to arrival in Canadian ports. CBSA also employs modern and emerging technologies to prevent dangerous cargo and contraband from entering Canada. These devices include stationary portal radiation detectors and mobile vehicle-mounted radiation detection systems designed to detect illegal radioactive materials, such as a dirty bombs and nuclear weapons in containers. Other technologies employed are ion mobility spectrometry (IMS) for detecting conventional explosives and narcotics, and gamma-ray technology that is used to create images of marine container interiors.

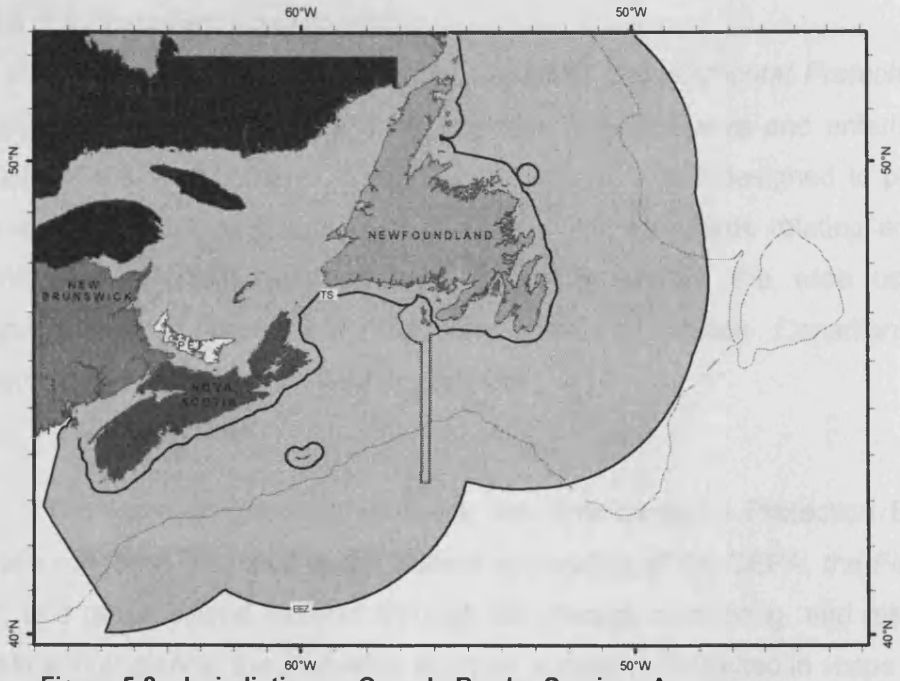


Figure 5-8. Jurisdictions – Canada Border Services Agency
Source: Canada Border Services Agency.

CBSA maintains small remotely-operated vehicles (ROVs) for inspecting the exterior of a vessel's hull below the waterline but the agency does not have any vessels in its equipment inventory for transporting inspection teams. Normally CBSA waits until a vessel is berthed in a Canadian port before conducting an inspection. However, if the situation arises in which it is necessary carry out an inspection at sea, CBSA relies on other government department assets, specifically those of DND and DFO/CCG, to execute such a tasking.

On a day-to-day basis, the Navy and CBSA work together to share information and intelligence pertinent to developing situational awareness and assessment of marine-oriented national security threats as well as formulating inter-agency contingency plans. CBSA maintains a representative at the Maritime Security Operations Centre housed at the regional naval headquarters in Halifax.

5.3.8 Environment Canada (EC)

Deriving its authority from the *Canadian Environmental Protection Act (CEPA)*, this department's primary objective is to preserve and enhance the quality of the environment. Departmental programs are designed to promote the establishment or adoption of objectives and standards relating either to environmental quality or pollution control, to ensure the wise use and management of renewable resources and to provide Canadians with environmental information of public interest.

Environment Canada maintains the Environmental Protection Branch, whose mandate is to ensure consistent application of the CEPA, the *Fisheries Act*, and other federal statutes through deterrence, monitoring, and response. While at first glance, the *Fisheries Act* may appear to be limited in scope only to fish, indeed it is one of the key pieces of federal legislation that affects the environment. This is because its applies to anything that might have an impact on fish or fish habitat.

Environment Canada is administered across the country through five regions. The provinces of Nova Scotia, New Brunswick, Newfoundland and Labrador, as well as PEI form the Atlantic region. Quebec is the other region represented on the Atlantic coast.

Although EC operates a number of smaller craft for local use, DFO/TC assets are used on a cost-recovery basis to carry out their major tasks of meteorological observations, research, enforcement of environmental regulations and pollution control.

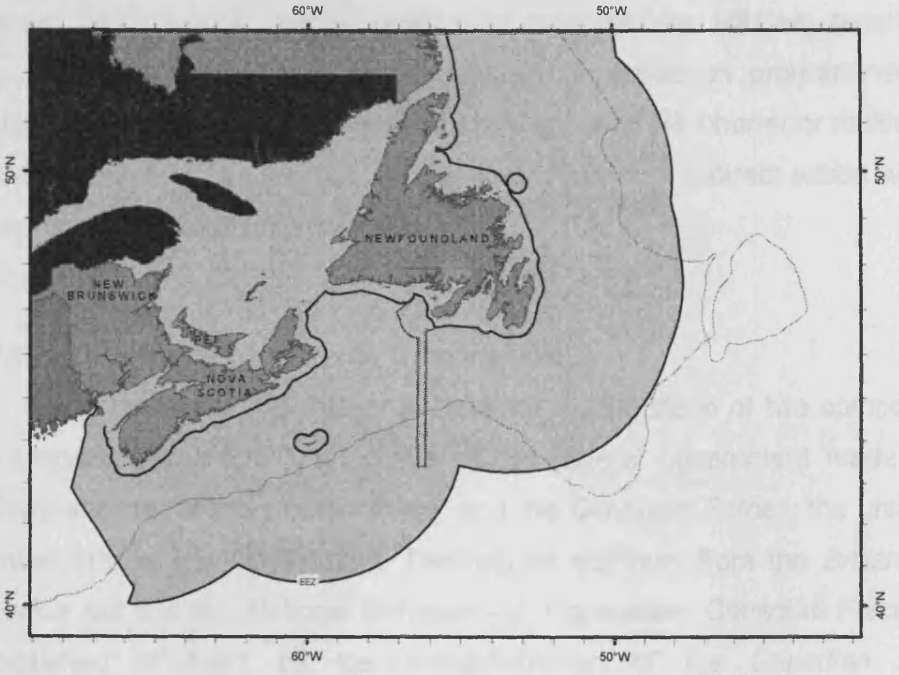


Figure 5-9. Jurisdictions – Environment Canada
Source: Environment Canada.

While there are some operational planning linkages with EC through the Maritime Operations Centre, the most frequent liaison occurs between the Canadian Forces' maritime patrol aircraft and Environment Canada in surveillance of maritime zones for incidents of marine pollution and ocean dumping. For example, in 2003, military CP-140 aircraft were responsible for the detection of 85 percent of the marine pollution violations reported.[182] In addition, on an infrequent basis, staff from the Canadian Wildlife Service embark aboard naval vessels conducting exercises in the maritime approaches to carry out sea bird counts to provide greater insight into bird density in relation to shipping lanes.

5.3.9 Natural Resources Canada (NRCan)

Natural Resource Canada objectives are to promote the discovery, development and effective use of the country's mineral and energy resources and to broaden the knowledge base of Canada's landmass and seabed. DFO

vessels provide the preponderance of support for NRCan geophysical research, mapping surveys and resource data collection programmes. The remaining services at sea are provided through contract, charter or multitasking of OGD vessels. NRCan has no day-to-day direct or indirect action with the Navy for maritime security purposes.

5.3.10 Department of National Defence (DND)

The Department of National Defence is comprised of two components: the Department which is an organ of the federal government made up of military and non-military bureaucrats, and the Canadian Forces, the uniformed combat arm of the Department. Deriving its authority from the *British North America Act* and the *National Defence Act*, the modern Canadian Forces was established in 1967 by the implementation of the *Canadian Forces Reorganization Act* that abolished the former three separate services and created a single service known as the Canadian Armed Forces.

Located in Ottawa, National Defence Headquarters (NDHQ) houses an integrated staff that supports the Minister of National Defence and the top military officer, the Chief of the Defence Staff (CDS). Also based at NDHQ are the "Chiefs" of the three "Environments," formerly known as "Services." The three Environments also correspond to three of the major commands of the Canadian Forces: Maritime Command, Land Force Command, and Air Command. The Environmental Chiefs report directly to the CDS, and are responsible for the day-to-day management and operational readiness of the forces assigned to them.

Given the naval flavour of this thesis, the discussion will focus on Maritime Command and elements of Air Command that support it. The head of Maritime Command, the Chief of the Maritime Staff, exercises overall command of Canadian maritime defence assets located on both the Atlantic and Pacific coasts, as well as the Naval Reserve. The Commander Maritime Forces

---

[182] Canada, Department of National Defence, *Serving Canadians – On Guard: Watching for Polluters and Illegal Fishing*, 28 January 2003 <http://www.airforce.forces.gc.ca/athomedocs/

Atlantic (Comd MARLANT) exercises operational command over east coast maritime forces from his headquarters in Halifax, Nova Scotia. From headquarters located in Esquimalt, British Columbia, the Commander Maritime Forces Pacific (Comd MAPAC) is delegated operational command of maritime forces on the west coast. The Commander Naval Reserve (Comd NAVRES) is located in Quebec City, PQ.

Within the unified structure of the Canadian Forces, 1 Canadian Air Division exercises full command over maritime aircraft through the Regional Air Co-ordination Elements (RACE) located in Halifax and Esquimalt. These air assets are subsequently placed under operational control of the Commanders of MARLANT and MARPAC.

The Chief of the Maritime Staff is responsible for all military Canadian maritime operations. When those operations are in Canadian waters, he exercises control of all maritime forces engaged in the defence of North America.[183] As a national commander, he is responsible for Canadian naval force generation, co-ordination of maritime policy and plans, and pan-naval standards.[184] Figure 3-5 of Chapter Three depicts the Navy's area of responsibility in the Atlantic and arctic regions.

Maritime Command operates two bases and five stations across the country. One base and four stations are in the Atlantic region: Canadian Forces Base (CFB) Halifax, Canadian Forces Station (CFS) St. John's in Newfoundland, CFS Mill Cove, CFS Shelburne, and CFS Newport Corners in Nova Scotia. The Navy also has a dockyard located in Halifax. The naval infrastructure also comprises a number of units and organisations designed to support naval training, marine engineering, ship repair and maintenance,

---

athodm4c_e.htm> (9 October 2003).

[183] Under the terms of Canada/US defence agreements, he exercises control of US maritime forces engaged in the defence of North America when these units are operating in Canadian waters.

[184] Force generation is a term used to describe the collective steps to prepare a particular force for operations. This would entail manning the units to the required strength, training the personnel for the expected missions, equipping the personnel, and ensuring that the equipment is in an appropriate, sustainable materiel state.

harbour control, systems testing, information and communications systems, and diving. It also includes a range of supply and administrative support units.

Principal components of the naval fleet are organised into two Naval Task Groups, one based in Esquimalt, and one in Halifax. Each is comprised of a Task Group command ship, two or three general purpose frigates, and an integral operational support ship. When the mission dictates, the Task Group could include one or more submarines.

At present, the Canadian Navy's order of battle includes three operational destroyers, twelve all-purpose frigates, four diesel-electric submarines, two auxiliary oil replenishment vessels, twelve maritime coastal defence vessels, three naval reserve tenders, and nineteen smaller auxiliary vessels. As well, the Navy supports the operation of two oceanographic research vessels. The composition of the Atlantic Fleet is shown at Table 5-6.

Maritime aircraft operate from three bases located at CFB Greenwood and CFB Shearwater in Nova Scotia, and CFB Gander in Newfoundland. There is one main maritime air base on the West Coast at CFB Comox, British Columbia. As well, a small helicopter detachment is located at Pat Bay, north of Esquimalt. Table 5-7 depicts the nominal number of aircraft by type that support maritime and naval missions in the Atlantic Region.

How are these ships, aircraft and supporting infrastructure used to achieve government objectives? That question will be treated in depth in Chapter Seven. However, for the purposes of comparing DND with the other departments, the traditional activities for which the Canadian Navy has provided support are fisheries management, counter-drug operations, search and rescue as a component of maritime safety, and environmental monitoring. The Department of National Defence maintains a number of agreements and contingency plans to provide assistance to other government departments charged with enforcement of specific statutes. This support has usually taken the form of information and data sharing as well as the provision of a particular type of platform, i.e. ship or aircraft, for a specific mission during which another

government department has been lead agency. One of the recommendations made in the Senate study on the rationalization of government fleets was that the Navy play a greater role in the assertion of Canadian sovereignty.[185]

TABLE 5-6

NAVAL FLEET - ATLANTIC

Vessel Type	Number
Submarines (4)	3
Destroyers (3)	2
Frigates (12)	7
Auxiliary Oil Replenishment Vessels (2)	1
Maritime Coastal Defence Vessels (12)	6
Patrol Craft (Naval Reserve Tenders) (3)	0
Auxiliary vessels (19)	8
Total Vessels (55)	27

Note: Numbers in brackets indicate total number of vessels of that type on both coasts.

TABLE 5-7

NAVAL AIRCRAFT – ATLANTIC

Aircraft Type	Number
CP-140 Aurora Maritime Patrol Aircraft (18)	13
CP-140A Arcturus Maritime Patrol Aircraft (3)	3
CH-124 Sea King Helicopters (29)	14
CH-129 Cormorant SAR Helicopters (15)	7
CH-146 Griffon Helicopters (SAR backup) 99)	4
Total Aircraft (164)	27

Note: Numbers in brackets indicate total number of aircraft of that type operated by the Canadian Forces. Unlike vessel numbers that remain relatively static, aircraft are allocated to each coast by 1 Canadian Air Division based on planning requirements and aircraft serviceability, resulting in frequent fluctuation of aircraft totals.

Perhaps the Navy's greatest potential contribution to sovereignty protection is its efforts in maritime domain awareness and surveillance. In addition to the several types of patrol assets, all offering different levels of utility in the enforcement arena, there are the joint ocean surveillance and information centres at Halifax and Esquimalt. It is at these shore establishments that intelligence and surveillance data are compiled from military and other

[185] Garnett, "The Navy's Role in the Protection of National Sovereignty," 4.

government department sources. The information is fused as required to create a plot that is shared with other agencies to enhance maritime domain awareness.

Having described in some detail the principal national regulatory and advisory bodies with interests or responsibilities for enforcement aspects of oceans management in Canada, the remainder of this chapter will cover certain provisions that further illustrate how the Navy fits into the regulatory framework.

5.4 Enabling Provisions for Naval Support

As noted earlier, the Navy not a designated law enforcement agency; however, support is provided to other government departments by military forces on a regular basis. This is done through inter-departmental Memoranda of Understanding, and the use of military forces for "domestic operations."

5.4.1 Memoranda of Understanding

The Canadian Forces maintains a large number of Memoranda of Understanding with other government departments for a variety of operational requirements. Their purpose is to enable departments to provide support to each other in situations in which one department may not have the resources available to carry out a specifically-mandated task. However, another department may possess the resources, but may not have the mandate, legal or otherwise to conduct the task. The other pertinent aspect is that these support operations are frequent, so much so that the process of seeking and obtaining ministerial approval for support becomes an administrative burden. In these situations, a standing MOU makes good sense from an efficiency standpoint.

From a naval perspective, there are three key MOU that pertain to maritime enforcement. Memoranda of Understanding have been developed with Fisheries and Oceans Canada, the RCMP, and Environment Canada for

counter-narcotics and fisheries enforcement, and aid to emergency environmental response.

5.4.1.1 Military Assistance to RCMP for Counter-drug Operations

The purpose of this agreement is to define the nature and process of military support to the RCMP in support of drug law enforcement. There are two basic tenets to this MOU. The first is that military assistance shall only be sought once the RCMP have developed a concept of operations for a particular scenario and, in doing so, the RCMP has ascertained that it does not have the capability to carry out the operation without assistance that the military can provide. The second is that the RCMP shall retain responsibility for all direct law enforcement activities, and that military personnel will function in a support role where it is unlikely that they will be used directly for the apprehension of suspects. The MOU outlines the cost recovery process, and also the provisions for setting annual ceilings of naval ship days and aircraft flying hours. Historically, these have been in the order of 30 ship days and 1,000 flying hours but, in many years, these ceilings have not been used.[186]

5.4.1.2 Military Assistance to DFO for Fisheries Enforcement

The purpose of this agreement is to define the nature and process of military support to DFO for surveillance and fisheries enforcement for national purposes, and on behalf of the North Atlantic Fisheries Organization (NAFO). The main premise of the agreement is that an allocation of ship days and aircraft flying hours shall be negotiated annually between DND and DFO, and once agreed upon, ships and aircraft will be provided for fisheries patrols on a no cost basis to DFO. The MOU specifies that ship and aircraft captains retain command and are responsible for the safe operation of their platforms, and DFO conservation and protection officers retain responsibility for all direct fisheries enforcement activities. The MOU outlines the cost recovery process, and also the provisions for setting annual ceilings of naval ship days and

[186] Canada, *Memorandum of Understanding between the Canadian Forces and the Royal Canadian Mounted Police concerning the Provision of Assistance by the Canadian Forces in Support of the Royal Canadian Mounted Police in its Drug Law Enforcement Role*, 20 January 2005.

aircraft flying hours. Historically, these have been in the order of 125 ship days and 500 flying hours.[187]

5.4.1.3 Military Assistance to EC for Environmental Emergency Response

The purpose of this agreement is to define the nature and process for military support to Environment Canada in aid of environmental emergency response, in particular the use of the military's robust command, control, and communications systems for management of environmental incidents. The purpose of the agreement is to establish designated points of contact between departments, and to outline the voice and data communications requirements needed for emergency environmental response, as well as procedures for the use of DND sites and property. Moreover, a section of the MOU discusses the use of naval vessels of opportunity that could be employed for sustained tracking of oil or hazardous material spills as well as estimation of dispersion patterns, provision of meteorological support, accommodation of EC personnel, and equipment stowage. Other provisions in the MOU articulate clearance diving support for underwater reconnaissance and surveys, as well as air reconnaissance and airlift by DND aircraft. The MOU outlines the cost recovery process, but unlike the RCMP and DFO MOUs discussed earlier, there are no annual ceilings for naval ship days and aircraft flying hours.[188]

Table 5-8 below shows the main interdepartmental Memoranda of Understanding that pertain to maritime enforcement at the present time.

---

[187] Canada. Fisheries and Oceans Canada/Department of National Defence. *Memorandum of Understanding between the Department of Fisheries and Oceans and the Canadian Forces respecting Surface Ship Patrols and Aerial Fisheries Surveillance.* Ottawa, May, 1999.
[188] Canada. Department of the Environment/Department of National Defence. *Memorandum of Understanding between the Department of the Environment and the Department of National Defence and the Canadian Forces relative to a Partnership for Environmental Emergency Response Assistance to the Department of the Environment.* Ottawa, March, 1994.

TABLE 5-8

KEY INTER-DEPARTMENTAL MARITIME ENFORCEMENT AGREEMENTS

Memorandum Of Understanding Title	DND	RCMP	DFO/CCG	EC
Drug Law Enforcement	X	X		
Surface ship patrols and aerial fisheries surveillance	X		X	
Environmental Emergency Response	X			X
Counter-Drug Operations		X	X	
Mutual Assistance between DFO and RCMP		X	X	
Security and Defence of Canadian Deep-sea and Inland Water Ports during a period of tension or war	X	X		
Assistance to RCMP Law Enforcement		X	X	
Employment of CCG ships and aircraft in a war or emergency	X		X	
Combating Oil Spills	X		X	

Note : Memoranda of Understanding in italics have expired and are under review.

5.4.2 Domestic Operations

Drawing from Chapter Three and the discussion earlier in this chapter, in a domestic context the main roles for the CF are the defence of Canada and sovereignty protection. During the Cold War, the defence role was relatively easy to articulate, given that the enemy or main threat was readily identifiable as the Soviet Union and its allies, the Warsaw Pact nations. Thus, defining the role of DND in this threat environment was equally straight -forward; if the threat posted to Canada was a state actor, it was a defence responsibility to counter the threat. Acts of violence or intimidation perpetrated by non-state actors were considered as criminal acts, and were dealt with by Canadian law enforcement agencies. Moreover, these types of threats tended to be focussed on Canadian soil, whereas defence tasks tended to be offshore or expeditionary in nature.

Notwithstanding the distinction between state and non-state threats to security, the Canadian Forces were, and continue to be used to support civil authorities in areas of Canadian jurisdiction. These are known within the military and legal communities as "domestic operations."

The *National Defence Act* codifies the principles for control of the armed forces, as well as providing the legal basis for the provision of military support to provinces for maintaining public order.[189] Pursuant to the *National Defence Act*, military "service" can be furnished "in any case in which a riot or disturbance of the peace, beyond the powers of civil authorities to suppress, prevent or deal with and requiring that service."[190] The Chief of the Defence Staff is accorded the discretion to determine the scope and nature of military "service" in these situations.

What is a domestic operation? It is a term used to denote ". . . any CF activities which provide assistance in response to requests for support from Canadian civil authorities, or from the Canadian public."[191] In truth, the Minister of National Defence or the Governor-in-Council may authorize the armed forces to "perform any duty involving public service," including the "provision of assistance in respect of any law enforcement matter."[192]

Provision of assistance to law enforcement agencies follows a formal procedure, and is only agreed to when the Minister of Public Safety and Emergency Preparedness makes the request.[193] In addition, the assistance must be deemed to be in the national interest and, as well, the matter cannot be effectively dealt with except with the assistance of the armed forces. Minor assistance that is limited only to logistical, technical or administrative support does not have to follow this sequence.

The Canadian Forces classifies domestic operations into five categories:

a. Category 1 – Routine support to community activities. This is, by far, the most frequent type of domestic operation undertaken by the Canadian Forces and pertains to non-crisis provision of services;

---

[189] *National Defence Act*, R.S.C. 1985 c. N-4. Part XI.
[190] Ibid.
[191] Canada, Department of National Defence, National Defence Headquarters, 3301-0 (DCDS) *NDHQ Instruction DCDS 2/98: Guidance for the Conduct of Domestic Operations*. 10 July 1998, p. 1.
[192] *National Defence Act*, R.S.C. 1985 c. N-4. s. 273.6.
[193] Formerly the Solicitor General of Canada.

b. Category 2 – Humanitarian assistance. This includes ground search and rescue, civil disasters such as floods and fires, environmental emergencies, and other humanitarian situations such as missing persons and mercy flights;

c. Category 3 – Assistance to law enforcement agencies (ALEA). This category is further sub-divided into four classes of assistance that run the spectrum from the benign, such as provision of ranges or training areas for police personnel, to situations in which a disturbance of the peace is occurring or about to occur and armed forces personnel or equipment may be needed for support;

d. Category 4 – Assistance to other federal government departments' law enforcement. This category pertains to such activities as assistance to federal penitentiaries for assisting in the suppression of prison disturbances. The four classes of assistance mentioned above can also be used in this category. As well, Memoranda of Understanding (MOU) with the RCMP, DFO, and EC fall into this category; and

e. Category 5 – Aid of the Civil Power. Pursuant to the *National Defence Act*, the Canadian Forces may be called out in aid of the civil power in any case in which a riot or disturbance of the peace, beyond the powers of the civil authorities to suppress, prevent or deal with and requiring that service, occurs or is, in the opinion of an attorney general, considered as likely to occur."[194] Under aid of the civil power, armed forces members possess the powers and duties of "constables" but remain under military command and control.

Under normal circumstances, the Canadian Forces do not use resources for a purpose not directly in support of national defence objectives. However,

[194] *National Defence Act*, R.S.C. 1985 c. N-4. s. 275

there are occasions when it is consistent with the intent of government policy to provide a service in response to a request from a non-defence agency, even though the service is outside the immediate scope of the national defence mandate. As such, the Government of Canada or Governor-in-Council, other federal government departments, provincial governments, municipal governments, other non-defence agencies, and individuals may request assistance or Canadian Forces support on a routine or emergency basis.

Depending on the nature and scope of the support requested, i.e., the category, a request for support is first discussed at the local level between departments, but must be processed through the requestor's staffing chain to the ministerial level. The Minister in need of the support makes the official request directly to the Minister of National Defence, who directs the request downward through the chain of command until support can be provided appropriately.

While this may appear to be an overly-bureaucratic and convoluted process, in practice authority for the provision of support can be obtained very rapidly, i.e., under an hour, in times of crisis. From time to time in domestic operations, Canadian Forces members are afforded peace officer status. This status depends on the circumstances of each situation and exists only for as long as it is required for duty. Peace officer status provides both legal status and legal protection to service members while carrying their legal duties. Notwithstanding this status, armed forces members remain under military command at all times.

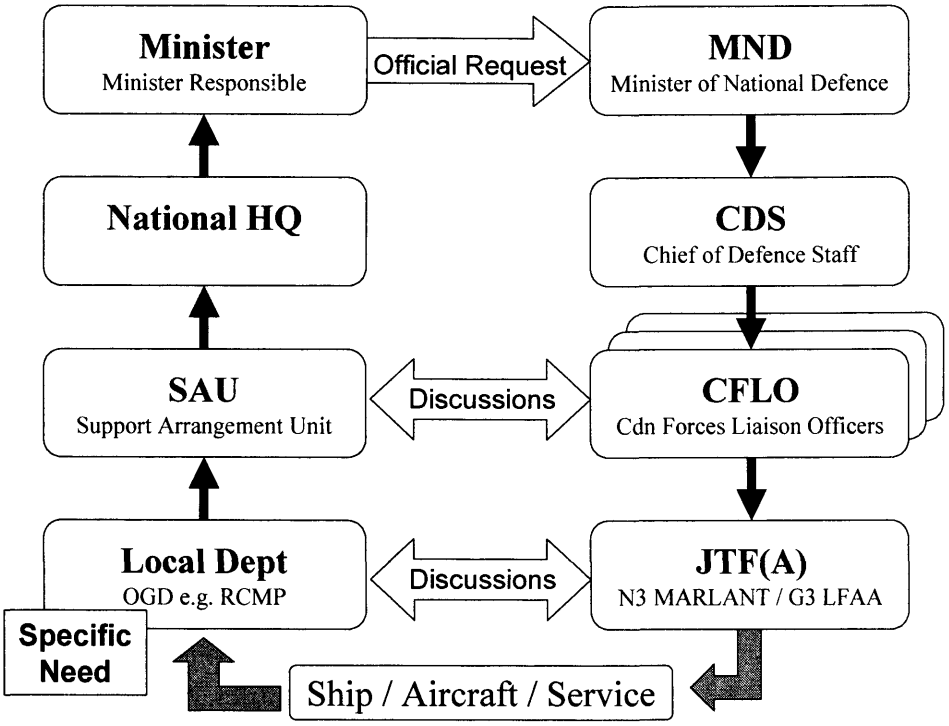


Figure 5-10. Process for Requesting Military Support – Atlantic Canada

TABLE 5-9

LEGAL INSTRUMENTS THAT SHAPE MILITARY DOMESTIC OPERATIONS

Type	Instrument
Federal Statute	*National Defence Act*
Federal Statute	*Emergencies Act*
Federal Statute	*Emergency Preparedness Act*
Federal Statute	*Security Offences Act*
Federal Statute	*Security of Information Act*
Federal Statute	*Canadian Security Intelligence Service Act*
Federal Statute	*Fisheries Act and Coastal Fisheries Protection Act*
Federal Statute	*Criminal Code of Canada*
Governor-in-Council Order	1975 Penitentiary Assistance Order
Governor-in-Council Order	1976 Olympic Games Security Order
Governor-in-Council Order	1993 Canadian Forces Armed Assistance Directions
Governor-in-Council Order	1996 Canadian Forces Assistance to Provincial Police Forces Directions and Principles for Federal (Military) Assistance to Provincial Policing
Ministerial Order	Nov 1996 - Approval authority for classes of assistance to provincial and territorial law enforcement
Ministerial Order	Nov 1997 - provision of services to non-defence agencies
Memo of Understanding	Counter Drugs MOU between MND and Solicitor General of Canada
Memo of Understanding	Fisheries MOU between MND and Minister of Fisheries and Oceans
Memo of Understanding	Environmental Emergency MOU between MND and Minister of Environment

Table 5-9 above lists the key federal statutes, Orders-in-Council, and Memoranda of Understanding that affect Canadian Forces domestic operations.

5.4.3 Regional Joint Task Force Structure

In 2005, the Chief of the Defence Staff of the Canadian Forces instituted a major structural change to the Canadian Forces in order for the military to better meet emerging threats in the new security environment. The Canadian Forces "Transformation" resulted in the establishment of two new operational-level command headquarters in Ottawa. The purpose of this initiative was to facilitate command and control of domestic and international operations from separate headquarters, rather than from one central headquarters that frequently found itself distracted by policy staffing and corporate governance in addition to command of operations. Canadian Expeditionary Forces Command (CEFCOM) was stood up to mount international operations, and the new headquarters that had the whole of Canada as a theatre of operations for domestic issues was established as Canada Command (CANCOM).

In addition to Canada Command, the transformation agenda resulted in the creation of six regional joint task forces spread across the country. These new structures are Joint Task Force Pacific (JTFP) in Esquimalt, Joint Task Force Western (JTFW) in Edmonton, Joint Task Force Central (JTFC) in Toronto, Joint Task Force East (JTFE) in Montréal, and Joint Task Force Atlantic in Halifax. A regional joint task force commander in any of the regions is responsible for command and control of all of the forces, that is, naval, air and land forces in the affected region, for the domestic operations described in earlier sections of this chapter. The establishment of Canada Command with the regional joint task forces provides the Government of Canada with a unified and integrated chain of command for the execution of the full spectrum of domestic operations, from natural disasters to terrorist threats. Figure 5-11 depicts the regional joint task force area of responsibility.

The introduction of the regional joint task force structure complicates the study of the Navy's role in domestic maritime enforcement because many of

the tasks previously assigned through pure naval channels are now the responsibility of Canada Command, a non-Service affiliated command. Two examples of such operations are search and rescue operations and fisheries patrols. It should be borne in mind though, the Commander Maritime Forces Atlantic is also "dual-hatted" as Commander Joint Task Force Atlantic, and is responsible for the force generation and force employment of naval forces on domestic operations

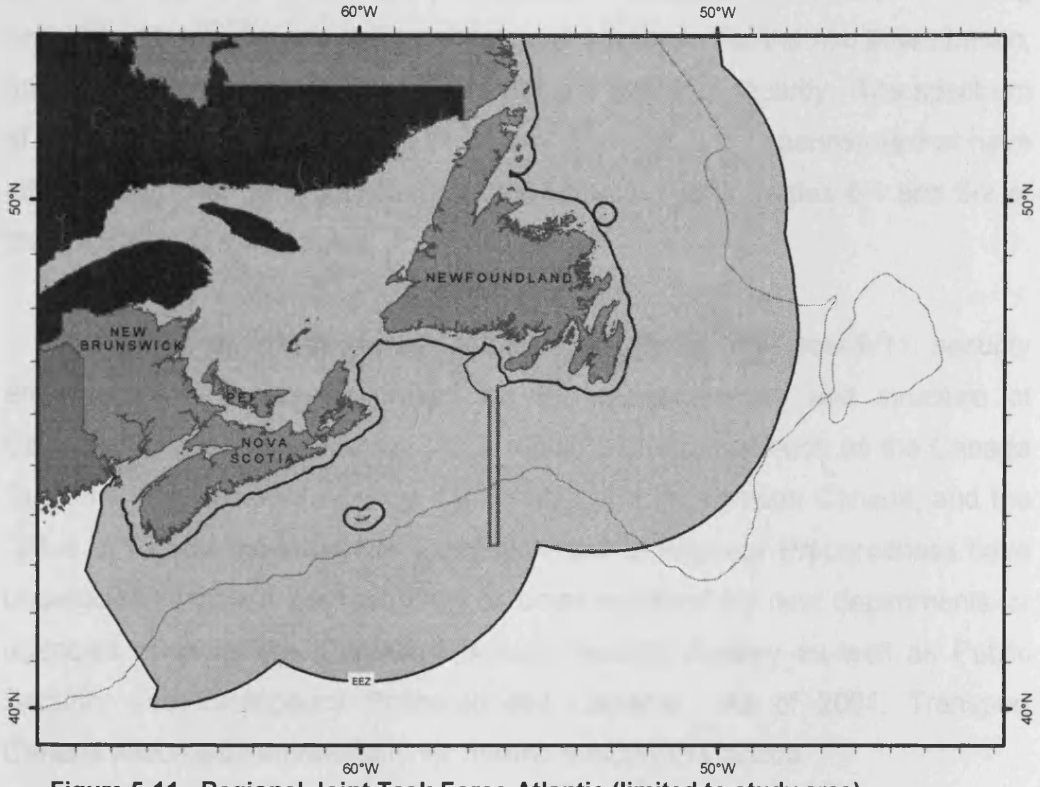


Figure 5-11. Regional Joint Task Force Atlantic (limited to study area)

missions in the Atlantic region. As well, naval staffs at the Joint Task Force Atlantic headquarters conduct the planning, command, control, and execution of these operations. Moreover, there is limited naval expertise at Canada Command headquarters, and when the need arises for advice on naval operations, the Canada Command invariably turns to Maritime Forces Atlantic (or Pacific) for this input. Hence, for purposes of this study, Canada Command missions that involve naval vessel and air assets will continue to be referred to as naval missions for the purposes of examining the naval contribution to maritime security and enforcement.

5.6 Summary

There are a many departments and agencies, as well as non-governmental organizations implicated in oceans management in the Atlantic region. Of these bodies, federal departments play the greatest role in governance, and its with these departments that the Navy has the greatest influence and interaction. The principal tasks that these regulatory and advisory bodies undertake are surveillance and monitoring activities related to exercising national sovereignty, developing situational awareness of the maritime domain, and control of the sea approaches to ensure territorial security. The spectrum of the various joint, federal, and provincial agencies and departments that have interests in ocean affairs in Canada are summarised at Tables 5-1 and 5-2 at the beginning of the chapter.

The threat of increased terrorist activity in the post-9/11 security environment has had an impact on the responsibilities and structure of Canadian federal departments. As a result, departments such as the Canada Customs and Revenue Agency, Citizenship and Immigration Canada, and the Office of Critical Infrastructure Protection and Emergency Preparedness have undergone complete restructuring, or been replaced by new departments or agencies such as the Canadian Border Security Agency as well as Public Security and Emergency Preparedness Canada. As of 2001, Transport Canada assumed responsibility for marine security in Canada.

The frequency of departmental restructuring should be cause for concern. For example, in the seven years since January 2001, as it morphed into the department at present known as Public Safety Canada, the department underwent four name changes as it added or discarded various responsibilities and legacy organisations. This flux in organisation structure is indicative of the difficulty that government faces in dealing with the complex post 9/11 security environment.[195]

---

[195] In January 2001 Emergency Preparedness Canada (EPC) was a stand alone federal department. In February 2001 it became the Office of Critical Infrastructure and Emergency Preparedness (OCIPEP). In 2004, OCIPEP morphed into Public Safety and Emergency

The number of Canadian federal statutes that govern ocean management is large, and many contain provisions that result in areas of mutual interest and responsibility between departments. Accordingly, departments draw up Memoranda of Understanding to provide support to each other in cases where one department lacks sufficient resources. Notably, despite the number of agencies and departments that have legitimate need to be "on the water," only DND, DFO, CCG and the RCMP maintain fleets of vessels, and only DND and DFO have any significant capability for deep-water intervention.

In the context of maritime enforcement, the key Memoranda of Understanding that have an impact on the Navy are those agreed upon with DFO for fisheries enforcement, the RCMP for counter-narcotic enforcement, and Environment Canada for environmental emergency incidents. The most visible manifestation for the Navy of these routine domestic operations is the provision of vessels and aircraft for OGD enforcement efforts.

Domestic operations is a term used to describe the use of military personnel and equipment to support civil authority at all levels of government. Domestic operations are strictly regulated, and fall into five categories. These categories span a spectrum of activities from the relatively benign provision of services to non-crisis community activities to armed aid to the civil power where military force is used to return order resulting from a disturbance beyond the ability of local law enforcement to contain.

Commander Maritime Forces Atlantic is responsible through the naval chain of command for the generation of maritime forces for defence missions around the globe and, wearing the hat of Commander Joint Task Force Atlantic, is responsible to the Canada Command chain of command for domestic operations in the Atlantic region. For the purposes of this thesis, all

---

Preparedness Canada (PSEPC). The title of this department was shortened in 2007 to Public Safety Canada.

support generated by naval vessels and aircraft in the Atlantic region will be deemed part of the Navy's contribution to maritime security and enforcement.

This chapter completes the examination of the second key theme of inquiry, the policy and regulatory framework for maritime enforcement in Canada. As well, the chapter ends the first main part of the overall investigation. Part One described the use of the sea in Atlantic Canada as well as its political regulatory framework. In essence, Part One is the theory portion of this study. The following chapters will describe how the theory is "operationalized," or in other words, how it is put into practice, both in terms of working relationships with other departments and, through a geographic lens, what the Navy contributes to maritime enforcement in the Atlantic region.

Chapter Six
INTERACTION BETWEEN AGENCIES AND DEPARTMENTS

6.1 Introduction

The first half of this thesis has provided the theoretical framework upon which is anchored the maritime enforcement component of oceans management in Canada. Part One described the marine geography of Atlantic Canada, the various ocean sectors, the evolution of relevant policy in Canada, and the key federal departments and agencies with enforcement mandates. The aim of the second half of this study is to measure in qualitative and quantitative terms how the Navy contributes to domestic maritime enforcement in Canada.

Having been introduced in Chapter Five to the key constituents in the enforcement regime, the aim of Chapter Six is to examine how these departments interact and co-operate. This chapter opens with a discussion of how maritime security is treated by government in Canada, and is followed by a review of the mechanisms for co-operation at the national level. Considerable attention is paid to the key national-level interdepartmental committee that laid the groundwork upon which much of the regional level interaction is based. The main strategic level federal committees and working groups with security thrusts are discussed as are the national level emergency response systems.

The strategic level examination is followed by a detailed review of interdepartmental co-operation in the Atlantic region. Acknowledging that there are multitudes of interdepartmental working groups, only those that have maritime security or enforcement mandates are examined. The chapter ends with a discussion of the flow of processes used when reacting to marine security incidents occur. The chapter notes how linkages established through intelligence networks as well as relationships built through participation in working groups and committees enable federal departments to respond to emergent marine enforcement incidents.

6.2 Security – Law Enforcement or Defence?

To understand how government departments interact with one another in an enforcement context it is important to observe that maritime security is viewed by all levels of Canadian government first and foremost as a law enforcement responsibility rather than a defence issue, even in the case of terrorism.[196]

This significant point is lost on many analysts. Moreover, it seems not to have been completely understood by the Senate Committee on National Security and Defence (SCONSAD) in their investigation of the need for a national security policy. In their 2003 report *Canada's Coastlines: The Longest Under-Defended Borders in the World*, the Committee waxes nostalgically about the Royal Canadian Navy's success in coastal protection when the country was on a war- time footing during the 1940s. The Committee further suggests that the Canadian Navy of present has abandoned patrols of its home coasts.[197]

While that is clearly not the case, the fact remains that in the present governance structure the Navy, as part of the Canadian Forces, has no legal mandate for law enforcement except in very specific circumstances. As outlined in Chapter Four, the Navy fulfils its constabulary role by supporting those departments that do, the key ones being the Royal Canadian Mounted Police, Fisheries and Oceans Canada, and Environment Canada. This is done primarily through the provision of naval ships and aircraft as transport for peace officers or conservation and protection officers; other military capabilities are used for surveillance and monitoring of the Canadian ocean areas. Prior to 2004, short of a direct attack on Canada or some threat so overwhelming that the responsible departments simply couldn't cope, the Navy would not have become the lead agency for most maritime security scenarios in the extant federal construct. However, with the promulgation of the National Security

---

[196] Canada, Royal Canadian Mounted Police. *National Counter-Terrorism Plan*. Annex L.
[197] Canada, Standing Senate Committee on National Security and Defence. *Canada's Coastlines: The Longest Under-Defended Borders in the World*. October, 2003, 17.

Policy, the Navy has been assigned the "co-ordination of on-water response to a marine threat or a developing crisis in our Exclusive Economic Zone and along our coasts."[198] This does not imply lead agency status for routine security tasks, ergo marine enforcement. However, it sets the stage for the Navy to play an important role when the scale or complexity of a security (or enforcement) scenario warrants harnessing the co-ordination, command and control capacity that the Navy can bring to bear on a problem.

Prior to 9/11, the threat of foreign terrorist attack on Canadian soil seemed remote in the minds of the public and government alike. Even more remote was the likelihood that this attack could come from or be supported by sea. As a consequence, the few departments that did monitor the threats tended to conduct their analyses from an isolated law enforcement perspective rather than a broader security perspective.

In a governance structure in which threats to security by non-state actors are viewed largely as criminal acts to be dealt with by the appropriate law enforcement agency, it should come as no surprise that government departments have become accustomed to viewing problems solely in the context of their narrow legal mandates. This approach has led to the conduct of government operations in what is termed a "stove-pipe" or "silo" fashion. In this manner departments and agencies address security activities without consideration of the relevance to another department's mandate, and thus fail to capitalise on opportunities to collaborate for mutual benefit. This was the normal way of doing business for government departments post-Second World War, until a government study spawned a renaissance of co-operation on maritime issues at the strategic level that had an effect at the regional level as well.[199]

Since 9/11, government bodies have adopted a more holistic view of security, and departments that had formerly paid only lip service to their marine

---

[198] Privy Council Office, *Securing an Open Society*, 38.
[199] The 1990 Treasury Board study led by Senator Gordon Osbaldeston is discussed in detail later in this chapter (Article 5.4.2.2.)

security responsibilities now acknowledge them, even if somewhat reluctantly. This reticence is due largely to the fact that many departments now may have "marine security" implied in their mandates but, as described in Chapter Five, they have no physical capability to either monitor or respond to security threats. However, what is important is that the concept of "contributing to marine security" appears to be a catalyst for greater co-operation among the departments.[200]

6.3 Nature of Multi-agency Relationships

Interdepartmental co-operation exists in Canada in an environment of complex, multi-agency relationships that, as a simple rule of thumb, span three levels of interaction. The first of these levels is the strategic. Issues at the strategic level are those that are pan-national in nature, usually concerning policy, and are addressed by national headquarters in Ottawa. The next level is the regional level.[201] Issues at the regional level are those that are province-wide or cover multiple provinces and large areas of the Atlantic approaches. The last level is the tactical or local level. Tactical level issues tend to be more narrowly focussed, often pertaining to specific incidents or operations that do not employ region-wide resources.

In addition to the levels of interaction, interdepartmental relationships at all levels can be categorised as being either formal or informal in nature as well being either proactive or reactive in their approach. In addition, some relationships are based on sharing of common intelligence, as opposed to some relationships that are a reflection of the need for agencies to mount a co-ordinated operational response to a set of stimuli. The next segment of this chapter will address the nature of inter-agency relationships at the strategic and regional levels.

---

[200] Personal observation based on experience from 2001 – 2007 as Chairman of Eastern Canada Interdepartmental Marine Operations Committee, and as Chief of Staff, Maritime Forces Atlantic.

[201] In military planning terms the regional level would be referred to as the "operational" level because in scope it equates to a theatre-wide level of planning for operations.

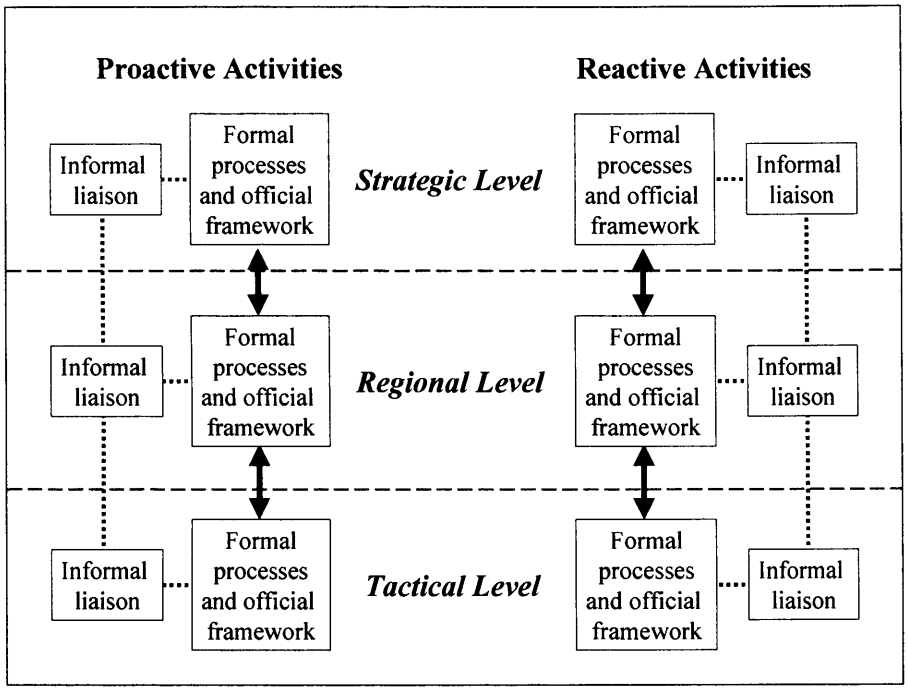


Figure 6-1. Nature and Levels of Multi-agency Relationships

6.4 The National Setting (Strategic Level)

The nation's capital, Ottawa, is where the power of government in Canada is centralised. It is in this city that Parliament resides, assisted by central agencies, and the strategic headquarters of the various federal departments and agencies. The term "strategic" is used in this context to suggest both the pan-national nature of the departmental headquarters, as well as the executive oversight elements of an organisation's "head office."

Central agencies are authoritative organisations that are not federal departments *per se*, but fulfil an important role in maintaining an enabling framework for departments and agencies, as well as providing advice and reports to the Prime Minister and Parliament. Central agencies seldom have direct responsibility for any particular policy; rather they influence and co-ordinate the policy initiatives of federal departments. The main central agencies in Ottawa are the Treasury Board Secretariat, the Public Service Commission, the Department of Finance, the Office of the Auditor General, and the Privy

Council Office. Of these, the Privy Council Office is the only central agency likely to be engaged in operational issues of marine security and enforcement.

The Privy Council Office is the secretariat of the federal cabinet and is, in essence, the Prime Minister's "department." The PCO's function is to provide the Prime Minister with non-partisan advice on a wide spectrum of government matters. Its main focus is the routine co-ordination of issues within government, and managing the federal cabinet's decision-making apparatus, i.e., preparation and administration of legal instruments and departmental policy proposals. PCO is one of the most influential bodies in the federal construct, so it was a significant breakthrough for the enforcement community when a senior member of PCO was appointed as the nation's first National Security Advisor to the Prime Minister in 2005. By this appointment, the government finally acknowledged the that security could no longer be relegated "to the back burner" as it had been in the past.[202]

Although each federal department or agency will differ in its approach to decentralisation, each has its national headquarters in Ottawa. Each department or agency reports to an elected member of Parliament who is appointed by the Prime Minister as "the Minister" for the specific line department. With the exception of a Minister's personal staff, the department or agency is made up of bureaucrats who execute the department's specific mandates.

Each department is headed up by a career civil servant known as the Deputy Minister, who reports directly to the Minister. The role of the Deputy Minister is to provide sound public service advice to the Minister on policy development and implementation of policy within the individual Minister's portfolio and the government's overall policy and legislative agenda.

[202] The National Security Advisor's purpose is to co-ordinate integrated threat assessments, help strengthen interagency co-operation, and assist in the development of an integrated policy framework for national security and emergencies.

Deputy Ministers are responsible for the maintenance of effective management frameworks within their departments, and for providing the strategic direction necessary to achieve the government's priorities. Deputy Ministers use their national headquarters for establishing national departmental objectives, policies, procedures and standards. Departmental headquarters in Ottawa also administer certain national programs and they monitor departmental activities across the country to ensure the quality and consistency of service delivery. Within a department's national headquarters, individual directorates at the national headquarters are managed by high-ranking civil servants known as Assistant Deputy Ministers (ADM). It is at this level, within DND and the RCMP, that uniformed senior officers find themselves from time to time appointed as ADMs alongside their civilian counterparts. It is also at this level that the line between the political and bureaucratic realms first begins to blur.

Almost all federal departments and agencies execute their programs throughout the rest of Canada in a "regional" construct. The number of regions varies depending upon the individual department. Each region is headed by a senior civil servant known as a Regional Director General. Like Assistant Deputy Ministers in Ottawa, Regional Directors General report directly to the Deputy Minister of the individual department. Within the national headquarters construct, Deputy Ministers, Assistant Deputy Ministers and Regional Directors General are expected to work closely together in manage a department's operations. However, what should be apparent in this discussion of headquarters structure is that a department's national headquarters focus will be on national policy development and feeding of the political machine through the department's Minister, whereas a department's operations tend to be relegated to its respective regions.

This brief synopsis illustrates the political and bureaucratic environment at the national level of government in Canada. The next few pages will discuss the nature of interdepartmental relationships at the strategic level.

6.4.1 Informal and Formal Relationships

Informal liaison occurs across the broad spectrum of government affairs. This liaison may be simply a matter of staff sounding out their counterparts at the same level in another department about a routine issue or pending initiative. At a national headquarters, it could be various staffs chatting unofficially about upcoming policy deliberations or changes to programmes. Informal co-operation is highly dependent upon individual personality and networking skills. Usually the liaison concerns a particular issue for which one or more departments have an interest or a line responsibility.

By contrast, formal co-operation is that which is established through official appointments, secondments, and memberships in various committees or working groups, *ad hoc* or otherwise. In many cases, the official nature of this liaison is captured in an incumbent's job description or terms of reference. For example, the Canadian Forces have a Liaison Officer permanently assigned to RCMP national headquarters to provide advice on the use of military resources for counter-narcotics operations. As well, military officers are assigned to supplement the Integrated Threat Assessment Centre operated by CSIS. Canadian naval officers have been seconded in the past to Transport Canada's national headquarters to assist in the formulation of marine security policy. The Canadian Forces also appoint an admiral-level officer to the staff of the Privy Council Office to provide high-level advice to the federal cabinet. As well, the Navy has seconded another senior naval officer to PCO who can advise the National Security Advisor on marine security issues.

6.4.2 Proactive Engagement

Government authorities deal with the management of their departmental mandates and emergent crises through both proactive and reactive means. In general, proactive measures reflect the interdepartmental working group and committee structure that convenes periodically to resolve issues spanning departmental mandates, as well as existing Memoranda of Understanding between selected departments.

Proactive co-operation takes many forms and occurs as part of normal daily activities. Longstanding relationships have ensured that lines of communication remain open so that contact leading to action can be made easily when the need arises. These relationships have been created and maintained through day-to-day liaison, through participation in official working groups and committees and, in some instances, national or bi-lateral strategic exercises.

6.4.2.1 Day-to-day Liaison

Day-to-day liaison at the strategic level in federal government departments is directed for the most part at the development of pan-national government policy. However, given a headquarters' notional proximity to Parliament Hill, Deputy Ministers are called upon continually to feed the political "beast;" thus, headquarters staffs expend considerable time, effort and resources supporting their Ministers for briefing and responding to the House of Commons.

It is important to acknowledge the significant difference between the way the military and other government departments function at the strategic level. While policy development and staffing in support of the MND also are core activities at National Defence Headquarters, the military also directs domestic and international operations from Ottawa. Certain aspects are delegated to military commanders in the various regions throughout Canada, but overall command and control is retained centrally. No other department directs routine operations from the strategic level.

There is a heavy emphasis in the civilian bureaucracy on gaining consensus before committing to a plan of action whereas the concept of hierarchical command and control is central to military operations. Indeed, military personnel are comfortable with shifting command and control functions; this is more difficult for civilians to accept. Even the term "command and control" has a negative connotation for many bureaucrats. One senior public servant observed that the term implies that the military seeks to control all aspects of a situation without input from other stakeholders. She also added

that the term invokes the image of a person controlling a toy aircraft or car using a radio controlled remote.[203] From the mission-oriented military officer's perspective, the civil servant is more concerned about consensus building rather than actually getting the job done. Thus, the differences in public service and military cultures manifest themselves in the day-to-day interchange and liaison.

The cultural difference between the civil service and military manifests itself in two ways. It is often difficult to progress operational issues because strategic-level OGD staffers are far removed from operations, and are less inclined to understand the pressing nature of some situations. Second, in some cases from DND perspective, there is no opposite number at the strategic level in a given department – the day-to-day contact that the military staff needs to connect with may be at a lower level out in one of the regions.

6.4.2.2 Inter-agency Committees and Working Groups

While day-to-day liaison between various departmental staffs may be sporadic and unstructured, that is less the case for inter-agency committees and working groups. However, attempting to outline a formal working group structure at the strategic level can be tricky. Normally, an ADM-level committee is stood up for most memoranda going to federal Cabinet, the purpose of which is to support the memorandum's progress. The committees might exist for a single meeting or perhaps weeks. In many instances these committee meetings may last years, and sometimes are never articulated publicly. Usually, committees are disbanded after the issue makes it to Cabinet but sometimes morph into regular working groups at lower staff levels.[204]

Notwithstanding the apparent ephemeral nature of some of the national level committees, there indeed are a significant number of these formal bodies that cover a host of governance issues across the broad spectrum of public sector policy. With respect to the marine sector, the Navy has a clear interest in

[203] Diane Giffin-Boudreau, Regional Director General Atlantic, Canada Border Services Agency, interview by author, 22 June 2007.

oceans policy development and is represented by the Director of Maritime Strategy at national committees that deal with these issues. Working groups that benefit from naval participation include the Interdepartmental Marine Protected Areas Working Group, the Interdepartmental Working Group for Canada's Oceans Strategy and multiple Interdepartmental Offshore Oil & Gas Working Groups.[205] However, for the purposes of this thesis, only the committees and working groups that have relevance to either marine security or maritime enforcement will be discussed further.

In order to understand better how government committees and working groups contribute to the overall security framework, it is worth stepping back a decade and a half to review a significant government study that set the wheels in motion for greater co-operation in the marine sector. What is important to note is the broad spectrum of issues that required addressing by the federal departments that operated ships and boats on the government's behalf, as evidenced by the number of sub-committees that were spawned from the study's final report. The large range of issues is indicative of the lack of sharing of information and resources at the time, resulting in a "stove-piped" approach to government maritime operations and fleet management.

6.4.2.2.1 The Osbaldeston Report: *"All the Ships that Sail"*

Although interdepartmental co-operation appears to have become topical in the context of national and maritime security only since 11 September 2001, co-operation has existed to varying degrees since the since Confederation in 1867. However, it was the watershed 1990 Treasury Board study led by Senator Gordon Osbaldeston that provided the major impetus for change. The Senator undertook a major review (referred to as the Osbaldeston Report) to identify opportunities for enhancing the efficiency and improving delivery of federal marine fleets programs.[206]

---

[204] Shauna Grant, Directorate of Maritime Strategy, Department of National Defence, interview by author, 23 June 2003.
[205] Ibid.

Participating departments and agencies in the study included Transport Canada, the Department of National Defence, the Department of Fisheries and Oceans (DFO), the Solicitor General of Canada and the Royal Canadian Mounted Police.[207] A unique aspect of this study was the primary emphasis it placed on compiling a comprehensive inventory database of the federal fleet. The data accumulated were used to identify the capacity of federal fleets to respond to present and future demand as well as a means for improving their utilisation.[208]

In the Osbaldeston study full consolidation of all maritime vessels under DND was not considered a viable option. However, it was recommended that DND increase its support for other government departments in the areas of sovereignty, fisheries, search and rescue and the environment.[209] Consolidation of the two civilian federal fleets (at the time DFO and CCG) was considered but this was rejected in light of the considerable financial and human resource costs that would be accrued.[210] However, from the perspective of determining more effective and efficient ways of utilising all federal government marine resources, the study's recommendation to create an interdepartmental steering committee was groundbreaking for the time.

6.4.2.2.2 Interdepartmental Program Co-ordination and Review Committee

The Osbaldeston Report recommended that an Interdepartmental Program Co-ordination and Review Committee (IPCRC), consisting of representatives of the (then) three major federal fleet operating departments (DND, DFO and CCG), be established on a two-year trial basis. The trial was to determine if the three departments could find effective ways to operate and

---

[206] Canada, Treasury Board of Canada. *All the Ships That Sail: A Study of Canada's Fleets,* by G.F. Osbaldeston. Report of the Study on the Utilization of the Federal Government's Marine Fleets. Ottawa, 15 October 1990, p. 66.
[207] In 1990, the Canadian Coast Guard's parent department was Transport Canada.
[208] Treasury Board of Canada. *All the Ships That Sail,*. 88.
[209] Ibid., 58.
[210] Ibid.

interact. In the event that they were unsuccessful, the study recommended examining the potential consolidation of the two civilian fleets.[211]

IPCRC held its first meeting in June 1991 met every year until 2001. IPCRC acted as a forum for identifying government program requirements for ship support and for coordinating the tasking of the government's fleets of sea-going vessels to promote their efficient utilization. However, it had no role with respect to fleet management. To the extent that the departments cooperated, existing bilateral Memoranda of Understanding were the prime method of meeting "supplier-demander arrangements".[212]

IPCRC reports were tabled formally with the Treasury Board. In terms of rank, IPCRC members were ostensibly at the Assistant Deputy Minister level. They were expected to ensure that the common database recommended and established after the Osbaldeston Report was maintained and updated regularly by the primary fleet operator and that the costing and utilization data was updated annually.[213]

IPCRC established a Working Group chaired by a representative (at the Director General/Director level) of the same department as the IPCRC chair. This Working Group met more frequently than IPCRC, and initially established two operationally-related activities, namely the Interdepartmental Co-ordination of Vessel Utilization Subgroup (ICVU) and the Concept of Operations Sub-committee (COSC). The Working Group provided direction to, reviewed and approved the Terms of Reference (TOR) for its various sub-committees to ensure that they remained true to the intent of the original Osbaldeston recommendations.[214]

---

[211] Ibid., 59-60.
[212] Ibid., 59.
[213] Art Silverman, Chairman, "Record of Decision – Meeting of the Organizing Committee for the Interdepartmental Program Co-ordination and Review Committee 24 May 1991" (Ottawa: 10 June 1991).
[214] Ibid.; Canada, Department of National Defence, National Defence Headquarters, 1735-5 (CMDO) *Delegation of Duties and Responsibilities Associated with the Interdepartmental Program Co-ordination and Review Committee*, 23 March 1992.

At the national level, the Interdepartmental Co-ordination of Vessel Utilization Subgroup was composed of representatives from the departments that owned fleets and from those departments who wanted to use them. It sought to establish and coordinate an annual matching process of ship requirements versus ship availability on an interdepartmental basis. It focused on maximizing the efficiency of vessel utilization. To that end, regional committees were established (Pacific, Atlantic and Central/Arctic) to coordinate vessel availability with both identified and unforeseen demands for vessel support, to compile a three-year plan for multi-tasking of ships to meet demands and to provide feedback to ensure the right ship for the task. This three-year plan was developed in parallel to the Multi-Year Operations Planning (MYOP) process employed by DND. The committee also maintained an historical record of utilisation.

The other body, the Concept of Operations Sub-committee, was charged to develop the Interdepartmental Concept of Maritime Operations (ICMO) working document. This publication detailed the concept of operations necessary to accomplish maritime-related tasks requiring the involvement of more than one government department. ICMO captured the protocols of existing interdepartmental MOUs and outlined the procedures to successfully accomplish the mission or task. The concept of ICMO was that any operational protocol could be extracted from it and used as a stand-alone document to suit the training and operational needs of individual departments.[215]

The IPCRC Working Group acknowledged the need for other sub-committees. A Communications Sub-committee (CSC) was set up to identify communication requirements to support interdepartmental operations and to make recommendations to IPCRC for equipment and procedures to meet those requirements.[216] In addition, a surveillance Sub-committee (SSC) was created to improve the efficiency of surveillance of the Canadian maritime approaches. Its objectives were to establish jointly manned surveillance co-ordination and

[215] Canada, Department of National Defence, National Defence Headquarters, 1735-5 (CMDO) *Delegation of Duties and Responsibilities Associated with the Interdepartmental Program Co-ordination and Review Committee*, 23 March 1992.

operations centres on both the Pacific and the Atlantic coasts of Canada. However, other than DND, participating federal government departments did not wish to finance jointly-manned operations centres. As a consequence, the objectives of the Surveillance Subcommittee were amended to simply establishing a means for concerned departments to have access to existing operations centres when necessary, and to develop a method to disseminate a Recognized Maritime Picture (RMP) to automated data processing equipment in individual departments.[217] Interestingly, in 2004 the National Security Policy directed the creation of Marine Security Operations Centres (MSOC) east, west and on the Great Lakes. These MSOCs will fulfill the needs that the IPCRC Working Group sub-committees had identified a decade and half earlier.

Other sub-committees to the IPCRC Working Group included a Hydrographic Operations Sub-committee (HOSC) that was established to co-ordinate the acquisition of hydrographic and bathymetric data, to develop the use of new technology, and to ensure a co-ordinated plan to meet pan-government requirements for hydrographic products and services.[218] The IPCRC Working Group also set up a Vessel Design Requirements Sub-committee to review new designs and modernization plans for increasing federal fleet interoperability. This sub-committee also considered issues such as sharing other infrastructure such as bases among government departments.[219]

Two years after IPCRC's inaugural meeting, its membership was expanded to include Canada Customs and Revenue Agency, Environment Canada, Citizenship and Immigration Canada, and Indian Affairs and Northern Development. The membership was later expanded to include Natural Resources Canada (NRCAN), the National Research Council of Canada (NRCC), and Public Works (PW).

---

[216] Ibid.
[217] Ibid.
[218] Ibid.
[219] Ibid.

In early 1994, a two-year assessment recommended by the Osbaldeston study was carried out to validate the effectiveness of IPCRC as a tool of interdepartmental governance. The assessment reviewed government processes with three major criteria in mind. The first criterion was that the participating departments were satisfied with the results of the IPCRC process. The second was that excess capacity, i.e., availability of resources that went unused, had been significantly reduced on an annual comparative basis. The third criterion was that unmet demand for fleet resources had been significantly reduced on a year-over-year basis.[220] The two-year assessment recommended that the IPCRC organization and supporting infrastructure be maintained as a co-operative interdepartmental body to increase the effectiveness of the federal fleets and to measure their efficiencies on an annual basis. It was generally believed that the IPCRC process was producing useful results in terms of fleet effectiveness and that potential existed for further gains in efficiency.[221]

Although the two-year assessment in 1994 did not recommend consolidation, by 1995 it was decided to combine the two non-military federal fleets (DFO and CCG) under the aegis of the Department of Fisheries and Oceans. In light of this, IPCRC was again reviewed and it was determined that the IPCRC organizing committee at the Assistant Deputy Minister level should be stood down, and that its responsibilities be taken over by the IPCRC Working Group. The organizing committee was renamed simply the IPCRC (DG level).[222]

A decision was also taken to combine the Surveillance, Communications, Concept of Operations and Vessel Design Requirements Sub-committees into one national Operations Sub-committee (OSC). To facilitate better regional co-operation it was rationalised that the OSC should have three regional sub-committees. These sub-committees would be

---

[220] Canada, Interdepartmental Program Co-ordination and Review Committee. *All the Ships That Sail: Two Year Assessment.* Ottawa, 18 January 1994, p. 2.
[221] Ibid., 12.

responsible for co-ordinating operational issues in the Atlantic, Pacific and Central/Arctic. It was decided that the Hydrographic Operations Sub-committee and the ICVU Subgroup would remain intact with their work being co-ordinated at the national level.[223]

From 1995 to 2001, the IPCRC Working Group and its the national-level Operations Sub-committee continued to function in conjunction with the three regional operations sub-committees. These were known as the Pacific Region Operations Sub-committee (PROSC), the Central and Arctic Zone Operations Sub-committee (CAZO) and the Atlantic Operations Sub-committee (AOSC). The Interdepartmental Co-ordination of Vessel Utilization Sub-group was subsumed by the OSC, whereas in 1998 the Hydrographic Operations Sub-committee began reporting directly to the IPCRC Working Group. It seemed as though the federal partners were well on the way to cracking the code to real interdepartmental co-ordination and effective employment of maritime human and materiel resources.

What, then, happened to IPCRC?

Over the course of ten years, IPCRC fulfilled its mandate with mixed success. As is the nature of such things, the departure of key individuals over time resulted in a diminution of IPCRC's importance in the departments that both maintained and needed the services of fleets. The consolidation of the two non-military fleets under one department reduced the flexibility possible within three fleets while concomitantly reducing the size of all. The absorption of the Canadian Coast Guard by DFO during an era of resource reduction diverted both departments' energies to the detriment of IPCRC. The 1990s saw the stagnation of interdepartmental relationships and, over time, meetings ceased to be conducted. The increased number of departments associated with IPCRC, with the multiplicity of departmental endeavours, made difficult the task of educating of federal employees about IPCRC and its contribution to

---

[222] Canada, Department of National Defence, National Defence Headquarters, 1150-110/J257-3 (DNR4) *Interdepartmental Program Co-ordination and Review Committee (IPCRC) - Reorganization*, 13 December 1996.

interdepartmental co-operation. Consequently, branches of departments returned to embarking in isolation on programs that would have better been served through the IPCRC process.[224]

The Interdepartmental Concept of Maritime Operations document, inspired in its conception, was allowed to whither. New federal employees, often pressed for time and ignorant of the founding principles of IPCRC, did not maintain the level of staff effort required to ensure its usefulness. Staffs in the various departments frequently embarked on operations that involved more than one department without reference to this document.

By the late 1990s, there was little funding available to progress interdepartmental issues, and public sector managers' priorities turned inwards to their own departmental needs during periods of budgetary constraint. Occasional spikes of activity that demanded multi-departmental responses, such as the Turbot Crisis in 1995 and the Swiss Air Flight 111 disaster of 1998, buoyed relations with other government departments. However, in general terms, many of the benefits set in motion by the Osbaldeston study and IPCRC simply stopped dead in their tracks. Sadly, IPCRC was stood down on 17 September 2001.

The Committee's final meeting aptly sums up the story of this genuine attempt at high level interdepartmental co-operation. Of the original list of invited OGD members (24 in total), only four individuals in addition to the two naval representatives were present. They were the IPCRC Co-Chair, IPCRC OSC Chair, CAZO Chair, and the HOSC Secretary, all of whom represented either DFO or CCG. The other IPCRC Co-Chair, the Director General Maritime Plans and Readiness represented DND, and was assisted by a naval staff

---

[223] Ibid.

[224] The acquisition of communications equipment is an example. The national OSC would have been the place for each department to consult prior to one of them buying equipment that might not be compatible with that of other government departments.

officer. The RCMP, TC, CCRA, NRCan and Public Works chose not to attend, even though the fate of IPCRC was to be decided at that meeting.[225]

In answering the question, "Is IPCRC still needed?" the Committee felt that the original mandate and impetus of IPCRC had long been surpassed and was no longer meeting the needs of any of the participants at the national level. It was argued that the situation described in Osbaldeston Report represented a completely different maritime fleet environment, with excess surplus in resources in 1990. This was in stark contrast to the state of reduced numbers in OGD assets and the climate of budgetary constraint by 2001. Moreover, the members felt that IPCRC forum was not providing any useful oversight for the regions to effect their day-to-day operations. In taking the decision to disband IPCRC, the members agreed not to interfere or cancel any previous initiatives instituted by the regions or sub-committees. It was felt that day-to-day co-operation in the regions would be able to continue without the need for the terms of reference or oversight of the national level IPCRC organisation.[226]

Retired Vice-Admiral Gary Garnett, one of the founding member of the IPCRC organising committee, downplays the effect of reduced budgets on the demise of IPCRC. Garnett, in a rebuttal to the researcher's summation of the causes of IPCRC's failure, argues that "the process was so dependent on the good will and professionalism of bureaucrats to move it forward, it leads one to wonder if this informal approach might not have also been a factor in this pause."[227] Garnett makes a valid observation, but it is obvious from the minutes of the IPCRC meetings leading up to the 17 September 2001 gathering, that funding concerns weighed heavily on the minds of the committee members and, in particular, the Canadian Coast Guard.

---

[225] Lieutentant-Commander Scott Godin, "IPCRC - Record of Decision 17 Sep 01," office email (18 September 2001).
[226] Ibid.
[227] Gary Garnett, "Whither Canada?" In *Continental Security and Canada-U.S. Relations: Maritime Perspectives, Challenges and Opportunities*, edited by Robert H. Edwards and Graham Walker, Halifax: Dalhousie University, 2003, p.187. <http://centreforforeignpolicystudies.dal.ca/ pdf/spc03garnett.pdf> (21 August 2007).

Why then, has so much space been allotted in this chapter to describing IPCRC and for that which it stood? The very fact that IPCRC was created showed that, up to that point, departments with similar mandates and challenges had not been learning from the experiences of other departments with the same problems. More importantly, IPCRC demonstrated that at the federal level, departments could work together to eliminate redundancies and make use of excess capacity, and could resolve mutual challenges. IPCRC showed that, with the right mindset, co-operation among disparate, complex bureaucratic agencies was within the realm of the possible, after all.

IPCRC also demonstrated the utility of specialized sub-committees to tackle unique aspects of interdepartmental co-operation. IPCRC's sub-committee structure was genesis of the regional operations committees, working bodies that have survived the demise of the national umbrella organisation, and remain thriving and useful organs that have sponsored true collaborative planning at the regional level. This is the enduring legacy of the Interdepartmental Program Co-ordination and Review Committee.

6.4.2.2.3 Cabinet Committee on Security, Public Health and Emergencies

The Cabinet Committee on Security, Public Health and Emergencies is a follow-on committee to high-level group that was assembled shortly after the 9/11 attacks. In late September 2001, the Prime Minister created the *Ad Hoc* Cabinet Committee on Public Security and Anti-Terrorism (PSAT) to co-ordinate the strategic government response in the emergent uncertain security climate. The PSAT committee's objectives were to protect Canadians from terrorist attacks, to keep the borders with the United States open, and to contribute to international efforts to combat terrorism. On the PSAT committee was minister-level representation from the Privy Council Office, PSC (then OCIPEP), CBSA, CRA, DFO, CCG, TC, DND and various police agencies.

PSAT, like many other *ad hoc* Cabinet committees, addressed time-sensitive issues that cut across the mandates of several departments. PSAT provided general policy direction, but it did not make policy decisions. Rather, issues were referred to permanent committees of Cabinet for decision. Once

formed in 2001, PSAT provided Cabinet with advice on proposed marine security measures and their priority for implementation, as well as advice on broader security initiatives.[228]

The *Ad Hoc* Cabinet Committee on Public Security and Anti-Terrorism was replaced by a different body, the Cabinet Committee on Security, Public Health and Emergencies, in December 2003. This occurred at the same time as major changes were introduced to the structure of parliamentary committees, departments, and agencies that created new entities such as CBSA and PSEPC. The Cabinet Committee on Security, Public Health and Emergencies has a broader mandate than PSAT, and endeavours to manage at a strategic level national security issues and activities and, in addition, government-wide responses to public health, national disasters, and security emergencies.[229]

6.4.2.2.4 Interdepartmental Marine Security Working Group

As Senator Colin Kenny observed incredulously in *Canada's Coastlines: The Longest Under-Defended Borders in the World*, the IPCRC was terminated in 2001 only six days after the terrorist attack on North American soil. The disbanding of the committee occurred precisely at a time when more co-ordination of related interdepartmental at sea activities was needed, not less. Thus it should have come as no surprise that within the year, the federal government recognised this need and constituted a new interdepartmental body, the Interdepartmental Maritime Security Working Group (IMSWG). The IMSWG's mandate was to "coordinate federal response to marine security, analyze our marine systems for security gaps, and develop possible mitigation initiatives to address these gaps."[230] Senator Kennedy observed that the IMSWG was "simply the resuscitation of the Interdepartmental Program Co-ordination and Review Committee" but this is not entirely accurate. Whereas

---

[228] Canada, Department of Justice, *Public Safety And Anti-Terrorism (PSAT) Initiative, Summative Evaluation*, 23 July 2007 <http://www.justice.gc.ca/en/ps/eval/reports/07/psat/sum/p5.html> (21 August 2007).
[229] Canada, Office of the Auditor General Canada, "Federal Response to September 11, 2001," *Exhibit 2.1 to 2005 Report of the Auditor General of Canada*, 5 April 2005 <http://www.oag-bvg.gc.ca/domino/reports.nsf/html/ 20050402xe01.html> (21 August 2007).
[230] SCONSAD, *Canada's Coastlines: The Longest Under-defended Borders,*110-113.

IPCRC was established to rationalise and manage fleet resources, the co-ordination of operational issues evolved as a logical progression from that. On the other hand, the IMSWG was created with an operational security mandate at the outset, and its participants included many who were not party to IPCRC.

From its inception, the Interdepartmental Maritime Security Working Group (IMSWG), was designed to be a working body that furnished the *Ad Hoc* Cabinet Committee on Public Security and Anti-Terrorism with fully staffed conclusions and policy recommendations on maritime security issues.[231] The IMSWG's function was to identify federal government actions in support of a national marine security plan and Canada's international marine security obligations. The IMSWG was given licence to facilitate co-operation and co-ordination among IMSWG member departments and agencies and "to promote the breaking-down of barriers to information exchange and the improvement of interoperability among the departments." Its main functions though, were to develop national policy recommendations for presentation to Cabinet and to provide integrated and interdepartmental recommendations on the prioritisation of marine security enhancements. These recommendations included the resource requirements of the federal government Marine Security Co-ordination Fund established in 2001. Lastly, IMSWG was charged with facilitating communication with federal departments and agencies, other levels of government and the private sector, and regional-based committees with interest in or responsibilities for marine security.

The IMSWG is chaired by Transport Canada, and has as members representatives from 14 departments and agencies. These are PSC, DND, RCMP, CSIS, DFO, CBSA, CRA, DFAIT, DOJ, and the Canadian Food Inspection Agency. Ex-officio members include the Privy Council Office, the Treasury Board Secretariat, and Finance Canada. Representation to the working group is at the Director General level from federal departments and agencies with policy, regulatory and/or enforcement mandates dealing with marine security. In addition, subject matter experts of those organisations

having a broad mandate touching on aspects to marine security (such as Agriculture Canada, Health Canada and Environment Canada) may be requested to attend IMSWG or its subordinate committee meetings.

As in the case of IPCRC, the Interdepartmental Maritime Security Working Group created several sub-committees to enable it to carry out its mandate. The first of these, the Information Sharing Sub-Committee, is chaired by DND and is responsible for identifying interdepartmental marine security information synergies and roadblocks to the effective sharing of that information between departments. The RCMP chairs another group, the Armed Ship Boarding Protocol Sub-Committee that has been developing a national protocol concerning the armed boarding of ships for national security purposes.

Given that there is a significant amount of seaborne commerce that uses the St Lawrence River and Great Lakes waterways, a third sub-committee has been stood up. Chaired by Transport Canada, the Canada-U.S. Seaway Vessel Security Screening Sub-Committee is establishing a co-ordinated approach for security-related information sharing and procedures to address ships using the Canada/U.S. St. Lawrence Seaway system.

At present, the IMSWG provides advice to the National Security Advisor and Cabinet committees on the four pillars of marine security: domain awareness, responsiveness, safeguarding and collaboration. Through the IMSWG, Transport Canada administers the Marine Security Co-ordination Fund,. This fund provides money for one-time or limited-period federal projects that improve the co-ordination of marine security efforts across the federal government and with other jurisdictions. In 2001, for example, the federal government allocated 60 million dollars for marine security initiatives over a six-year period. This commitment was increased to 172 million dollars in 2003 in order to fund 13 different but related marine security initiatives. These projects included the purchase of increased hours for DFO-contracted surveillance aircraft, an Automatic Identification System (AIS) and Long Range Vessel

[231] Peter Avis, "Surveillance and Canadian Maritime Domestic Security," *Canadian Military*

Identification and Tracking project, a High Frequency Surface Wave Radar (HFSWR) project, increased resources to support police Emergency Response Teams (ERT), and the acquisition of static and portable explosive, nuclear, chemical and biological scanning equipment for shipborne containers. The funds are dispersed to whichever department has the lead for a particular project. For example, in 2006, the IMSWG approved funding for interdepartmental projects proposed by the Royal Canadian Mounted Police, Canada Border Services Agency, Transport Canada, Health Canada, and the Canadian Space Agency.[232]

6.4.2.2.5 Integrated Threat Assessment Centre

In the American public's collective mind, the attack on the World Trade Center by Muslim extremists in 2001 was the direst manifestation of a failure of intelligence. In the post-attack analysis a number of open source reports cite prior knowledge by a small number of US government authorities of extremists' intentions to target New York. However, the sharing of this information by government agencies and the ability to synthesise that intelligence was insufficient to thwart the attacks. North of the border, the ability of Canadian authorities to meet the same challenge has attracted greater scrutiny by the public and government alike. As one senior police official put it in this wry understatement, "the open and proactive sharing of law enforcement information was inconsistent and not as well co-ordinated as it could have been."[233] In this climate, it was assessed that Canadian departments and agencies with security mandates continued to operate in "stovepipes," and would be more effective if a multi-agency intelligence assessment group were

---

Journal 4, no. 1 (Spring 2003): 9-14.

[232] Canada, Transport Canada, "Transportation Security," *Transportation in Canada 2006*, 14 August 2007 <http://www.tc.gc.ca/pol/en/Report/anre2006/Chpt-4e_b.htm> (1 September 2007); Canada, Department of National Defence, "Enhancing the Security of Canada's Marine Transportation Station: Canada's Marine Transportation System," *Issues and Challenges*, 28 September 2006 <http://www.navy.dnd.ca/cms_strat/strat-issues_e.asp?id=301> (3 September 2007).

[233] Testimony of Mr. Julian Fantino, Commissioner of the Ontario Provincial Police, before the Standing Senate Committee on National Security and Defence, Issue 17 – Evidence 18 June 2007 <http://www.parl.gc.ca/39/1/parlbus/commbus/senate/Com-e/defe-e/17evb-e.htm?Language=E&Parl=39&Ses=1&comm_id=76> (20 August 2007).

established to integrate all-source intelligence analyses and disseminate them to the government authorities charged with responding to them.

In 2004 the National Security Policy articulated the need for such an organisation, calling for the establishment of the Integrated Threat Assessment Centre (ITAC). The function of ITAC is the collation and analysis of intelligence feeds from multiple agencies, and the generation of comprehensive threat assessments. These threat assessments are disseminated in a timely and effective manner so that risks to public safety can be either prevented or mitigated in some fashion.[234] John MacLaughlin, the Director of ITAC, describes the role of Centre in this manner:

> "You could think of ITAC as a mixing bowl that provides the environment for integration. Integration, in this context, has three dimensions: integration of access to information; integration of departmental or agency analytical cultures; and integration of the assessments themselves."[235]

CSIS provides the framework for ITAC but it is not staffed exclusively by CSIS personnel. Additional staff members from other security and enforcement agencies are seconded to ITAC, normally for a two-year period. There are roughly a dozen agencies represented at ITAC at the time of this writing. These include CSIS, PSC, CBSA, DND, TC, RCMP as well as the Privy Council Office, the Communications Security Establishment, Foreign Affairs and International Trade, the Correctional Service of Canada, and the Financial Transactions and Reports Analysis Centre of Canada. Also included are the provincial police forces of the two provinces in which the RCMP does not have contracted provincial policing duties. These services are the Ontario Provincial Police and La Sûreté du Québec. The core members of ITAC bring expertise of their respective organisations to the table, and furnish a pipeline through which intelligence and information can be pulled from the various agencies. ITAC is also the formal link to international threat assessment centres in the United States, UK, Australia, and New Zealand.

---

[234] Canada, Canadian Security and Intelligence Service, *The Integrated Threat Assessment Centre*, 13 April 2007 <http://www.csis-scrs.gc.ca/en/newsroom/backgrounders/backgrounder13.asp> (20 August 2007).

6.4.2.2.6 Arctic Security Working Group

This body was established by the Canadian Forces in 1999 as the Arctic Security Interdepartmental Working Group, and brought together representatives from 15 federal departments and territorial government representatives. Having dropped "interdepartmental" from its title in recognition of the increased membership by NGOs and academics, the Arctic Security Working Group meets semi-annually to provide a forum to share information and intelligence and to generate synergy among departments and organisations in the North. Sub-committees to the working group have been established recently for Arctic sovereignty, security, interoperability and the environment.[236]

While the group discusses a broad range of issues ranging from science and research to delivering the mail, recent discussions have highlighted concerns increased air traffic in the North that is forcing a rewrite of the Canadian Forces major air disaster plan.[237] The Arctic Security Working Group has championed several joint operations in the Arctic such as a 2005 simulated terrorist attack on the Mackenzie Delta gas industry.

While there has been little linkage between this working group and broader marine security and enforcement initiatives to date, one can expect this body to take on a greater role as activities in the Arctic increase. At present there continues to be renewed interest in scientific exploration in the Arctic with the aim of bolstering claims by other nations of extensions to their continental shelves, such as by Denmark in the vicinity of Hans Island, and by the Russians in regard to the Lomonosov ridge.[238]

---

[235] Chris Thatcher, "Integrating Terrorism Intelligence Resources," *Vanguard* (February 2006) <http://www.vanguardcanada.com/IntegratingIntelligenceThatcher> (20 August 2007).
[236] Colonel Norris Pettis, Chairman, "Minutes of Arctic Security Interdepartmental Working Group Meeting 18-19 November 2002" (Yellowknife, N.W.T.: December, 2002).
[237] There at least 315 flights per day that overfly Canada's Arctic, according to MARLANT intelligence sources.
[238] "Russia plants flag under N Pole," BBC News, 2 August 2007 <http://news.bbc.co.uk/2/hi/europe/6927395.stm> (22 August 2007).

6.4.3 Reactive Engagement

Up to this point, the discussion has treated proactive interdepartmental activities at the national level through the lens of working groups and committees. However, from time to time, situations develop that require strategic level government response. These scenarios would be those that are too large in scope or too politically sensitive for the Regional Directors General to manage alone. When these types of situations arise, the set of protocols that form the Federal and National Emergency Response Systems are expected to resolve them.

6.4.3.1 Federal Emergency Response System

In the Canadian system of government, the Prime Minister retains overall responsibility for national security and the safety of its citizens. Until relatively recently, there was no other minister below the Prime Minister who had sole responsibility for national security. Rather, federal organisations with security mandates reported directly to their respective ministers, who were accountable for activities within departmental silos. With the creation in 2003 of what is now known as Public Safety Canada, a single minister became responsible to support Prime Minister in matters of public safety and emergency preparedness. In addition, the National Security Advisor supports the Prime Minister for issues of national security.

In conjunction with the appointment of the National Security Advisor and the stand-up of the new department, there was recognition that in order to provide leadership in emergencies of national significance, a formalized set of procedures needed to be established for strategic federal response. Moreover, there was a need for a system to ensure that alert and warning systems across government could respond effectively to threats, and that the system could provide 24/7 co-ordination and support to government officials and key national stakeholders in the event of national emergency. To meet this challenge, Public Safety Canada proposed the Federal Emergency Response System (FERS). It should be borne in mind that the premise of FERS was for relief from natural disaster or pandemic, and this remains the mindset of many of the

architects of the FERS and, in particular, PSC. However, the FERS structure lends itself equally well to human-induced threats to security.

The overall aim of the Federal Emergency Response System is to provide effective leadership ensuring a "whole of government" federal response to any emerging, imminent or occurring incident that affects the national interest. This includes all manners of incident, not just those that are enforcement or security related. As such, the FERS has three major objectives. The first is to ensure early detection of any incident that may require a federal response. The second is to provide information and briefs to facilitate ministerial policy direction and decision-making as required. The third objective is to develop and implement incident specific strategic "whole of government" national security and public safety response plans that are harmonized among federal departments and agencies.

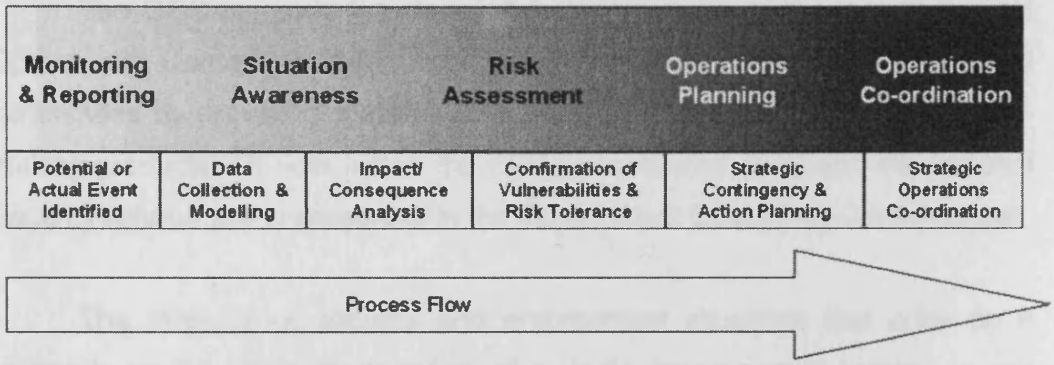


Figure 6-2. Security Response Process Flow

The FERS aligns federal co-ordination structures, capabilities, and resources into a unified all-hazards response to major events of national interest or significance that affect national security and public safety. The term "all hazards" implies an approach that integrates the security incident and disaster emergency responses into a seamless response flow that can deal with both national security, including enforcement, and the consequence management aspects of a potential or actual event.

Activities that are undertaken under the FERS construct occur mainly within the Government Operations Centre (GOC). Housed in PSC facilities in Ottawa, this Centre provides strategic coordination and direction to federal departments and agencies and, as required, interfaces with provincial, territorial and international agencies. The GOC has a mandate for both domestic and international incidents. In developing the concept of the GOC, it was determined that the Centre should be action biased, conducting both pre-emptive as well as reactive strategic operations, and that the Centre needed to fuse both crisis and consequence management. The GOC should be the single point of contact for international events affecting the national interest, and be capable of round-the-clock operations with immediate access to expert knowledge in areas of national security, consequence management, cyber and public communications. Moreover, the GOC required full time connectivity with federal and provincial operations centres in the regions.

The GOC supports the decision-making process of the federal Cabinet Operations Committee and appropriate Assistant Deputy Minister level committees by providing a series of incident-related information and decision-making products. Of note, when the FERS is activated, PCO and the National Security Advisor are represented in the Government Operations Centre as well.

The majority of security and enforcement situations that arise on a routine basis fall within the mandate of a single department or agency, or can be dealt with by federal authorities alone. For example, CBSA often boards commercial vessels inbound for Halifax Harbour when the agency suspects that there may be a security concern aboard a particular ship. CBSA embarks its personnel through the use of the pilot boats of the Atlantic Pilotage Authority. The RCMP and CBSA frequently collaborate to investigate suspicious containers in the Port of Halifax facilities. However, from time to time, these types of operations may be driven by information gleaned at the strategic level, or they may ordered by higher authority. Figure 6-3 depicts the relationships that exist in a single mandate scenario as described above.

Noting that policy development, not operations, tends to be the focus at strategic level OGD headquarters, individual federal departments and agencies differ considerably regarding the amount of involvement that their Ottawa offices have in any given event. For most OGDs, if Ministerial involvement is necessary, the Minister might deal directly with the appropriate Regional Director General rather than engage the national level departmental headquarters in the operation. This concept is foreign to military officers, and adds yet another dimension to interdepartmental co-operation.

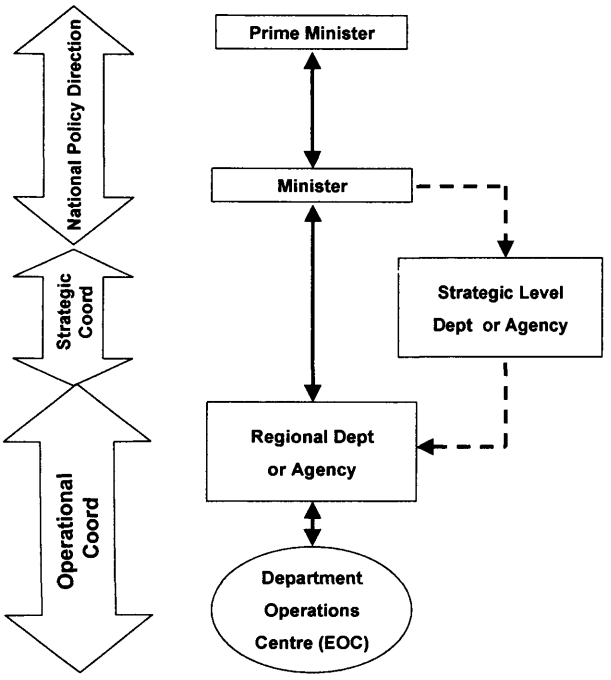


Figure 6-3. Single Mandate Scenario – National / Regional Relationships

Within the FERS, there are three activation levels. The first level is an initial risk assessment and incident monitoring. If warranted, the incident controller may choose to go to the next level, which involves contingency planning and a limited government response. The third level is the full Government of Canada response.

6.4.3.2 National Emergency Response System

To have a truly strategic system, the federal component of the emergency response system has to effectively complement and interact with the various existing provincial and territorial response systems to ensure timely and effective federal support in time of crisis or emergency. In situations in which a combined federal/provincial response to an event is warranted, the National Emergency Response System (NERS) is activated. The NERS addresses the interface between the federal/regional organisations and associated FERS process mechanisms, and those of the provinces and territories, i.e. a different level of government with similar but separate departments and processes.

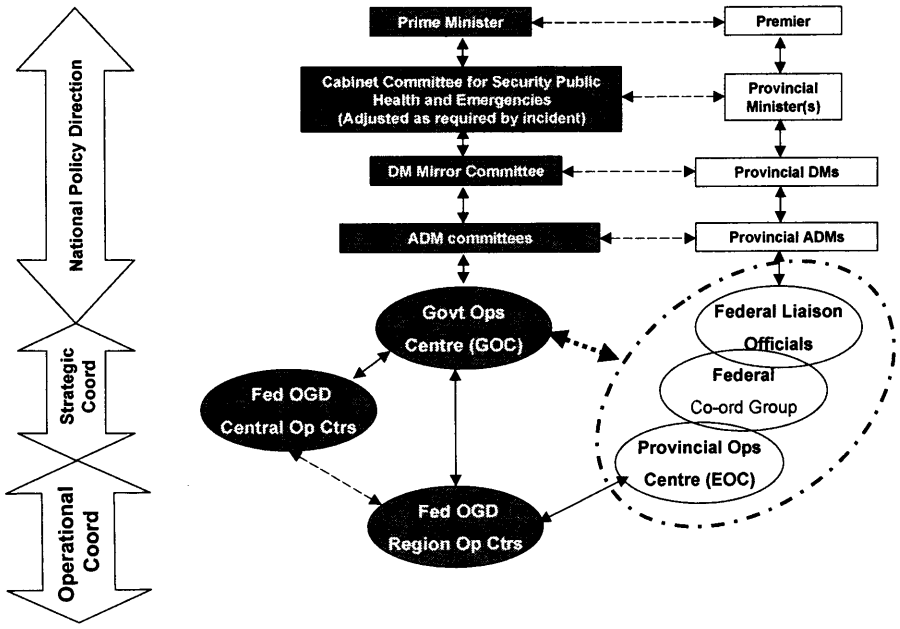


Figure 6-4. Multiple Mandate Scenario – Federal / Provincial Relationships

The NERS adheres to an almost identical sequence of procedures and protocols as the FERS but they are amended as appropriate for the provincial or territorial legal framework. Figure 6-4 shows the linkages between national policy direction, strategic co-ordination and regional level co-ordination in a multi-agency federal/provincial scenario.

PSC has produced a draft Federal Emergency Response Plan (FERP) that is intended to become the nation's "all-hazard, whole of government co-ordination plan for responding to single and/or multiple mandate events or emergencies involving one or more federal departments and agencies."[239] The purpose of the FERP is to provide guidance to managing the grey area between events for which a single department or agency has a mandate to address and those that require multiple agencies and are national in scope."[240]

6.5 The Regional Setting (Operational Level)

Although the main study area for this thesis is the Atlantic region, up to this point the discussion has treated federal government interdepartmental relationships at the national level. This was necessary in order to comprehend the strategic framework with which the regional authorities must interact so that linkages between various operations centres, committees and working groups can be better understood.

Outside of the nation's capitol, federal departments are headed by a Regional Director General in a regional headquarters. However, because OGDs at the strategic level concern themselves largely with policy, and operational decision-making and authority for resource expenditure are delegated to the regions, the RDGs are the true powerbrokers in terms of inter-agency co-operation.[241]

As mentioned in Chapter Four, not all departments organise their respective regions in the same manner. In the Atlantic study area, some departments combine all four provinces to create one large region and have only one RDG to manage the four provinces. Other departments use provincial boundaries for delimitation and employ four RDGs in four separate regions in

---

[239] Canada, Public Safety Canada, *Federal Emergency Response Plan (FERP) Volume 1 – 8 November 2006 (Draft 6)* (Ottawa: Department of Public Safety Emergency Management and National Security Branch, Government Operations Centre Directorate, 8 November 2006), 23.
[240] Ibid., 22-23.
[241] Most federal departments employ the title Regional Director General. The are some exceptions: the senior CCG officer in the region is called an Assistant Commissioner, the senior regional RCMP officer is called the Deputy Commissioner, and each province has its own Commanding Officer.

the Atlantic area. Yet other departments use non-political geographic criteria upon which to establish their regions, resulting in three regions with three RDGs to administer the same area as other departments with one or four RDGs. The significance of these organisational differences means that interagency co-operation will be inherently more complicated on a regional basis because a greater number RDGs and their bureaucracies must be engaged than would be required at the strategic level.

The remainder of this chapter will address interaction between government agencies and departments in the Atlantic study area.

6.5.1 Informal and Formal Relationships

Just as at the national level, informal liaison occurs in the region across the full spectrum of government affairs. The nature of the liaison is less politically or policy driven, and focussed more on delivery of a federal government service or program. In the regions, informal liaison often drops to the tactical level. As well, informal co-operation at the regional level is just as dependent upon individual personality and networking, acknowledging that different skill sets will be needed in an operational environment as opposed to a policy-oriented atmosphere.

Similar to the Ottawa construct, formal co-operation at the regional level is that which is established through official appointments, secondments, memberships in various committees and working groups. However, the emphasis of the co-operation favours "hands on" resolution of issues. Further, in the regions, there are a greater number of OGD representatives in each others operations centres than there are at the strategic level. Moreover, there is a greater likelihood that operations centres in the regions will be joint ventures, such as the Joint Regional Co-ordination Centre in which DND and CCG co-manage search and rescue cases in the Atlantic and Arctic areas. Another example is the Marine Security Operations Centre, which is hosted and run by DND, but has representation from five other federal partners.

6.5.2 Proactive Engagement

As at the strategic level, government authorities in the Atlantic provinces deal with the management of their departmental mandates and emergent crises through an interdepartmental working group and committee structure. From a maritime enforcement perspective, the regional interdepartmental bodies that concern themselves with oceans management as well as marine security and maritime operations are of prime interest to the Navy. This proactive framework, especially since 9/11, has become the foundation upon which departments manage their individual and joint responses to reactive operations.

The Atlantic region is also where the operational elements of Memoranda of Understanding between selected departments are put into practice. It is at the regional level where federal departments and agencies have a vested interest in delivering the programs and activities to the taxpayers. The impetus for resolving problems is not the same in the rarefied atmosphere of national headquarters, as it is looking eye-to-eye with the citizens of the regions.

6.5.2.1 Day-to-day Liaison

At the regional level, there is considerably less emphasis on policy development and greater focus on operational execution of departmental mandates. There are countless ways in which a department may carry out day-to-day liaison in a marine security or maritime enforcement context. Using the case of Maritime Forces Atlantic (MARLANT) as a single department having relationships with many others, the following are examples of proactive day-to-day liaisons being undertaken on a year-round basis:

a. Liaison with the Conservation and Protection staffs of DFO to co-ordinate naval support to fishery patrols in accordance with DND/DFO MOU;

b. Liaison with the Oceans Management Branch of DFO to provide surveillance information to assist with the scientific study, management, and potential enforcement of the Sable Gully Marine Protected Area;

c. Liaison with Environment Canada (EC) for assistance in detecting and investigating pollution incidents. Naval vessels have also carried Canadian Wildlife Service scientists during fishery patrols to assist with ongoing pelagic bird surveys;

d. Liaison with the RCMP to provide support for counter-narcotics operations in accordance with DND/RCMP MOU. MARLANT also provides logistical support in the form of transportation to assist the RCMP with its Coastal Watch program;[242]

e. Liaison with Health Canada to co-ordinate support of the Navy's Nuclear Emergency Response Team during visits to Halifax by nuclear-powered vessels;

f. Liaison with various agencies for intelligence sharing and monitoring of designated Vessels of Interest, as well as joint security efforts such as the G7 Finance Ministers' Conference;

g. Liaison with United States Navy commands such as the Commander-in-Chief Atlantic Fleet, Commander Second Fleet, and the Office of Naval Intelligence (ONI) on naval matters of Homeland Defence; and

h. Liaison with the United States Coast Guard First District (Boston) on matters of safety, security, and Homeland Security.

It can be seen then, that there are a broad spectrum of operational issues that generate considerable day-to-day liaison among the federal departments that have security and enforcement mandates.

---

[242] Refer to Chapter Five for greater detail on the RCMP Coastal Watch programme.

6.5.2.2 Interdepartmental Committee and Working Group Structure

In the Atlantic region, there are a number of committees and working groups that contribute to governance across a variety of public sector domains. As is the case at the strategic level, the Navy has a clear interest in oceans management and security concerns and is represented regionally by the Maritime Forces Atlantic surface operations staff on committees and working groups that address these issues. While the intent of this chapter is to examine only those committees and working groups that are either operationally or security oriented, there are others that are worth noting due to their participants.

6.5.2.2.1 Oceans Management Committees and Working Groups

Three interdepartmental or non-government bodies are worthy of mention in this section. The groups concern themselves with the broader scheme of oceans management rather than the more focussed topic of maritime security. These are the Eastern Scotian Shelf Integrated Management group (ESSIM), the Atlantic Coastal Zone Information Steering Committee (ACZISC), and the Interdepartmental Committee on Oceans (ICO). There is little direct relevance to this discussion except that many of their participants are the same representatives that regional OGDs send to the various security working groups and, as such, use the opportunities afforded by oceans management venues to further foster longstanding relationships. The downside of this approach, in which a department essentially designates a single representative for all manner of interdepartmental meetings, is that the participants can over-extend themselves and not be available for meetings that may be of a higher priority than others. Moreover, employing only one or two departmental representatives usually results in participation at meetings in a note-taking capacity, rather than in a decision-taking capacity. Thus, the decision-makers in a department are far less likely to be engaged, than had they participated in the meetings themselves.

6.5.2.2.2 Integrated Border Enforcement Teams / Integrated National Security Enforcement Teams / National Port Enforcement Teams

Originally conceived in British Columbia in 1996 to address cross-border crime, Integrated Border Enforcement Teams (IBET) have been established in 15 locations across the country, including the Atlantic region. These teams comprise representatives from the RCMP, CBSA and other police agencies in Canada, and their American counterparts in the US Immigration and Customs Enforcement (ICE), US Customs Protection/Border Patrol (CBP/BP), and the US Coast Guard. The focus of IBET is on potential threats of terrorism, impeding the smuggling of drugs, humans, contraband cigarettes, or other illegal substances.[243]

CBSA is working to set up Joint In-Transit Targeting Teams (JITT) with other agencies and American officials in Halifax, Montreal, Vancouver, Newark, and Seattle to monitor and intervene suspicious sea and air cargos and containers both in Canada and at international points of departure.

Integrated National Security Enforcement Teams have been established to increase the capacity for the collection, sharing and analysis of intelligence among the RCMP, CSIS, CBSA, and other police agencies regarding individuals or groups that are deemed threats to national security. As well, as part of the RCMP's National Port Strategy, there have been four National Port Enforcement Teams (NPET) established in the ports of Halifax, Montreal, Hamilton and Vancouver. These teams are comprised of individuals from federal, provincial and municipal law-enforcement agencies whose aim is to target organized crime and other threats to national security that might be present at or passing through major ports.

At present, there is little direct interaction between DND and the IBETs, INSETs and NPETs; rather, the Navy's link is an indirect one through the intelligence channels that these organisations feed. That said, the naval

intelligence personnel assisted in concept of operation development when the IBETS was established in the Atlantic region several years ago.

6.5.2.2.3 Eastern Canada Interdepartmental Maritime Operations Committee

At the operational level in Atlantic Canada, there are two key bodies that have the greatest influence on how enforcement and maritime security are managed within the region. The first is the Eastern Canada Interdepartmental Maritime Operations Committee (ECIMOC).[244] This committee is comprised of federal departments that either conduct, or have an interest in, operations in the maritime environment. Principal members include Maritime Forces Atlantic, DFO including representatives from the CCG Maritimes and Newfoundland and Labrador Regions, CBSA, CRA, TC, EC, and PSC. Health Canada as well has participated since their major involvement in the merchant vessel *Wadi Alarab* anthrax incident of 2003.[245]

ECIMOC's aim is to identify and develop the most practical means of applying operational resources to facilitate joint and effective employment. It is through ECIMOC that a link to the strategic-level IMSWG has been established through the distribution of each group's records of discussion. Examples of items for discussion at ECIMOC are departmental operations briefs, departmental training requirements, opportunities for interdepartmental training and exercises, communications and information sharing requirements, and reports from ECIMOC sub-committees.

6.5.2.2.4 Nova Scotia Federal Council Security Sub-Committee

The other significant organ is the Nova Scotia Federal Council's Security Committee. This committee, comprised of Regional Directors General of

---

[243] Canada, Royal Canadian Mounted Police, *Canada / U.S. Integrated Border Enforcement Teams*, 21 November 2003 <http://www.rcmp.ca/security/ibets_e.htm> (15 December 2003).
[244] ECIMOC is what was formerly known as Atlantic Operations Sub-Committee prior to IPCRC's demise in 2001.
[245] Testimony of author before the Standing Senate Committee on National Security and Defence, Issue 20 – Evidence 16 June 2003 <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/Com-e/defe-e/20ev-e.htm?Language=E&Parl=37&Ses=2&comm_id=76> (30 October 2003).

federal departments with enforcement or security mandates, meets every two months to discuss a broad range of security-related issues. In the aftermath of the September 11th attacks in New York City, it was this committee that recognised that the federal departments in the Atlantic region needed to improve their ability to work together in order to respond to future security incidents. This committee initiated a series of table top and command-post exercises, designed to stimulate and, if necessary, to force interaction between departments through the resolution of complex scenarios containing both terrestrial and marine elements.

6.5.2.2.2 Atlantic Region Security Committee

In 2006 another interdepartmental security committee was established in the Atlantic Region. Known as the Atlantic Region Security Committee, it meets to address issues of national and provincial security with implications for Atlantic Canada as a whole, linking closely to provincial and national activities. Clearly, it is similar to the NSFC Security Committee in that it is comprised of federal officials representing departments with security, intelligence, and law enforcement roles. However, what is different about this committee is that provincial departments have seats at the table. Commander MARLANT, in his capacity as Commander Joint Task Force Atlantic is a member of this committee as are the Deputy Ministers of the New Brunswick Department of Public Safety, Nova Scotia Attorney-General, Newfoundland Attorney-General, Prince Edward Island Attorney-General, as well as the Royal Canadian Mounted Police Atlantic Region. Additionally, the Regional Directors General for CSIS, CBSA, TC, PSC, Health Canada, and Justice Canada are represented, as are the Assistant Commissioners of the Newfoundland and Maritimes regions of the Canadian Coast Guard. The objectives of the Atlantic Region Security Committee are to align inter-agency policy and priorities, progress intergovernmental communication protocols, carry out strategic co-ordination of joint exercises and, most importantly, to develop a common understanding of the security threat environment.

6.5.2.3 Inter-agency Exercises and Simulations

There have been several interagency exercises held in the Atlantic region since 11 September 2001. The first of these was held in May, 2002. This two-day exercise, ATLANTIC GUARD was championed by the members of Nova Scotia Federal Council Security Committee, sponsored by OCIPEP (pre-PSEPC) and hosted by DND's Land Force Atlantic Area (LFAA). ATLANTIC GUARD challenged 13 federal and three provincial agencies with three different scenarios that presented security, health and environmental disaster problems. The ATLANTIC GUARD Final Report, prepared by an independent assessor from outside of government, highlighted the requirement to regularly exercise interdepartmental co-operation in order to standardise such things as telecommunications, public affairs and command and control.[246]

A similar exercise, ATLANTIC GUARD II was conducted 28-31 October, 2003. This command-post exercise met the basic interoperability objectives, but reiterated the need for continued effort in resolving joint command and control issues among many departments. Since 2003, at least one ATLANTIC GUARD type of exercise has been conducted in the maritime provinces per year.

Another multi-agency exercise undertaken in the Atlantic region post-9/11 was a CCRA Chemical, Biological, Radiological and Nuclear Table Top Exercise on 24 September 2002. This exercise was one in a series of table top exercises held across the country by CCRA. The scenario presented was that of a "dirty bomb" entering Halifax by container ship.

Several interagency exercises followed CCRA's CBRN exercise in 2002. The first of these, Exercise ATLANTIC SPEAR, was held from 18 to 22 November, 2002. Hosted by LFAA, the scenario was a G8 meeting to be convened at very short notice at Campobello Island, NB. While primarily an LFAA initiative to train its headquarters staff, it included participation from

[246] Jim Bruce, *Exercise Atlantic Guard Final Report* (Halifax: Science Applications International Corporation Canada, Emergency and Safety Services Division, 2002).

several federal government departments such as DFAIT, RCMP, CIC, and Health Canada. Maritime Forces Atlantic staff provided a maritime component.

Exercise ATLANTIC SHIELD followed on 12 May 2003. Hosted by the Halifax Port Authority, this exercise was designed to test the response to a bomb threat against a visiting cruise ship. The exercise served two purposes. First, it satisfied the Port Authority's need to demonstrate a specified level of security to the cruise industry in order to secure continuing visits to Halifax. Second, it presented an opportunity to determine the level of response required from the Halifax Regional Municipality, the province and from federal departments.

A number of similar interdepartmental exercises have been carried out in the region over the few years, but only recently have they taken on an international flavour. Recently, from 24 to 27 June 2007, Exercise Frontier Sentinel 07-02 was conducted to examine the command and control relationships between Canada and the United States in the context of a marine security event. Exercise Frontier Sentinel was a co-ordinated joint inter-agency multi-national and private (JIMP) exercise that attempted to employ a "whole-of-government" approach to resolving a marine security incident.

In Exercise Frontier Sentinel 07-02, a vessel of interest was monitored by US authorities when it was believed to have become a significant maritime security threat due to an established link and proximity with a cruise ship that had been high-jacked in international waters. The vessel of interest's next intended port of call was to be on the Eastern Seaboard of the United States, and the cruise liner's next port was to have been at Halifax. The exercise was designed to require collaborate planning between military and law enforcement agencies to facilitate the execution of a bi-lateral Canada-US response. Exercise participants included US Coast Guard, US Navy, US Custom Border Patrol, and Canadian naval and air assets. In addition, Public Safety Canada, the RCMP, Transport Canada, CBSA, CSIS, DFO, CCG, and the Department of Justice Canada had active roles in the exercise.

6.5.2.4 Regional Interdepartmental Concept of Maritime Operations

Under the aegis of ECIMOC, a sub-committee is drafting the procedures necessary to accomplish maritime-related tasks requiring inter-departmental co-operation in one umbrella document called the Regional Interdepartmental Concept of Maritime Operations (RICMO). These guidelines include, but are not limited to counter-terrorism operations, environmental responses, illegal migrants, counter-drug operations, preventative patrols, and surveillance operations. As well, RICMO will contain regional interdepartmental communications and points of contact, inventories of air, sea and shore-based assets, an inventory of Memoranda of Understanding among departments, and legislative or regulatory mandates, and statutory authorities, including the use of force.

6.5.2.5 Summary of Key Regional Proactive Relationships

The relationships among Canadian interdepartmental committees and working groups with marine security and enforcement mandates at the regional level as well as the strategic and national levels are depicted at Figure 6-5. Shown in this figure at the national level are the Cabinet Committee on Security, Public Health and Emergencies (CCSPHE), the Arctic Security Working Group (ASWG) and the Interdepartmental Maritime Security Working Group (IMSWG). At the regional level, the oceans management bodies are depicted with dotted lines to indicate indirect linkages to the main security and enforcement committees. While each individual department has its own internal reporting chain, the dotted arrow between the IMSWG and the Eastern Canada Interdepartmental Marine Operations Committee (ECIMOC) represents the exchange of meeting minutes between these two bodies that provides awareness of each others main issues.

In Figure 6-5, the Atlantic Regional Security Committee (ARSC) symbol is positioned over the provincial Federal Council Security Committees (Prov FC SC) to symbolise the guidance function that this committee provides. The interdepartmental exercise program is shown linked by an arrow to the provincial Federal Council Security Committees; in practice there is a sub-committee that develops the agreed-upon exercise regional exercise schedule.

Arrows link the ARSC and the provincial Federal Council Security Committees to the marine security and departmental operations centres (MSOC and OpCen). These arrows represent the capacity to deal with unforeseen or emergent crises through the experience, insight, and contacts gained in multi-agency problem-solving in a proactive programme of scenario-based exercises. In addition, in Figure 6-5, an arrow represents the procedural foundation that the Regional Interdepartmental Concept of Maritime Operations (RICMO) contributes the operational response to an emergent crisis. In the future, with the continued refinement of the FERP, RICMO may cease to be of any further utility.

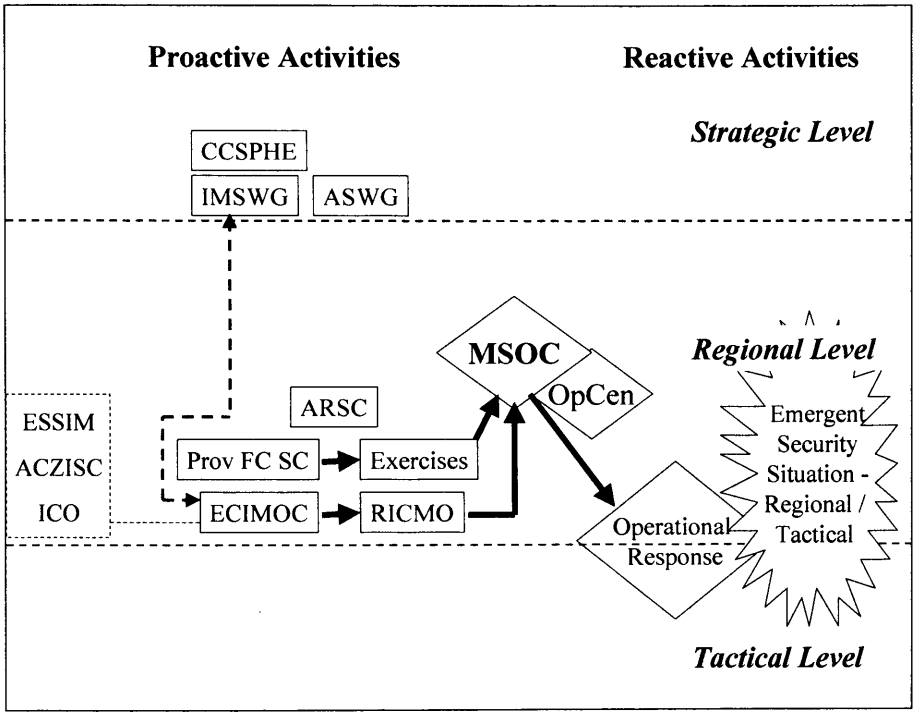


Fig. 6-5. Interdepartmental Working Group Contribution to Operational Response.

6.5.3 Reactive Engagement

Reactive engagement by departments at the regional level was captured in the overall discussion of the FERS and NERS earlier in the chapter. However, that discussion focussed more on vertical processes between the different levels of government as opposed to the collaborative processes that

occur more or less horizontally within the levels. The next few paragraphs will elaborate on the evolving protocols for operations at the regional level.

Figure 6-6 depicts the elements that are in place to enable authorities to respond to an emergent situation based on information garnered through the various intelligence networks. The diagram shows departmental intelligence sections represented at all three levels, linked with each other, and with international intelligence agencies at the strategic and operational levels. The main departments contributing to this community within Canada are CSIS, RCMP, CBSA, DND, the Communications Security Establishment (CSE). As well, there is a linkage among the departments through the Integrated Threat Assessment Centre. Allied connections in the United States include ONI, the Defence Intelligence Agency (DIA), the US Coast Guard Intelligence Co-ordination Center, and the Joint Interagency Task Force (JIATF) South. Information is shared with departments depending upon the recipient's need to know and, in most cases, departments can respond effectively within individual department mandates.

6.5.3.1 Threat Assessment Group / Federal Co-ordination Group

The intelligence networks uncover large numbers of items requiring investigation and determination of credibility, level of threat, and so on. The ability to "filter" this information varies among departments, as does each department's understanding of what is of significance to another. In the fall of 2002, a vessel with a suspect container arrived in Halifax. Four departments or agencies were aware of this container, but the information about the container and potential responses to it were interpreted differently by each department. This lack co-ordination pointed to a need to formalise a process to transition from compiling information, to determining whether a operational response is required, to mounting the actual operation.

As a direct result of this particular incident, the RCMP sponsored the development of a body in the Atlantic region known as the Threat Assessment Group (TAG). A TAG meeting became the genesis of a co-ordinated interdepartmental operational response to an emergent issue that transcended

the mandate of any one department. The TAG also assisted with the determination of a lead agency. TAG members belonged to four principal departments: CSIS , RCMP, CBSA, and DND. Other departments were called if the issue was obviously relevant to a particular department. TAG members included both intelligence analysts and operators, and the aim of the TAG was to ensure that a common understanding of a potential event was reached, so that each agency could then plan and co-ordinate its response.[247]

By September 2007, the development of the draft FERP and the discussions pertaining to marine security among the Atlantic Regional Directors General had matured to the point that it was agreed that the functions of the TAG could be carried out by the regional Federal Co-ordination Group (FSG). Federal Co-ordination Groups are bodies of designated federal officials who regularly come together to discuss safety and security issues in the regions. While they were originally conceived to advise and co-ordinate the allocation of resources during emergencies as part of the NERS process, it has become apparent that they can be employed in the role that the TAG fulfilled during safety and security response scenarios. As such, it has been agreed among the Atlantic RDGs that the FCG will convene as required to carry out the functions of the TAG, and the TAG will no operate in the Atlantic region.[248]

6.5.4 Maritime Domain Awareness

There is an inherent need to develop and maintain an understanding of what activities are happening in Canada's coastal zones and its approaches. This situational awareness is required by multiple government departments with overlapping mandates and interests in our maritime security environment. The Navy uses a specific tool to acquire this domain awareness, and shares it with other government departments. It is known as the "recognized maritime picture." The term "recognized" is used to indicate that the picture has been

---

[247] Testimony of Chief Superintendent Ian Atkins, Royal Canadian Mounted Police, before the Standing Senate Committee on National Security and Defence, Issue 22 – Evidence 22 September 2003 <http://www.parl.gc.ca/37/2/ parlbus/commbus/senate/Com-e/defe-e/22evb-e.htm?Language=E&Parl= 37&Ses= 2&comm_id=76> (30 October 2003).

[248] Announced at a meeting of the Atlantic Regional Directors General of PSC, CBSA, DFO/CCG, CSIS, RCMP, and DND that was hosted by Commander Maritime Forces Atlantic, 13 August 2007. The author was a participant at the meeting.

evaluated prior to its dissemination. In other words, rather than having stations simply pass data between themselves, there is a central authority to whom data is forwarded for compilation, evaluation and dissemination as a *recognized* picture – a analyst's evaluation of what is happening in a given area. Generation of the RMP is worthy of discussion here due to its inherent relationship to intelligence, and as a good example of inter-agency co-operation.

The RMP compiled by the Navy is produced for an ocean area that encompasses Atlantic waters well past the 200 nautical mile Exclusive Economic Zone, extending north to the Pole and west to the end of the Great Lakes and encompassing the entire St. Lawrence Seaway, following the Canada-U.S. border where appropriate. This area has been adopted for picture management purposes, not to suggest a legislated mandate for control within that area. Although this arbitrary area of responsibility is assigned for management purposes, the various databases supporting the picture actually contain data for the entire globe.

At present, sufficient resources would not available for comprehensive surveillance of the large area of responsibility were only military assets to be used. Accordingly, the RMP is compiled in co-operation with many other agencies that possess data on maritime activity. The benefits of this are clear – a wider collective awareness and links through which to share information, plus a growing ability to reduce duplication of effort and use resources efficiently. As such, the picture combines data from a variety of government and non-government sources. The development of the RMP will be discussed in greater detail in Chapter Seven; it is sufficient at this juncture to understand that its compilation requires active engagement by a host of national and international agencies and technical systems.

6.4.4.1 Marine Security Operations Centres

The requirement to maintain maritime domain awareness has always been a defence task undertaken by the Canadian Navy, only relatively recently has there been broad recognition across government that this is a national

security requirement, not just a defence mission. The National Security Policy of 2004 articulated the need for multi-agency Maritime Security Operations Centres (MSOC) to meet both marine and national security challenges of the post 9/11 security environment.

The origins of the MSOCs lie within the Navy's own Maritime Operations Centres in Esquimalt and Halifax. These operations centres, in conjunction with the naval intelligence commands on each coast, attempted to produce actionable intelligence and a recognized maritime picture that provided the Maritime Commanders with the appropriate situational awareness needed for defence purposes. In 2002, the Navy began work on a project called MOSIC (Maritime Operations Surveillance and Information Centre) intended to upgrade the capabilities of the joint ocean surveillance and information centres on both coasts. When the National Security Policy was tabled post 9/11, it was decided to leverage the efforts already underway with the MOSIC project and to channel them into the creation of an interdepartmental capability on both coasts, and along the St. Lawrence Seaway.

The Maritime Security Operations Centres are secure physical locations where regional representatives of select federal departments can collect, fuse and analyse departmental "need-to-share" information to enhance the government of Canada's situational awareness of the ships, cargoes and people who use Canada's marine environment and marine infrastructure. Personnel at the MSOCs continue to work for their respective Departments but use the collaborative work environment of the MSOC to enhance their information-sharing and analysis capability. MSOCs have been established at the existing operations centres at Halifax and Esquimalt. Operational oversight and infrastructure support are provided by the Navy at these two sites. As well, an interim MSOC has been established for the Great Lakes and St. Lawrence Seaway. Situated at Niagara-on-the-Lake, the interim MSOC is led by the RCMP with some DND personnel assigned to assist.

The core membership of the MSOCs are employees of Canadian Border Services Agency, Canadian Coast Guard, Department of National Defence,

Royal Canadian Mounted Police and Transport Canada. Other Departments that are involved in marine security operations or may be key contributors during contingency operations may participate on an as required basis. The MSOC Concept of Operations does not usurp extant departmental authorities or responsibilities, nor does it change the nature of lead agency or support departments for operations and incidents.

The goal of the MSOC is to create data collection, fusion and analysis centres where the sum of all departmental input and analysis will be greater than the analysis that can be generated by a single department. The core functions of the MSOCs are routine operations and contingency operations. For routine operations the MSOCs must produce actionable intelligence and must disseminate it appropriately so that departments have adequate warning to coordinate and respond to a marine security incident before it affects Canada or its allies. In the event of the requirement for a proactive or reactive response to a marine incident, the MSOCs may facilitate the planning, co-ordination and execution of contingency operations in support of the lead agency.

In order to be able to fulfil the MSOC mandate, the centres must be robustly networked with the national level Government Operations Centre, the Integrated Threat Assessment Centre, the CCG's Marine Communications and Traffic Services (MCTS), CCG's Regional Operational Centres (ROC) and the CCG's National Co-ordination Centre; DND coastal maritime operations centres, and United States government American Government marine security operations and intelligence organisations.

In Figure 6-6, the intelligence network is symbolised by grey boxes linked with arrows. A circular symbol represents the Recognized Maritime Picture, and is linked by arrows to the regional level intelligence operators at DND. Figure 6-6 shows the process flow of a relatively low-level activity that can be handled through the resources or interdepartmental connections at the Marine Security Operations Centre or another departmental operations centre (OpCen).

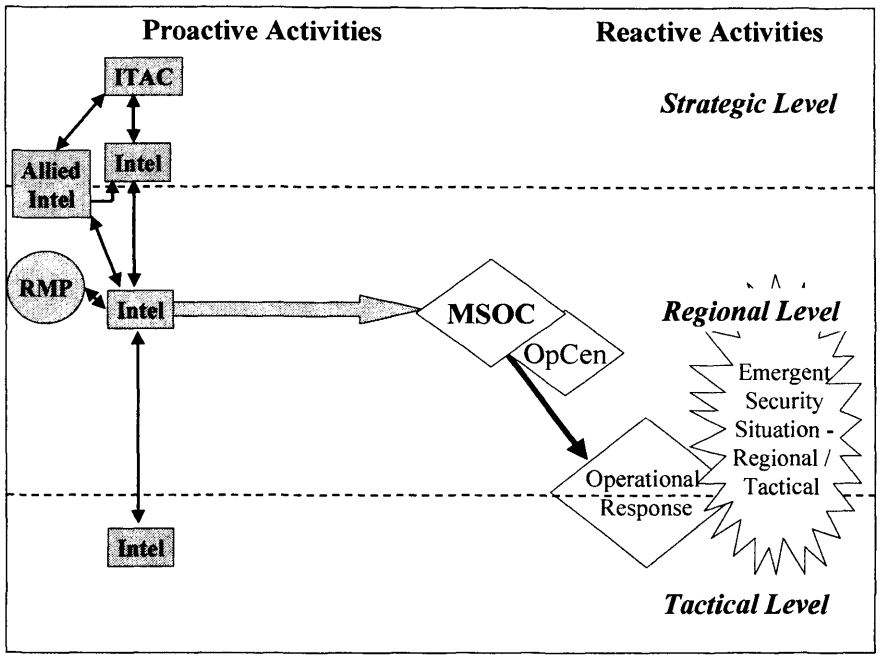


Fig. 6-6. The Relationship of Intelligence to Operational Response.

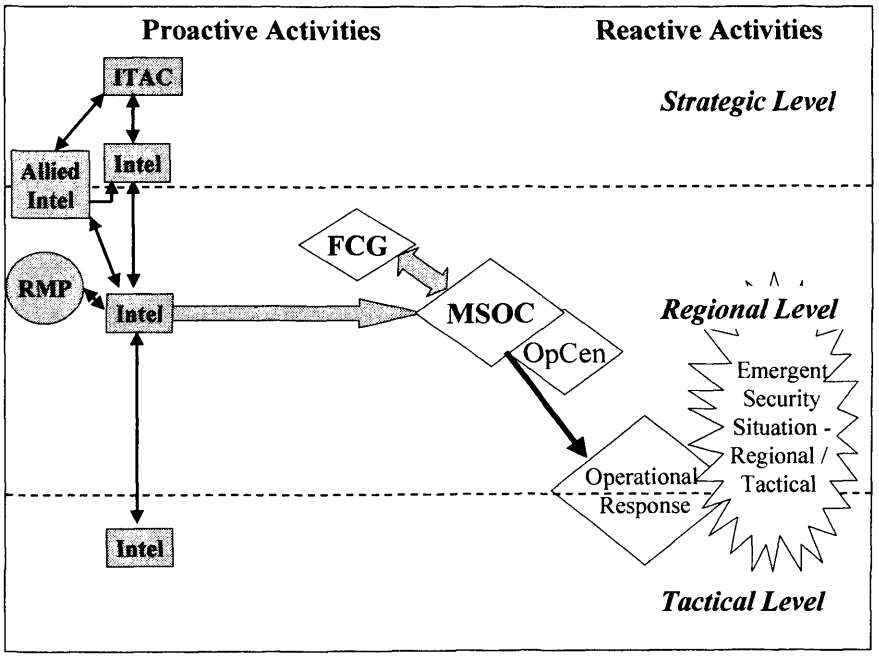


Figure 6-7. Relationship of Intelligence to Operational Response – Multiple Agencies.

Figure 6-7 depicts the process flow of a response to an emergent situation based on actionable intelligence, but of a greater magnitude. In other

words, multiple agencies might be involved, or the nature of the potential situation is such that that a response requires the intervention of the Federal Co-ordination Group to determine the scope of the response and the lead agency.

Figure 6-8 depicts the process flow required when intelligence calls for an operational response to an emergent situation that is truly national in scope, and may require a national contingency operation to be entertained.

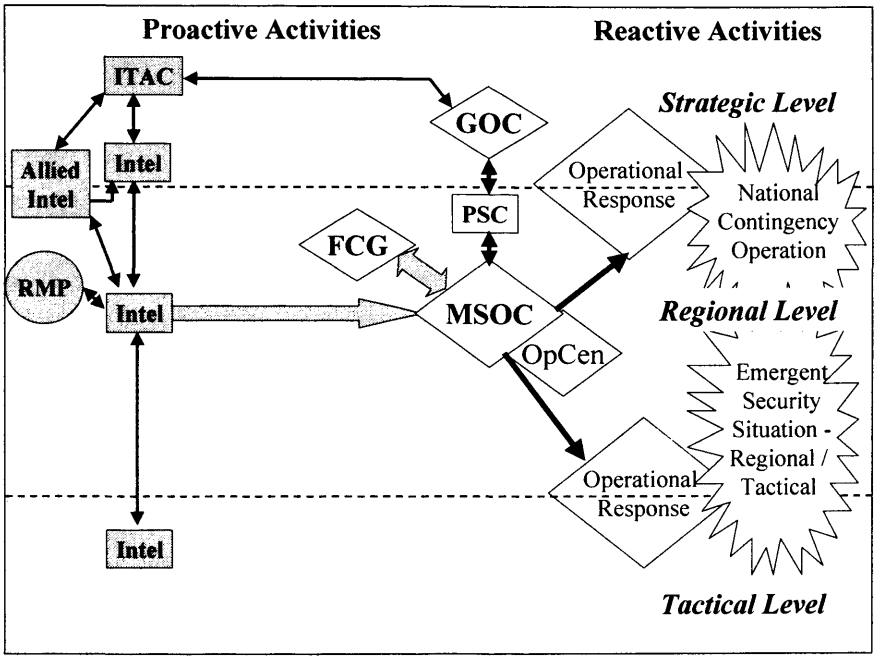


Fig. 6-8. Intelligence-initiated Strategic and Operational Response.

6.6 Summary

Inter-agency co-operation is a functioning reality that spans three levels of interaction: strategic, regional, and tactical. What differentiates the character of interaction at the strategic versus the regional levels is the focus at national headquarters in tending to the political and policy aspects of a given issue, whereas at the regional level the emphasis is effect "on the ground."

The strategic-level Osbaldeston Study of 1990 provided the impetus for greater inter-agency co-operation in the conduct of maritime operations among federal departments. This study spawned the Interdepartmental Program Co-

ordination and Review Committee, from which regional operations sub-committees were established, and continue to this day notwithstanding the demise of the parent strategic-level committee.

At the regional level, there are multiple federal working groups and committees that form a framework for inter-agency co-operation in oceans management and marine security and enforcement. However, the interdepartmental co-operation described in this chapter exists despite a previous lack of Government of Canada strategic security and surveillance policies. This policy vacuum set in motion the evolution of the *ad hoc* structure. It works adequately due in large part to the professionalism and influence of a small number of individuals in key departments, and their genuine desire to do what is right for Atlantic Canadians despite limitations imposed by various bureaucracies.

Frequent multi-agency exercises have been conducted in the Atlantic region for the past several years that contribute to the long-term education process of staffs at all levels. Although initially premised on emergent disaster relief situations, the relationships cultivated through informal and formal initiatives have enabled departments to deal with maritime security issues with greater confidence and ability. Greater clarity is likely to be achieved as the Public Safety Canada-led Federal Emergency Response System matures, and a subordinate Marine Security Response System is agreed-upon by federal partners.

Maritime security continues to be viewed by all levels of Canadian government as a law enforcement responsibility rather than a defence issue. This posture shapes government security response systems, with the result that the Canadian Navy functions in a support role to those departments and agencies with enforcement mandates. The National Security Policy assigns the Navy the task of co-ordinating the on-water response to a marine threat in the Canadian maritime zones. Moreover, the Navy is required to establish Marine Security Operations Centres to facilitate co-ordination among government departments. This allows the Navy to influence the marine security

response system as it evolves so that the significant collaborative planning, co-ordination, command and control capabilities that are resident within the Navy can be used to full effect.

Chapter Six has identified how government agencies and departments with maritime security and enforcement responsibilities are able to interact through working group structures and reactive processes, spanning national and regional levels, to carry out their general mandates. The next chapter will narrow the focus to just the Canadian Navy. Chapter Seven will quantify exactly what the Navy contributes to maritime enforcement in Atlantic Canada, and what benefits the Navy derives from this contribution.

Chapter Seven
NAVAL CONTRIBUTION TO MARITIME DOMAIN AWARENESS

7.1 Introduction

The intent of this next section is to shift the discussion of previous chapters from the political, legal, and interdepartmental frameworks for interaction to a narrower focus on the operational capabilities that the Navy brings to maritime security and enforcement in Canada. The aim of this chapter is to examine the first of the remaining three key themes of inquiry, the naval contribution to maritime domain awareness.

The chapter opens with an explanation of the roles that navies fulfil in modern coastal states, and is followed by a review of the threats to maritime security in Canada. Leading on from this background, the constituent elements of domain awareness and the data sources will be reviewed. The analysis will further ascertain the level of government "presence" derived through aerial surveillance in Canada's maritime zones, as well as determine the concentrations of marine activity in these zones. An assessment will be rendered of the appropriateness of the government presence in relation to marine activity. The chapter closes with a review of non-surveillance contributions that the Navy makes for maritime domain awareness.

7.2 Naval Use of the Sea

7.2.1 Roles of Navies

The broad roles of the Canadian Forces were examined in Chapter Four in the context of evolving defence policy. However, the capabilities that navies can deliver to their governments were not discussed. Thus, the next few paragraphs will review the role that navies, as opposed to the other military services, play in domestic and international affairs.

Any review of the roles of modern navies invariably makes reference to Ken Booth's *Navies and Foreign Policy.* In this 1979 work, Booth argues the use

of the sea is the unifying principle that underpins a navy's three main roles: a military role, a diplomatic role, and a policing role. Within each of these roles, Booth asserts that navies can serve a large variety of subordinate functions.[249]

Figure 7-1. Canadian Naval Roles and Functions for the 21st Century
Source: Canada. Department of National Defence. *Securing Canada's Ocean Frontiers: Charting the Course from Leadmark* (Ottawa: Directorate of Maritime Strategy, 2005), 18.

The military role is a navy's foundation; the ability to apply force coupled with a navy's military character is what lends it credibility in the other two roles. The exercising of foreign policy short of the use of force is what characterizes the diplomatic role of the navy. The policing or constabulary role is broken down into two broad categories: coastguard responsibilities and nation-building. In general terms, coastguard responsibilities are those of exercising sovereignty in the nation's own maritime zones and approaches, resource utilization, and maintenance of good order. Booth argues that the military and diplomatic roles are well established, but the policing role is becoming of increasing importance to coastal states.[250]

Some observers suggest that an additional dimension be added to

[249] Ken Booth, *Navies and Foreign Policy* (New York: Holmes & Meier, 1979), 16.

Booth's Triangle. This fourth side would represent the economic driver that navies provide to a nation's industrial base through shipbuilding and ship repair. This effect is even more pronounced in countries that lack a national shipbuilding strategy, such as Canada. Here, the shipbuilding industry struggles for survival through boom and bust cycles but is kept solvent during the "busts" by contract awards for work on government fleets. The emerging argument for converting the triangle of roles into four-sided shape has yet to gather traction among scholars so, for the present, naval use of the sea will be discussed in the context of the triad of military, diplomatic, and constabulary roles.

While the military and diplomatic roles are worthy of separate treatment in their own right and could easily form the basis of a separate thesis, the central theme of this research is maritime enforcement. Accordingly, the focus will be on the constabulary role.

7.2.2 Constabulary Role of Navies

Naval analyst Eric Grove observes that while navies are established primarily for war, they find their main utility in peace.[251] Current Canadian defence policy requires that its Navy be capable of mounting effective responses to emerging situations in Canadian areas of jurisdiction. To do so, the Navy must demonstrate regularly the capability to monitor and control activity within maritime zones and approaches. Moreover, the Navy's key strategic document, *Leadmark*, identifies six functions that the Canadian Navy should expect to execute in fulfillment of the constabulary role:

a. Sovereignty patrols. These are a "specific form of presence undertaken within a state's area of maritime jurisdiction, in support of nation-building, to reinforce claims in contested waters, or otherwise "to show the flag" in a domestic context;[252]

---

[250] Booth, *Navies and Foreign Policy*,16.
[251] Eric Grove, *The Future of Sea Power* (Annapolis, MD: Naval Institute Press, 1990),187.
[252] Canada. *Leadmark: The Navy's Strategy for 2020* (Ottawa: Directorate of Maritime Strategy,

b. Aid of the Civil Power. Naval personnel may be called out in a Category 4 or 5 domestic operation in any case in which a riot or disturbance of the peace is beyond the powers of the civil authorities to suppress;[253]

c. Assistance to Other Government Departments. These are both routine and extraordinary operations in which the Navy supports and assists other government departments in such areas as counter-narcotics, fisheries enforcement, prevention of illegal immigration and environmental protection;

d. Search and rescue. In conjunction with the Canadian Coast Guard, the Armed Forces are mandated to maintain a national search and rescue capability;

e. Disaster relief. The Navy is expected to be able to contribute to humanitarian assistance and disaster relief within 24 hours, and sustain this effort for as long as necessary;[254]

f. Oceans management. This function implies a wide spectrum of inter-departmental and inter-agency measures conducted to facilitate the regulation of activities on, under and above the sea. Oceans management is both a domestic and international function.[255]

So far throughout this thesis the terms maritime security and maritime enforcement have been used virtually interchangeably. However, maritime enforcement is a sub-set of maritime security, and relates to particular activities undertaken to support enforcement efforts that form part of the nation's overall

---

2001), 40.
[253] See Chapter Five, Section 5.4.2 for a discussion of the five categories of domestic operations carried out by the Canadian Forces.
[254] Canada. *Leadmark: The Navy's Strategy for 2020* (Ottawa: Directorate of Maritime Strategy, 2001), p. 41.
[255] Ibid.

maritime security requirements. In a post-911 international security environment, the practical definition of maritime security is no longer constrained to historic threats of a naval or military nature. A state's requirements for maritime security, sovereignty, and oceans management are increasingly interconnected. Thus a navy's contribution to maritime security is equally a contribution to maritime enforcement.

7.2.3 Spectrum of Conflict

In practice, navies seldom function exclusively in a military, diplomatic or constabulary role alone. In many cases there is considerable crossover between roles. For example, during the 1995 "Turbot Crisis" between Canada and Spain, existing maritime forces (the military role's fleet-in-being) used the sea for the diplomatic purpose of presence, and the constabulary functions of supporting another government department (DFO) to enforce fishery law. As well, the use of force is not solely confined to the military role. The likelihood and magnitude of force to be employed in the various naval functions is referred to the Spectrum of Conflict, and is depicted in Figure 7-2.

Even sovereignty enforcement, the quintessential constabulary role, could theoretically involve combat operations. Consider the apprehension in Canadian waters of a merchant vessel that has been seized by terrorists who possess a portable nuclear device. More than likely the terrorists would be non-compliant with law enforcement agencies, and the use of military force at sea might be the only means to prevent the ship from getting too close to coastal population centres. What the Navy brings to the table that is unique among government departments is the capacity to apply significant coercive force in emergent crises.

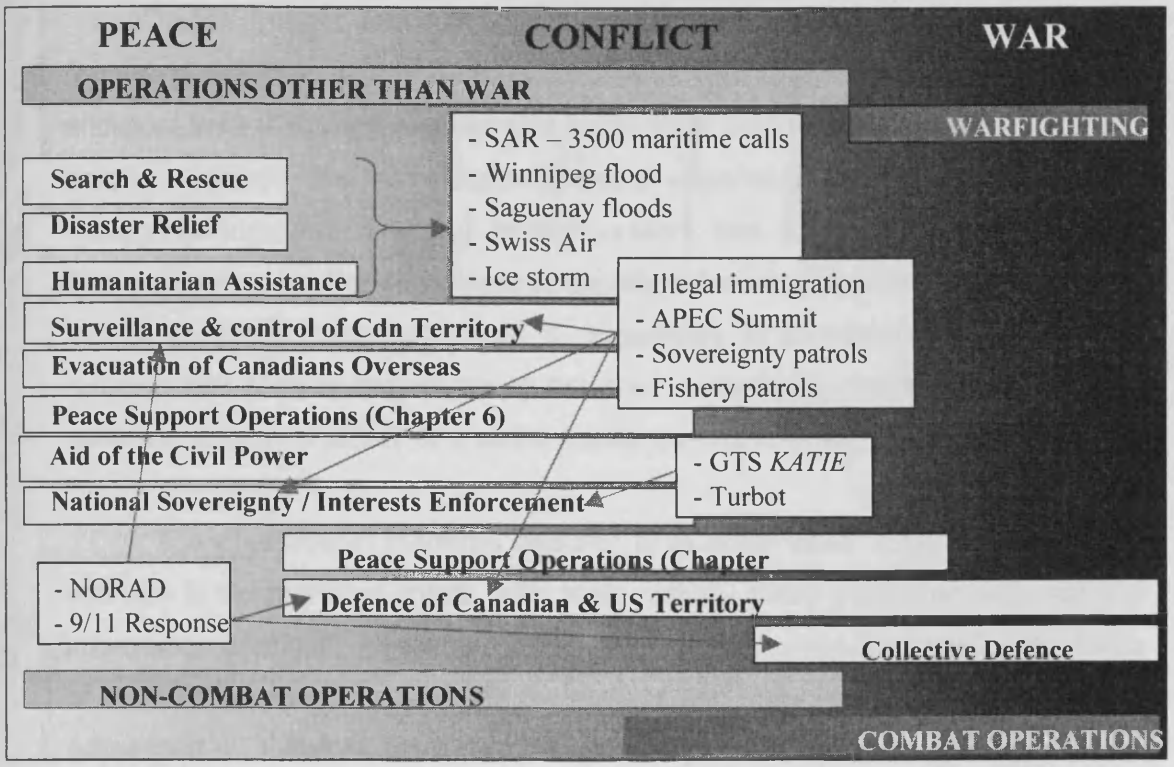


Figure 7-2. Spectrum of Conflict in the Maritime Context
Source: Kelly Williams, "Canada's Maritime Strategy: A Naval Perspective," in *Continental Security and Canada-U.S. Relations: Maritime Perspectives, Challenges and Opportunities*, ed. Robert H. Edwards and Graham Walker <http://centreforforeignpolicystudies.dal.ca/pdf/spc03williams.pdf> (11 March 2005).

7.2.4 Maritime Threats and Maritime Domain Awareness

Joanne Lostracco posits that the interests of a coastal state's security forces fall into four general categories: protection of fishing rights, prevention of illegal activity at sea, such as piracy or smuggling of contraband or human cargo; counter-terrorism, and protection of the environment.[256] A more complete list of threats or activities of interest in Canada's maritime zones would be search and rescue situations, illegal fishing, drug smuggling, pollution incidents, illegal immigration, unauthorized at-sea research, petroleum and natural gas industry monitoring, whale and seabird protection, eco-tourism, sightings of unusual activities in the Arctic, foreign intelligence collection, and extremist activity.[257]

[256] Joanne Lostracco, "What Force for Canada: A Theoretical and Practical Study of the Canadian Navy in the 1990s" (M.A. thesis, Dalhousie University, 1998), 21-23.
[257] Maritime Forces Atlantic, in its *de facto* role as surveillance coordinator for federal departments on Canada's east coast, routinely monitors all of these activities.

These threats and vulnerabilities always have been of concern to the Navy and the other government departments with enforcement mandates, pre- and post-9/11. Organized crime and trans-state actors are a greater threat than before. Canada has had relatively recent experience on the west coast with smuggling rings and arrest of fishing trawlers with illegal Chinese immigrants. The experience on the east coast is slightly different; illegal migrants tend to be landed by large merchant ships, or stowaway in containers. However, the reasons that compel individuals to flee their homelands and to enter Canadian waters in search of safety or a better future are not forecast to decrease.

The objective in maritime security is to know what is happening, where, and why in the maritime zones, with progressively better positional accuracy and information credibility as shipping and other activity nears the coast. The choice of security measures depends on the context and urgency of the challenge being addressed. Choices include safeguarding, collaboration, marine domain awareness, and reaction. Safeguarding refers to activities such as personnel screening, physical security, e.g. fencing and cameras, searching of containers and so on. All federal departments have interests in aspects of safeguarding, but it is largely other government departments and port authorities that have responsibility for these types of measures. Collaboration, in the maritime security context, refers to the sharing of database information and analysis for intelligence and data fusion purposes, as well as development of collaborative procedures. This aspect was treated in depth in the last chapter.

The term "maritime domain awareness" was introduced in Chapter Six in the discussion about the importance of interdepartmental interaction. It is a relatively recent term; in security circles the term "recognised maritime picture" was used to describe the snapshot of activities in the maritime zones and approaches obtained through surveillance and monitoring efforts. However, the "snapshot" provided only part of the required situational awareness. When appropriate intelligence from a variety of civil and military sources is applied to the "snapshot" of the security problem, the result is full maritime domain awareness. The Navy, in exercising its military and constabulary roles, develops

maritime domain awareness in order to respond to a variety of threats to maritime security.

7.3 Naval Contribution to Maritime Domain Awareness

With a coastline of 243,00 kilometres and an area of responsibility over eight million square kilometres, Canada has a formidable challenge in addressing maritime security. There are 25 deep-water and 650 smaller ports in Canada and, on a typical day, there are some 1,700 reported ships in the Canadian maritime zones, with many more not self-reporting, being further out from the major ports and beyond the coverage of vessel traffic management systems. Against this backdrop are the challenges of generating maritime domain awareness from multiple government departments with overlapping mandates and interests in the maritime security environment, and limited ships, aircraft, radar stations and other collection assets needed to conduct effective surveillance or confirm self-reported positions.[258]

The development of awareness of what is happening in the Canadian maritime approaches has been a long-standing challenge, and from a "whole of government" approach has been deficient:

> "The process of integrating or fusing intelligence, surveillance and reconnaissance information, data and products to generate situational awareness in the maritime realm in near real time is non-existent to a large extent due to technical and/or format incompatibility, personnel and procedural impediments, policy constraints and lack of fusion tools."[259]

The Navy has been the sole government body that has taken on the challenge, and has become the *de facto* lead agent for development of marine domain awareness in Canada. The stems from the assignment of a standing military task in the Defence White Paper of 1994 under the "Protection of Canada" mission. Essentially, the mission has two components: monitor activity for sovereignty

---

[258] Laurence M. Hickey, Testimony before the Standing Senate Committee on National Security and Defence, Issue 18 – Evidence 16 June 2003 <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/Com-e/defe-e/witn-e/hickey2-e.htm> (3 April 2008).

[259] Canada, Government of Canada, MSOC – Maritime Security Operations Centre, *Project Scope Statement,* 17 October 2007 < http://msoc-cosm.gc.ca/document/background/scope/over_e.asp > (3 April 2008).

purposes and assist other government departments, i.e., those with enforcement mandates, to achieve their goals. Building a plot of maritime activity is one of several activities that contribute to the Protection of Canada mission.

7.3.1 The Recognized Maritime Picture

In the current global security environment, there are a bewildering variety of terms, definitions and acronyms referring to various types of picture building efforts. However, the fundamental goal does not change, that is to support maritime domain awareness through building a recognized picture. For simplicity, the acronym RMP or the term "maritime picture" will be used in the remainder of this chapter to refer to the recognised maritime picture developed by the Navy in the Atlantic region.

The maritime picture is built from all data sources that can be accessed concerning maritime traffic in the area of interest. The collection of data can undertaken by satellite, aircraft, surface ship, submarine, land-based radar or by towed and fixed sonar arrays. Normally, a data source will provide geographic position and identity information pertaining to a given vessel and, increasingly, amplifying data such as the vessel's owner, cargo and other background information is included. Assembled into the RMP, all of this data provide an awareness of the volume, location and nature of shipping activity and provides a background for deeper analysis of trends and vulnerabilities. Data sources are identified through actively seeking them out and then collecting and assembling the data in a format suitable for exchange between numerous partners.[260]

7.3.1.1 Data Collection for the Recognised Maritime Picture

At present, there are insufficient military resources alone for comprehensive surveillance of the large area of interest and responsibility in the Atlantic region. Thus, the RMP is compiled in co-operation with many other agencies that possess data on maritime activity. The benefits of this are clear –

[260] Sam Bateman, "Maritime Surveillance and Information Exchange", in Sam Bateman & Stephen Bates (eds), *Calming the Waters: Initiatives fir Asia Pacific Maritime Cooperation*, Canberra Papers on Strategy and Defence No. 114, Strategic and Defence Studies Centre, Australian National University, Canberra, 1996, p. 69.

a wider collective awareness and links through which to share information, plus a growing ability to reduce duplication of effort and use resources efficiently. As such, the maritime picture combines a plethora data described in the following paragraphs.

Canadian naval ships operating on the East Coast are required to report their own positions and the details of contacts around them into the RMP at one-hour intervals. Military aircraft fly a number of hours each week for dedicated surveillance and conduct surveillance as a secondary task even when on training missions. Naval ships are also under standing orders to hail merchant vessels, and these communications result in further information being generated on each vessel. In turn, naval ships also use the RMP for cueing information for the area beyond the range of their own sensors. For the most part, data forwarded by ships can be received by the Regional Joint Operations Centre for inclusion into the maritime picture within minutes. Military aircraft, however, are currently less capable in this regard and often the results of their surveillance cannot be included in the RMP until a few hours after the end of their patrols.

Reports are also received from aircraft contracted by Fisheries and Oceans Canada. The contractor, Provincial Airlines, flies these patrols with a well-equipped air platform that provides radar, infrared and photographic data. A key aspect of these flights is that the data can be forwarded in flight for integration in the RMP (except the photo data), resulting in the data's appearance into the maritime picture within 15-20 minutes. This makes the fisheries patrol aircraft one of the most capable surveillance assets on the east coast of Canada. Although normally focused on fisheries surveillance, these flights report pollution incidents and, at times, merchant shipping as well. In 2007, an initiative allowed National Defence to purchase 565 hours of PAL surveillance time that equated to 112 sorties. This permitted the Navy to task these flights for broad maritime surveillance, rather than that focused narrowly on one departmental mandate.[261]

[261] Commander Ted Parkinson, "RMP and PAL Questions," 14 April 2008, email to author.

The recognised maritime picture also incorporates reports from the Canadian Coast Guard, including mandatory reports required from commercial vessels at 96 and 24 hrs before reaching a Canadian port. This data is hosted in the Canadian Coast Guard's servers and is accessed by a direct link between the Navy and Coast Guard systems. Data in the Coast Guard system, known as the Automated Information System for Marine Navigation (INNAV), is comprehensive and its timeliness increases with a vessel's proximity to Canada. INNAV has become a fundamental cornerstone of maritime picture building in Canada; it contains the reports mandated by Canadian legislation, and is the data path for the transponder beacon data of the IMO-mandated Automated Identification System. Transponder beacons are important sources as they provide geographic position and identity automatically by radio signal, without the need for a surveillance asset to detect and physically identify the vessel.

Transponder beacons also figure in reports received from certain fishing vessels. Automated radio signal reports from fishing vessels, with their positions and identities are received by Fisheries and Oceans Canada. This department receives these reports for European Union fisherman when those vessels are operating in specified areas near Canada's EEZ, and the reports are forwarded to the Navy to be included into the RMP. Additionally, some Canadian vessels fishing in domestic areas began carrying these beacons in the summer of 2003, and their data are forwarded to the Navy for inclusion in the maritime picture as well.

The recognised maritime picture incorporates reports on a global scale based on positions provided through merchant vessel voluntary weather reporting. Merchant ships at sea report weather in their local area, typically at 4-6 hour intervals. This data is pooled by weather bureaus worldwide and Environment Canada receives the sum of all the data. Since these reports contain the call signs and positions of the vessels, they are of value to the maritime picture. These reports are forwarded to the Navy via Internet and converted to the format necessary for inclusion in the RMP. An additional database has also been developed to match ship names with the call signs

provided in the reports.

Reports from various NATO sites also find their way into the Canadian RMP. The two main NATO centres each produce a maritime picture for their international region and share the picture with among themselves and other NATO allies.[262] Although they do not report ships off Canada's east coast, the data are included in the RMP for long-range cueing and to support naval ships when deployed. Although in the past NATO had not typically been a large reporting source for merchant vessels, the focus in this regard is changing for the better.

Reports are also received from various centres in the US Navy. The US connection is a significant feed to the Canadian RMP. The data forwarded from the US contain locator messages for merchant vessel traffic on a global scale. As well, the US Navy shares its list of high interest vessels with Canada, and the names of these vessels are placed on an alert list. When a report on any of the vessels is received in the Canadian RMP, the information is passed on to the appropriate US agency.

The recognised maritime picture also draws upon commercial sources. Many shipping companies maintain their own plots of where their ships are operating and often the data are posted to company sites on the Internet. These data are not routinely included in the RMP, but can be used to investigate vessels of interest, and will likely become a growth area for inclusion in the RMP in the future.

The final category of report that is used to develop the RMP is that of national technical sensors, such as those that are space-based. The data from

[262] At present, there are only two NATO RMP Managers: MCC Northwood (for the Atlantic and Baltic), and MCC Naples (for the Mediterranean, and nominally the rest of the world). When the researcher commenced this study, there were four RMP managers: SACLANT, CINCEASTLANT, Baltic and Mediterranean. With the re-organisation of the Alliance in 1999 to 2000, the number of NATO headquarters and RMP Managers were reduced. Of course, like Canada, many NATO nations maintain a national RMP, and these feed to some degree into Northwood and Naples.

these sources are sensitive, and are not released to non-military agencies. Incorporation of this sensitive data is what creates complication in information-sharing among government departments, and requires the generation of both classified and unclassifed versions of the recognised maritime picture.

To review, maritime domain awareness is derived through several components, but the two essential inputs are relevant intelligence and an accurate recognised maritime picture. The intelligence piece is co-ordinated through the Navy's Joint Ocean Surveillance and Information Centres, known as *Trinity* in Maritime Forces Atlantic.[263] The Centre integrates information from sensors, sources and organisations into a composite picture, and uses modern computer technology and information management techniques to process and disseminate this information. This process involves data warehousing, analysis, and fusion. The quality of data varies between each of the sources.

A key concept in fusing and analyzing this data is that the data are almost always time late. The maritime picture is not a real-time picture; in other words each contact in the RMP only represents the last report received on the vessel, not necessarily its most up-to-date position. The overall time late of the RMP averages eight to twelve hours. This figure is decreasing, but timely data sources that provide high quality data with identity and full background information, are still scare in the overall surveillance effort.

7.3.1.2 High Frequency Surface Wave Radar (HFSWR)

For the two decades, as part of DND's Technology Demonstration Program, the Department has funded a project that evaluated high frequency surface wave radar as a means of providing wide area, over-the-horizon coastal surveillance from shore sites. Work on the demonstration project commenced in 1996 with the construction of two full-scale high frequency surface wave radars installed at Bona Vista and Cape Race, Newfoundland. The project was a collaborative venture between DND and Canadian industry. Figure 7-3 depicts the two east coast sites.

[263] The Pacific region's counterpart is called *Athena*.

Early research postulated that HFSWR would be able to detect large targets such as icebergs or large vessels in excess of 500 kilometres, small ships at a range of 370 kilometres and small low flying aircraft at 200 kilometres. DND assessed that such a capability would satisfy the national requirement for the continuous surveillance of the Canadian EEZs in support of national sovereignty, search and rescue, domestic naval and maritime enforcement operations and resource protection. The Senate Committee on National Security and Defence recommended in one of its studies that eight or more HFSWR sites be built to provide an all-weather, highly autonomous 24-hour, 7-day per week surveillance capability that would have the potential to facilitate the cueing of patrol vessels and aircraft to effect monitoring and control of Canada's maritime approaches.

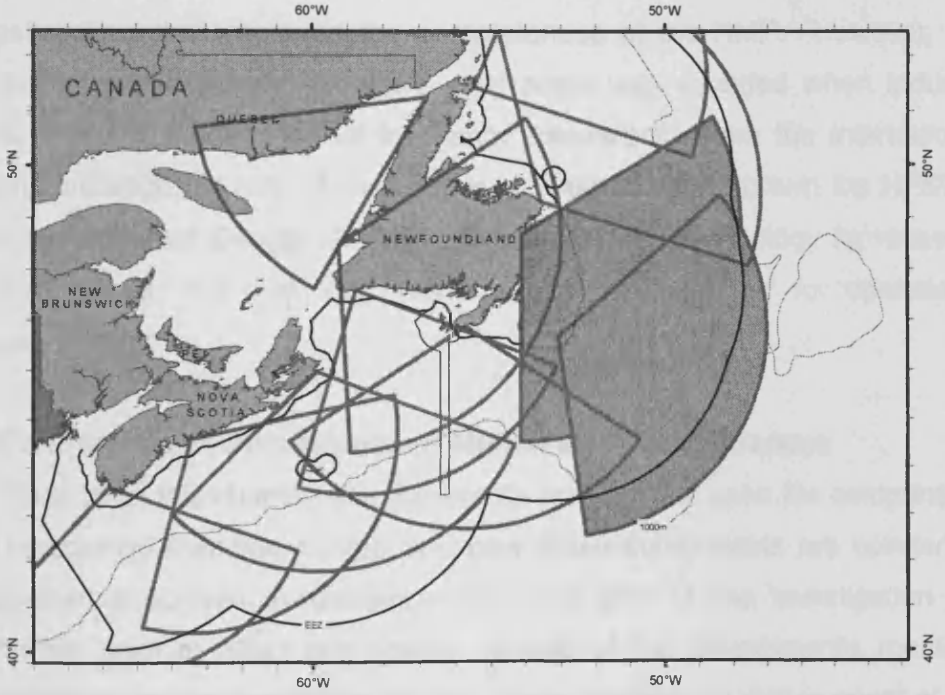


Figure 7-3. High Frequency Surface Wave Radar Coverage
Source: Raytheon. Shaded areas show notional coverage of radar currently in operation. Other arcs indicate coverage of proposed sites.

Figure 7-3 also depicts the locations of other potential sites that, if constructed and set into operation, would provide seamless HFSWR coverage of

the Atlantic maritime approaches.[264]

The radar picture generated from Bona Vista and Cape Race was displayed in the operations centre at Maritime Forces Atlantic Headquarters starting in October 1998, and was used as input to the recognised maritime picture. In the following years, the utility of the surveillance data was evaluated by end users at the surveillance centres in collaboration with DND research scientists and members of the Navy's Maritime Operational Research Team. Unfortunately, the technology did not live up to expectations. The HFSWR system did not perform well unless weather and atmospheric conditions co-operated. The evaluators noted that the detection ranges of HFSWR fell short of those specified in the Technical Statement of Requirements, and that the data fusion function was a time-consuming, onerous task. The evaluators observed that when HFSWR was combined with another sensor, there appeared to be a synergistic effect that improved the completeness of the RMP. However, the death knell for HFSWR on Canada's east coast was sounded when Industry Canada received a complaint of frequency interference from the International Telecommunications Union. A decision was taken in 2007 to turn the HFSWR sites to the Assistant Deputy Minister for Science and Technology for research and development, but that they would no longer be used for operational purposes.[265]

7.3.2 Contribution of Surveillance to Marine Domain Awareness

Thus far in this chapter, the discussion has centred upon the components of the recognised maritime picture and how these components are collated to develop marine domain awareness. The next part of the investigation will examine the level of effort and spatial context of the government's maritime surveillance operations conducted in the Atlantic region. The first element of the analysis will be a determination of the presence of military and other government department patrol assets in Canada's maritime zones.

---

[264] Canada. Report of the Standing Senate Committee on National Security and Defence. *Canada's Coastlines: The Longest Under-defended Borders in the World.* October, 2003, p. 57.
[265] Canada. Report of the Standing Senate Committee on National Security and Defence. *Canadian Security Guide Book – 2007 Edition - Coasts.* March, 2007, pp. 19-20.

To recap from earlier chapters, the main contributors to government presence are military patrol aircraft, DFO/CCG patrol aircraft, naval vessels, and DFO/CCG vessels. In a perfect world, all naval, Coast Guard and RCMP vessel tracks, as well as all aircraft flight tracks would have been reconstructed to provide a composite picture of federal government presence in the study area for a specified period. However, this research concentrated on reconstruction of surveillance aircraft patrols only. Two separate issues drove this decision. First, aircraft have a tremendous advantage over ships as surveillance platforms by virtue of their speed. The speed advantage enables aircraft to cover much more area than ships during the same time period. In addition, an aircraft can ascend in altitude, effectively increasing radar antenna height with a proportionate extension in radar range thereby increasing detection capability. Thus, the magnitude of contribution to the RMP by aircraft is considerably greater than that of ships limited, in relative terms, by their lower speed and fixed radar antenna heights.

The second issue that affected the decision to concentrate the analysis on aircraft presence was a more practical one. Quite simply, access to full geographic positional information on all naval vessels at sea could not be obtained. This was a surprise, since the positions of all naval vessels are transmitted on a frequent and automatic basis to a contact history database at the Maritime Operations Centre in Halifax, and are shared via the Global Command and Control System with Canadian and allied warships and military aircraft. However, it was discovered that when the contact history database had been set up a decade earlier, it had been configured incorrectly. No one other than the researcher had requested unique "pulls' from the database, so it was not until specific data was requested that it was determined that much of the vessel track data had been permanently lost, was corrupted, or was not retrievable. As for ship track data from the Coast Guard and RCMP, these departments simply would not provide the requested data.

In light of these circumstances, the determination of government presence in Canada's maritime zones was undertaken by assessing the surveillance effort of military and DFO maritime patrol aircraft.

7.3.2.1 CP-140 Aurora Presence (DND)

As indicated in Chapter Two, the method I used to determine the cumulative presence of the patrol aircraft was to record the predefined sector in which the CP-140 Aurora aircraft flew, then determine the number of times aircraft flew missions in a given sector. The totals for each sector provided an indication of the relative presence of the CP-140 Aurora aircraft for the year 2002. This method was chosen once it had been determined that the CP-140 aircrew's estimates of sector coverage were sufficiently accurate for the purposes of this research.

In 2002, Canadian CP-140 maritime patrol aircraft flew 382 sorties in the study area. Not all of these sorties were mission-specific surveillance flights. However, when surveillance was not assigned as the primary mission, it was tasked as a secondary mission objective, and all vessels detected were recorded and provided as input to the recognised maritime picture.[266] Table 7-1 summarizes the number of patrols flown in each area in 2002.

It should be noted that the military tasking authority employed multiple co-ordinate grid systems to assign patrol sectors.[267] The lack of a common grid for sector assignment made creation of the map that depicts CP-140 aircraft presence more difficult to achieve. In order to create this map, the GIS technician had to identify overlaps common to multiple sectors in the different grid systems and weight them accordingly. This was accomplished using the Polygon Split, Union Features, and Intersect Features tools in ArcGIS to create new polygons from the area that is shared between the selected overlapping patrol sectors (polygons).

---

[266] The dates and missions for each flight are found in Table G-1 at Appendix G.
[267] Maps of the standing patrol grids are found in Figures 3-7 and 3-8 of Chapter Three.

TABLE 7-1

DND CP-140 AIRCRAFT PATROLS BY AREA - 2002

Areas	Grid Used for Patrol	No. of Patrols
Unicorn	ATC & Restricted Danger Zone	92
2H	NAFO Area	27
0B	NAFO Area	24
A-67	ATC & Restricted Danger Zone	24
3L, 3M, 3N, 30	NAFO Area	22
95/NFLD South	CP-140 Patrol Area	22
A-63	ATC & Restricted Danger Zone	21
2G	NAFO Area	20
A-62	ATC & Restricted Danger Zone	20
94/NS South	CP-140 Patrol Area	18
A-12, A-13, A-17, A-18	ATC & Restricted Danger Zone	18
1F	NAFO Area	17
G1, G2, G3, G4	MARLOA Area	12
2J	NAFO Area	11
92/NS Outer	CP-140 Patrol Area	7
H1, H2, H3, H4	MARLOA Area	4
0A	NAFO Area	4
93/NFLD Inner	CP-140 Patrol Area	4
98/Belle Strait	CP-140 Patrol Area	3
A, B, D1, D2, D3, D4	MARLOA Area	2
1E	NAFO Area	2
91/NS Inner	CP-140 Patrol Area	2
A-10, A-11, Zebra	ATC & Restricted Danger Zone	2
E2, E3	MARLOA Area	1
1D, 3P, 3S	NAFO Area	1
96/Grand Banks	CP-140 Patrol Area	1
97/NFLD East	CP-140 Patrol Area	1

Source: Maritime Air Component Commander (Atlantic) Staff, 2003.

Figure 7-4 depicts CP-140 Aurora patrol aircraft presence in 2002. In the figure, the areas of darkest shading received the greatest number of CP-140 Aurora flights. As such, the presence of the patrol aircraft was deemed to be greatest in these areas.

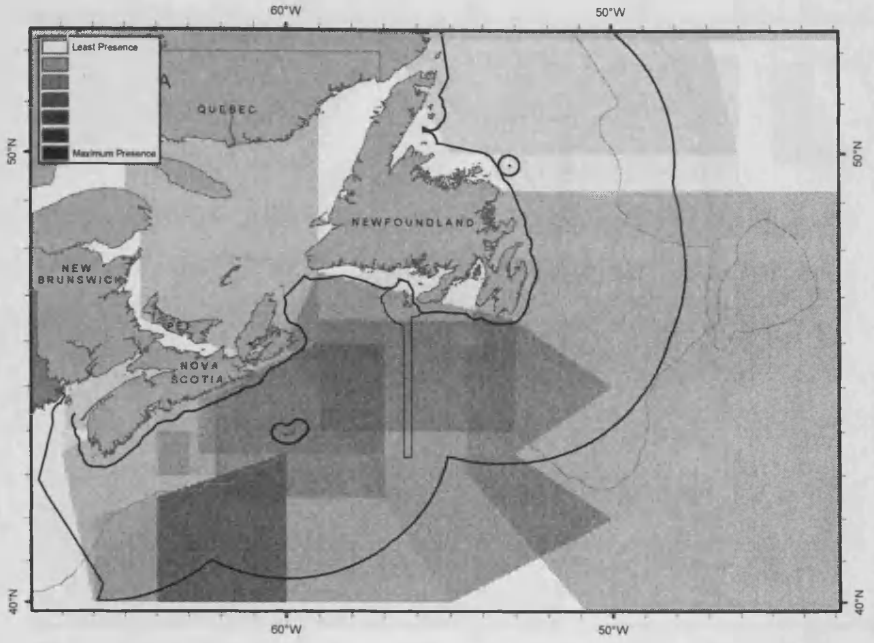


Figure 7-4. DND CP-140 Aircraft Patrols By Area - 2002
Source: Maritime Air Component Commander (Atlantic) Staff, 2003.

In 2003, a GIS technician, Sgt Richard Mayne, was transferred from Ottawa on a short-term assignment to the Maritime Operations Centre (MOC) in Halifax. During the period of his assignment, I gained the co-operation of the Wing Commander at the Greenwood airbase, and established the procedure for extracting flight track data from CP-140 surveillance flights. Figure 7-5 was drawn from data recorded by fourteen CP-140 Aurora maritime patrol aircraft that conducted airborne operations from 15 Dec 2003 to 15 January 2004. Geographic positions of the aircraft were extracted from the onboard tactical computers and forwarded as ASCII files to the MOC at Maritime Forces Atlantic Headquarters where the co-ordinates were entered into the GIS to recreate the aircraft tracks. A nominal buffer of 75 nautical miles was applied to the tracks to approximate the radar coverage during a normal flight profile at different altitudes.

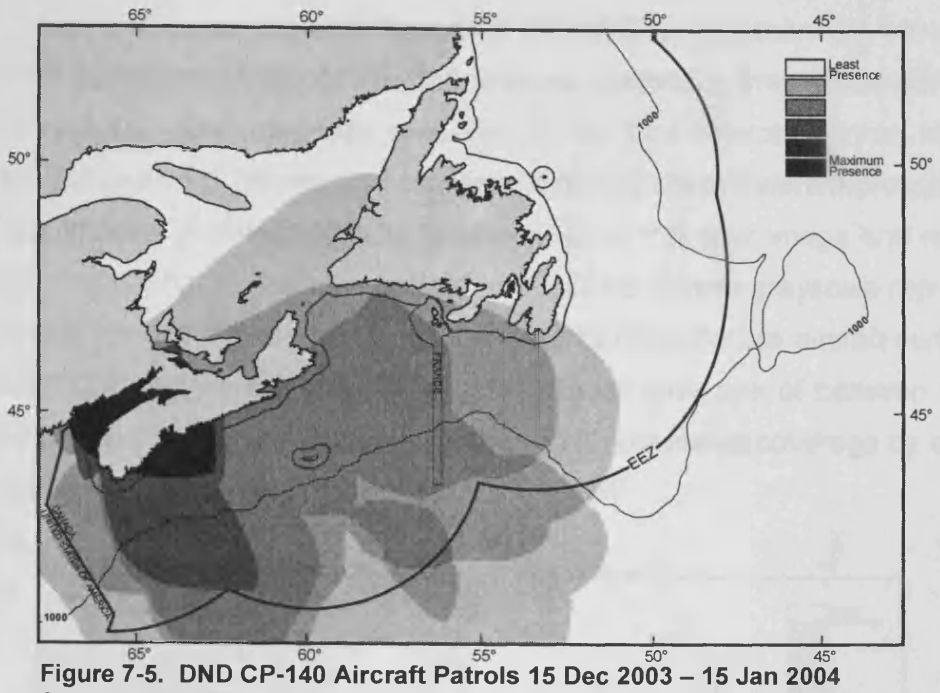


Figure 7-5. DND CP-140 Aircraft Patrols 15 Dec 2003 – 15 Jan 2004
Source: Maritime Air Component Commander (Atlantic) Staff, 2004.
Derived from data from 14 flights.

Sgt Richard Mayne manipulated the raw data and rendered the draft version of the choropleth map. However, 13 different shades were represented on the first images. I chose to decrease the numbers of orders of magnitude to make interpretation of the map easier. A polarizing filter was applied to the draft image and reduced the number of shades from thirteen to five.

The shades on map at Figure 7-5 represent the cumulative radar coverage and the level of presence by CP-140 Auroras during a 30-day period. The lightest greyscale represents areas that were in the radar coverage of one or two Aurora aircraft during the period. The next darker shade represents radar coverage of between three to six flights. The next darker shade represents coverage by seven to nine flights, and so on. Readers are cautioned that this map does not represent the tracks of Arcturus variant of the CP-140 aircraft that may have flown during the same time period because the avionics package of the Arcturus aircraft did not facilitate downloading of track data.

Figure 7-6 was created from data recorded by eighteen CP-140 Aurora maritime patrol aircraft that conducted airborne operations from 15 January to 15 February 2004. The map was rendered by the GIS technician in an identical fashion to Figure 7-5. However, seventeen different shades were represented on the first images. A polarizing filter was applied to the draft image and reduced the number of shades from seventeen to five. The lightest greyscale represents areas that were in the radar coverage of one to three Aurora aircraft during the period. The next darker shade represents radar coverage of between four to seven flights. The next darker shade after that represents coverage by eight to eleven flights, and so on.

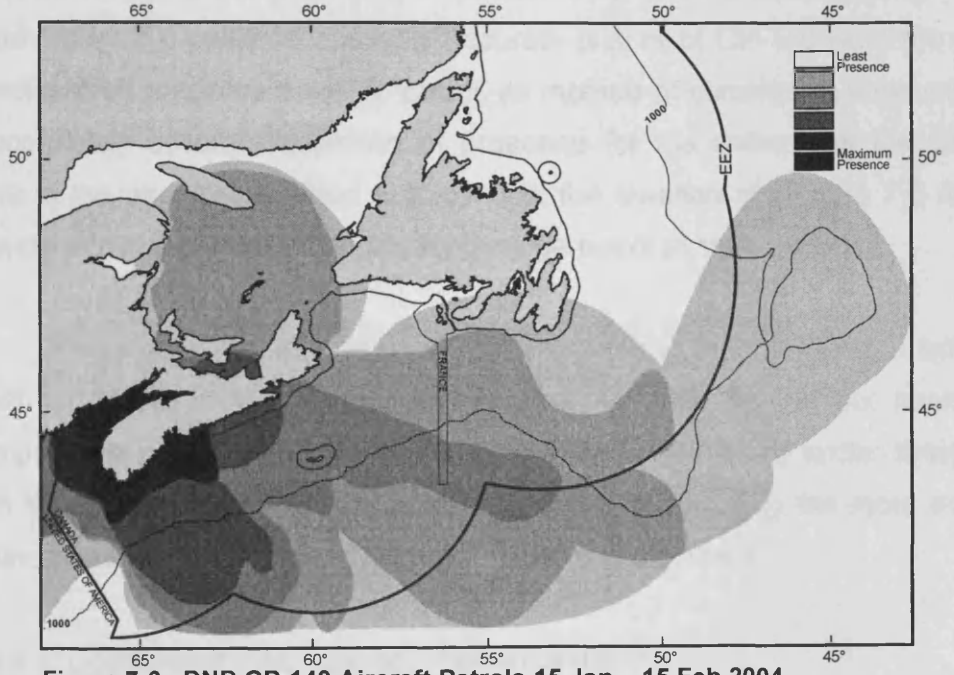


Figure 7-6. DND CP-140 Aircraft Patrols 15 Jan – 15 Feb 2004
Source: Maritime Air Component Commander (Atlantic) Staff, 2004.
Derived from data from 18 flights.

Figures 7-5 and 7-6 demonstrate several things. The first is how surveillance presence can be depicted when the actual flight tracks are used and the creation of the map not constrained by use of defined sector boundaries. The second significant point to note is how the pattern of surveillance presence changes in the space of just 30 days. This change is reflective of predicted marine activity, such as fishery openings and closings, bad weather, pack ice, and aircraft availability and serviceability.

It is noteworthy that in both Figures 7-5 and 7-6, the darkest shades correspond to the littorals within 100 nautical miles of the airbase in Greenwood, NS. This makes perfect sense since this area would be overflown by each aircraft for every take off and landing. What is significant though, is that this pattern does not appear in Figure 7-4. Indeed the same littorals are depicted in relatively light greyscale. The reason for this is that Figure 7-4 was created from a summary of the areas patrolled by military aircraft once they arrived in their assigned sectors. What was not indicated in the post-mission reports (Forms Purple) were the areas covered during the aircraft's transit from the point of take off to arrival at the assigned sector, nor the route taken to return to base. Thus, while Figure 7-4 paints a relatively accurate picture of CP-140 Aurora maritime patrol aircraft presence once on patrol, its method of compilation does not allow a completely accurate depiction of presence for the entire time the CP-140s were in the air. The method employed in the creation of Figures 7-5 and 7-6 provide a true depiction of military long range patrol aircraft presence.

Regrettably, Sgt Mayne's assignment came to an end before a full year's worth of 30-day maps could be produced. As such, it was not possible to compare the patterns of CP-140 presence in 2002 derived by sector assignment with the 2004 patterns that could have been derived using the more accurate method based on flight track rather than sector assignment.

7.3.2.2 Contracted PAL Aircraft Presence (DFO)

As was the case for CP-140 aircraft, prior to 2003, there was no means by which the researcher could obtain track data on PAL flights, either by electronic data capture, or by manual recording of positional information by aircrew, such that data could be entered easily into a GIS system. Consequently, the method employed by the researcher was essentially the same one used for military surveillance aircraft. Based on the PAL post-flight report, a tally was compiled of the areas that the aircraft was tasked to patrol. Since the PAL aircraft were tasked by DFO using the NAFO grid for surveillance planning and reporting, the totals for flights flown in each NAFO area were recorded manually by staff at the

Maritime Operations Centre.

In 2002, there were a total of 481 flights flown on behalf of the Newfoundland Region of DFO, 256 sorties on behalf of the Maritime Region (at the time known as Scotia-Fundy), as well as 63 flights for the Gulf Region. That year, Quebec Region accounted for 65 flights, the Canadian Coast Guard flew 80 anti-pollution patrol flights that were recorded and included in the totals for DFO. Table 7-2 summarizes the 945 PAL patrols flown in each NAFO sub-division in 2002. A single patrol may have entered into more than one sub-division during the flight.

Figure 7-7 reflects the presence of PAL aircraft on patrol in the Atlantic region in 2002. As in the case of previous maps, the darkest shades indicate the areas in which PAL aircraft flew the most frequently and thus represent the areas of greatest presence by Fisheries and Oceans Canada.

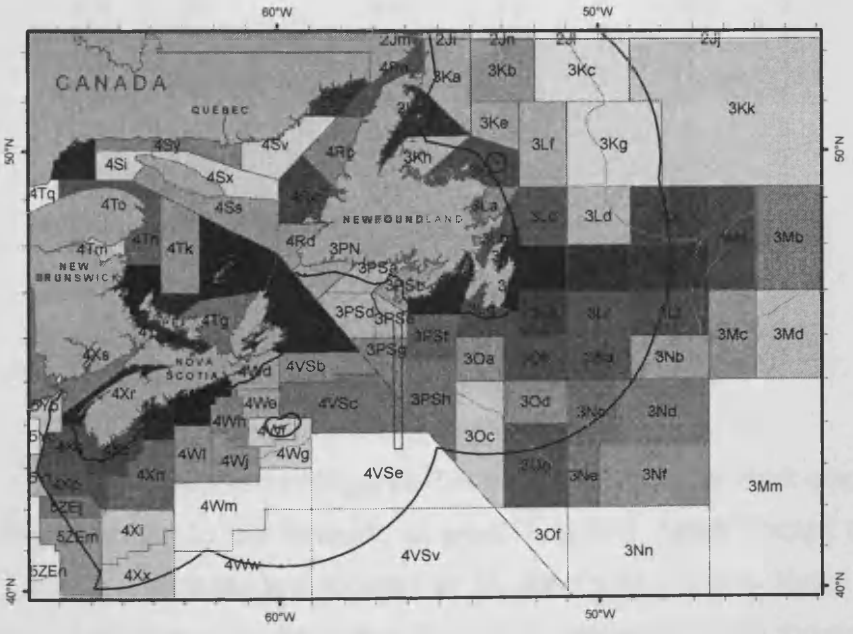


Figure 7-7. DFO PAL Aircraft Patrols By NAFO Area - 2002
Source: Maritime Operations Centre Staff, 2003.

TABLE 7-2

DFO PAL AIRCRAFT PATROLS BY NAFO SUB-AREA - 2002

Area	Flts	Area	Flts	Area	Flts
3Lj	481	4Tn	34	3PN	13
4Wk	324	3PSf	33	3Ke	13
3Lg	355	4Xn	31	3Lf	11
4Tl	235	4Tg	30	3Ka	11
3PSc	215	3Nc	26	3PSe	10
4Tf	131	5ZEj	25	3Kh	10
3Lf	115	4VSb	25	3PSa	9
4VN	110	3PSh	24	3PSd	9
4Xr	106	3Ne	24	3Ld	9
4Sz	105	4Xs	23	5Yf	8
4Xm	103	3Mb	23	2Hd	8
3Kd	99	3Nd	22	3Md	6
4Tj	93	4Wh	21	2Ji	6
3Lh	89	4Sy	21	2Jd	6
3Li	76	4Rb	21	5Yb	5
4Sw	75	3La	21	4Xx	4
3Ls	66	3PSg	20	4Tm	4
4Rc	65	4VSc	19	3Oc	4
3Le	65	4Wl	18	3Kk	4
4Xo	56	3Oa	18	2Je	4
3Ma	54	3Od	18	4Xi	4
3Ki	54	2Jm	18	4Wg	3
3Lq	50	4Wj	17	4Wf	3
3Lb	50	3Nf	17	4Tp	3
3Lt	50	4Tk	16	4Sx	3
4Xq	47	4Ss	16	4Sv	3
3Ob	45	4Rd	16	2Jb	3
4Xp	40	5ZEm	15	4Si	2
4To	40	3Mc	15	3Kg	2
4Ra	40	3Kb	15	2Ja	2
3Oe	40	3PSb	14	3Kc	1
3Lr	40	3Nb	14	2Jn	1
3Lc	40	4We	13	2Jf	1
3Na	35	4Wd	13	2Ha	1

Source: Maritime Operations Centre Staff, 2002.

As was observed in Figures 7-5 and 7-6, there are dark areas depicted in the littorals close to the airfields at which the PAL patrol aircraft are based. In this case, the airfields are located at St John's NL, and in Nova Scotia, at the Halifax International Airport rather than at Greenwood. Thus the data indicate as shift in greater presence east along the coast. This also highlights the difference between CP-140 and PAL post-mission reporting; in the case of PAL, the report indicates all areas in which the aircraft flew, not just the assigned sector.

The areas of high PAL presence to the north and east of Cape Breton Island are surprising, given that the Gulf Region of DFO had only 63 flights assigned to it in 2002. The obvious conclusion is that a large number of the 256 flights allocated to the Maritimes (Scotia-Fundy) Region also overflew areas of the Gulf Region. A random inspection of Scotia Fundy mission printouts for 2002 confirmed this supposition.

7.3.2.3 Spatial Aspect of Marine Traffic

Having determined where the government has placed its aerial surveillance effort in Section 7.3.2.2, the second element of the analysis is a determination of the concentration of marine traffic and activity in Canada's maritime zones.

As articulated in Chapter Two, the security classification associated with the source and nature of the some of the fixed, mobile and space-based sensors constrained what I could use to establish patterns of maritime activity. In light of this, I assessed that PAL aircraft under contract by DFO provided the best level of detailed contact data in an unclassifed format.

For consistency of comparison, what will be presented are PAL surveillance data for the year 2002. The specific data collected were the mission designator, date, time, geographic co-ordinates, vessel name, nationality, and type of vessel. The staff of the Maritime Operations Centre extracted this information from post-mission reports posted to DFO's Surveillance Information System server in St. John's, NL. The next series of figures are both point plots and surface model maps for the year 2002, for the four seasons, and for each month in 2002.

Figure 7-8 is a point plot of all radar contacts detected by PAL lights during the year 2002. The 2002 database from which the figures were drawn contains 20,153 contacts.[268] Contacts that were identified by the PAL aircrews

[268] This figure is not the actual number of contacts that were present in the region in 2002. Many of these contacts would have been detected and recorded by flights on sequential days. What is important is the spatial relationship between these contacts and others recorded on the same

as icebergs, bergy bits, and other non-vessel contacts are not reflected in this or subsequent figures. However, where aircrew were unable to visually identify the contact, or the contact was not exhibiting the characteristics of a vessel, i.e., the radar contact was not showing a course and speed made through the water, the contact was recorded as an "unknown" and is reflected in Figure 7-8, as well as subsequent figures.

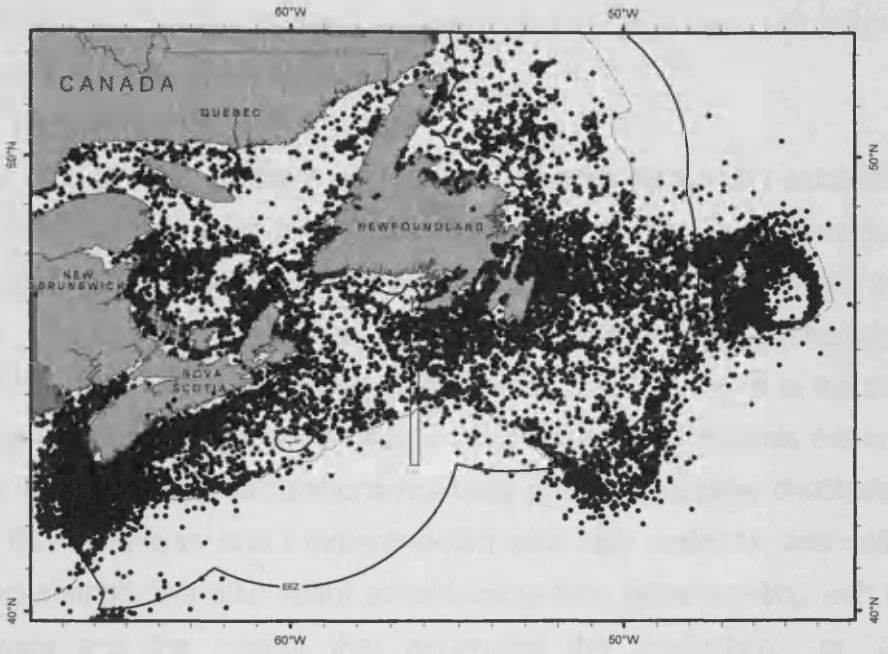


Figure 7-8. Cumulative Vessel Detections by DFO Aircraft - 2002
Source: Maritime Operations Centre Staff, 2003.

Figure 7-8 clearly depicts concentrations of marine activity in the offshore fishery, especially on the Nose and the Tail of the Grand Banks, as well as the Flemish Cap. The inshore fishery is reflected within 100 nautical miles to the southeast of Newfoundland, and the substantial lobster fishery to the south and southwest of Nova Scotia is readily apparent. Another area of concentration shows the inshore fishery in the Gulf of St. Lawrence to the east of New Brunswick and north of PEI. Surprisingly, the merchant vessel traffic lanes through the Gulf of St. Lawrence to the St. Lawrence Seaway are not well defined, although there is a faint pattern of a fine trail of contacts leading southeast of Anticosti Island.

---

day.

Figure 7-9 depicts the same data, but as a surface model rather than a point map. In this case, the surface models are representations of the densities of individual point data. Density plots are useful for showing where point features are concentrated, particularly in cases where a large number of points are clustered in the same location such that the points blend into one another. Surface models were chosen because they allow changes in patterns due to seasons to be seen more readily.

The ArcGIS software allowed two choices for density calculation: simple and kernel. In the case of a simple density calculation, the software sums all of the points that fall within a search area grid cell, then divides the total by the search area size by to arrive at a density value for each cell. The kernel density calculation works the same way except that the points found at the centre of the grid cells are weighted more heavily than those found towards the edges of the cells. Kernel density calculations normally provide smoother distribution plots.[269] The GIS technician and I experimented with both methods, and settled on the kernel method. We also spent considerable time experimenting with the ArcGIS software and the criteria that generated the graduations, or "classes" in greyscale. The aim was to assign criteria that would generate no more than six scales of shading, yet show discernable pattern changes. The reason for this choice was that humans find it difficult to differentiate between more than five or six shades of grey on thematic maps. [270]

The GIS technician and I also experimented with the features that would create the classes of values that would equate to shades of grey. In the end, the natural breaks algorithm was selected, and the criteria adjusted to best display the changes in patterns.

---

[269] A. Stewart Fotheringham, Chris Brunsdon, and Martin Charlton, *Quantitative Geography* (London: Sage Publications, 2000), 45-46;Trevor C. Bailey and Anthony C. Gatrell, *Interactive Spatial Analysis* (Essex: Prentice Hall, 1995), 84-88.

[270] David J. Cuff and Mark T. Mattson, *Thematic Maps: Their Design and Production* (New York: Methuen, 1982), 36-37.

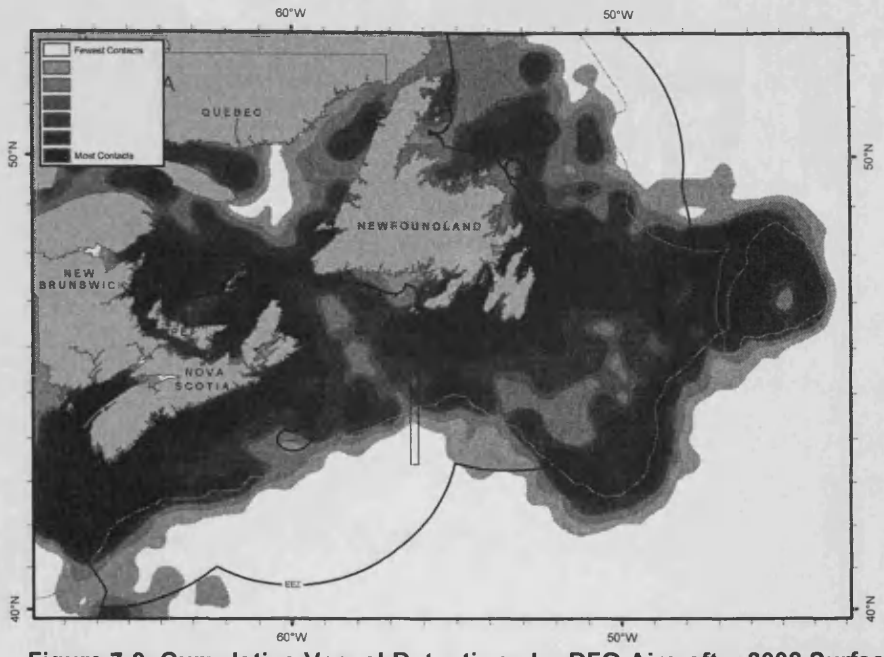


Figure 7-9. Cumulative Vessel Detections by DFO Aircraft - 2002 Surface Model
Source: Maritime Operations Centre Staff, 2003.

Figures 7-10 and 7-11 are two from a series of maps that break down vessel concentrations by month and by season for the year 2002. The complete series are found at Appendix D. The maps in the series are presented as both point plots and surface models. A comparison of the figures will demonstrate how the patterns of vessel concentration change throughout the year. Figures 7-10 and 7-11 were selected because they depict distinct changes in marine activity during the passage of only two months.

Figure 7-10 shows an active inshore fishery in the Gulf of St. Lawrence during April, yet by the end of June this fishery has closed and the only vessel activity of note is the merchant traffic enroute to the St. Lawrence Seaway. The magnitude of activity on the Grand Banks in April is high, but diminishes significantly by June. However the inshore fishery of southwest Nova Scotia remains relatively constant.

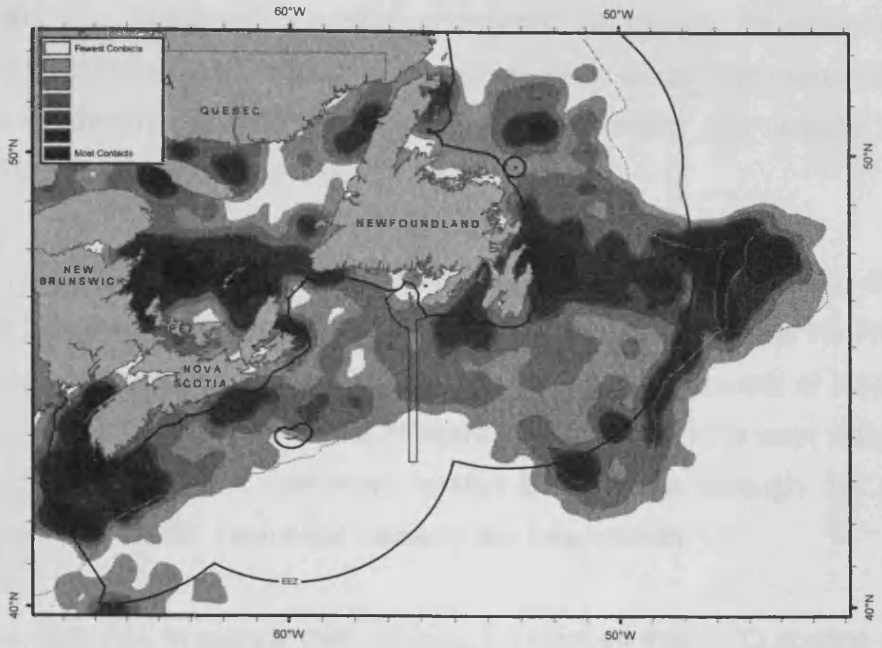


Figure 7-10. Vessel Detections by DFO Aircraft - April 2002 Surface Model
Source: Maritime Operations Centre Staff, 2003.

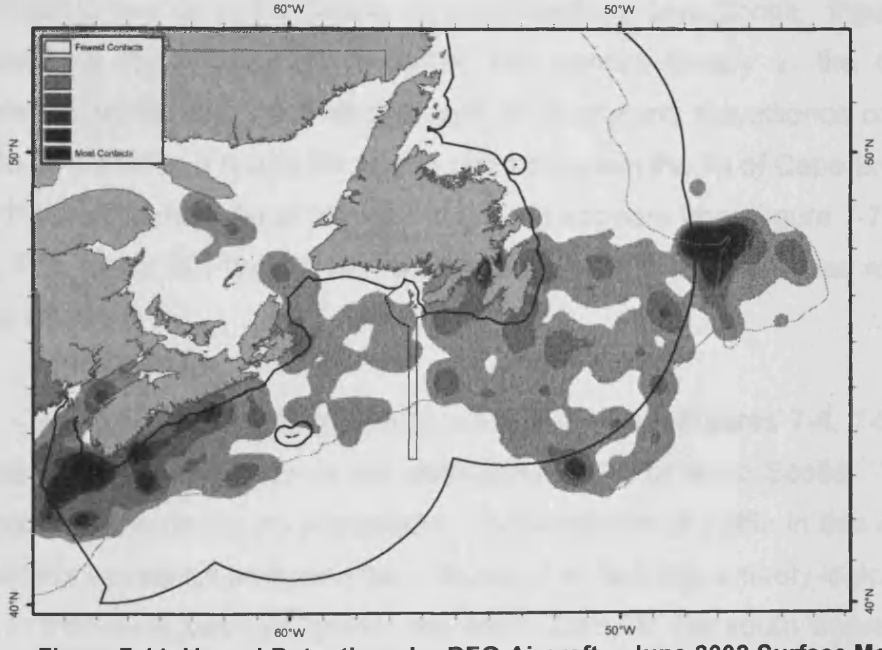


Figure 7-11. Vessel Detections by DFO Aircraft - June 2002 Surface Model
Source: Maritime Operations Centre Staff, 2003.

7.3.3 Comparison of Marine Activity and Government Presence

Having established the federal government's aerial surveillance presence in 2002 as well as where the concentrations of marine activity were located during that time frame, the third element of the analysis will be to determine

whether the government's presence targeted the appropriate areas in Canada's maritime zones. The method to do so will be a visual map comparison with a view to identify patterns of marine activity by month and season against the backdrop of patrol effort for the entire year.

To recap, concentrations of vessel activity occur in the offshore fishery on the Nose and the Tail of the Grand Banks, as well as the Flemish Cap. Inshore fisheries concentrate vessels on the southeast coast of Newfoundland, and to the south and southwest of Nova Scotia, and on the west side of the Gulf of St. Lawrence. The merchant vessel traffic lanes through the Gulf of St. Lawrence to the St. Lawrence Seaway are less distinct.

The PAL presence map, Figure 7-7, shows that DFO spends much of its effort in patrolling the entire Grand Banks and the Flemish Cap. PAL also has a moderate presence in the fishery of southwestern Nova Scotia. Figure 7-7 also suggests a focus of effort to patrol the inshore fishery in the Gulf of St. Lawrence, which has the added benefit of conducting surveillance on merchant traffic as it passes through the choke point between the tip of Cape Breton Island ant the southwestern tip of Newfoundland. It appears from Figure 7-7 that few, if any, PAL flights are tasked with patrols beyond 100 nautical miles southeast of Nova Scotia.

All three of the military aerial presence maps (Figures 7-4, 7-5, and 7-6) depict a greater presence to the immediate south of Nova Scotia. The vessel detection maps depict no substantive concentration of traffic in this area. Why would this increased presence be indicated? In fact, it is entirely logical because it is in the naval exercise areas, the MARLOAs, to the south where the Navy conducts its main training exercises that integrate naval surface and sub-surface forces with naval aviation and long-range maritime patrol. As such, to support these exercises, CP-140 Aurora aircraft would be expected to fly in these MARLOAs frequently.

Figures 7-4, 7-5, and 7-6 also show a moderate level of military presence

south and southeast of Cape Breton Island in the approaches to Cabot Strait. This is the result of collaborative surveillance planning between DND and DFO staff. DFO PAL flights tend to focus on areas where fishing activity is located, and tend to overfly the approaches to Cabot Strait less frequently. DND surveillance planners recognise this, and task CP-140 flights to patrol the areas in which merchant vessels are converging to enter the gateway to the St. Lawrence Seaway. The three figures also depict military aerial presence along the entire southeastern coast of Nova Scotia.

The comparison of concentration of vessels to patrol presence suggests that, on the whole, the two main departments with surveillance mandates are tasking their assets to monitor the areas that demand the most attention. However, acknowledging the fact that the vessel concentration maps are based on data collected from actual missions flown, it is possible that there are concentrations of activity in areas over which no PAL aircraft were tasked to fly. The area of concern is directly south and southwest of Sable Island. Indeed, military surveillance aircraft did fly in this overall area; there is no standing or seasonal fishery in this area, and CP-140 aircraft reported widely dispersed merchant traffic and infrequent sword-fishing vessels that tend to follow linear depth contours rather than congregate in specific areas. This contact data could not be parsed efficiently from the classified RMP for the purposes of this thesis.

As further confirmation of the relatively light amount of traffic south of Sable Island, one can review a study commissioned by DFO in 2002 to determine merchant vessel activity, patterns and trends in Canada's Atlantic region. The study produced vessel movement transect and density maps for 1990, 1995, and 2000 that were based on RMP data compiled by Maritime Forces Atlantic from a variety of public sources. Figure 7-12 is representative of the inbound and outbound transect maps that show that the majority of the merchant traffic is dispersed beyond 100 nautical miles of the Nova Scotia coast (and beyond Sable Island). The figure shows that the traffic tends to follow the coastline as it converges to round Cape Breton Island to enter the Gulf of St. Lawrence. This area is well patrolled by CP-140 Auroras, and to a lesser extent,

by PAL aircraft.

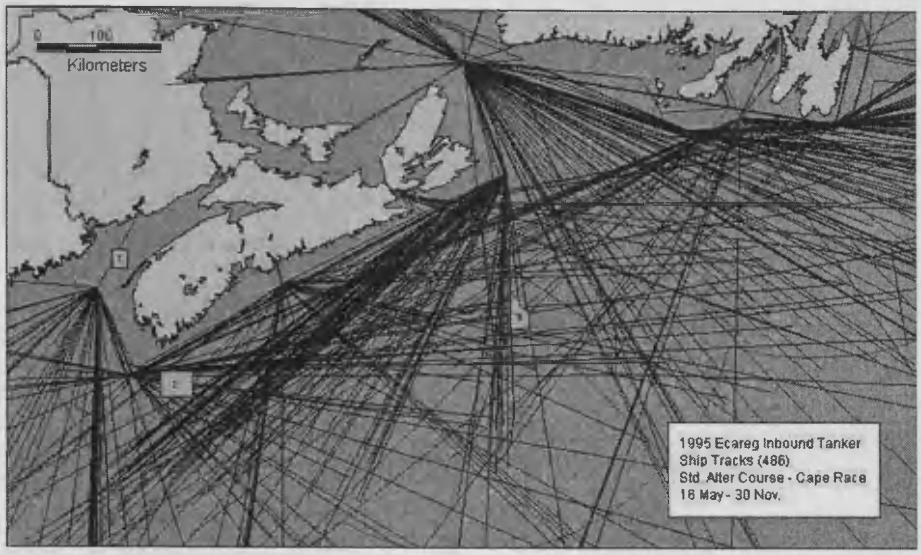


Figure 7-12. Merchant Traffic Inbound to Atlantic Canada – 1995 Filtered
Source: Bernard Kelly, *Marine Commercial Vessel Traffic Activity in Canada's Atlantic Region*, Geocentric Mapping Consulting, June 2002.

7.3.4 Other Contribution to Maritime Domain Awareness

7.3.4.1 Canadian Maritime Network

The Canadian Maritime Network (CANMARNET) is an unclassified but restricted, Canadian government interdepartmental computer system for sharing maritime operational information. Its genesis was the 1990 Osbaldeston Report that recommended that a means to facilitate greater information sharing between departments be established. The CANMARNET system was developed as a prototype in 1994, and originally linked Maritime Forces Atlantic Headquarters, Fisheries and Oceans regional office in St John's NL, and the Coast Guard offices in Dartmouth, NS. The system was configured to link several different departments through dial-up connections employing Internet web technology. At present, the CANMARNET is hosted on the Government Enterprise Network (GNet) and is protected by firewalls and password controls. Dial-up access remains for users without access to the GNet. The network consists of a collection of E-mail, Web/HTML, databases, and file servers hosted by DND at Maritime Forces Atlantic Headquarters. Although CANMARNET was conceived for the benefit of all government departments, it was and remains the Navy that

provides the funding and human resources to allow the system to continue to operate.

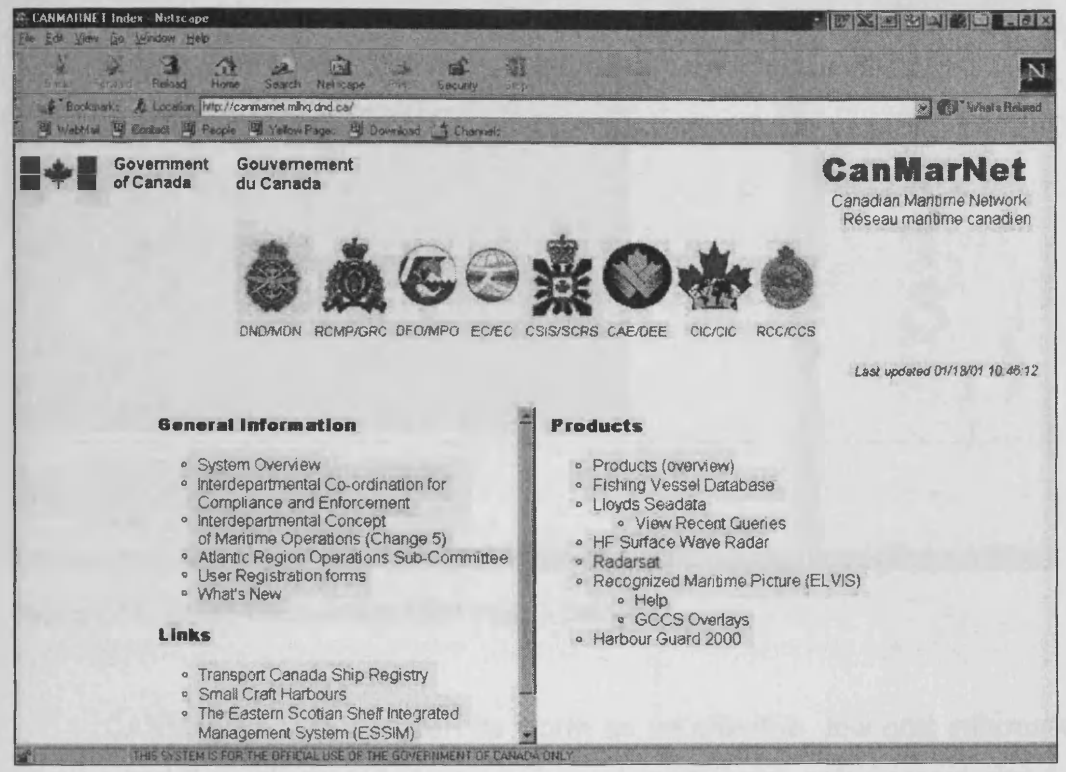


Figure 7-13. CANMARNET Home Page in August 2001

The CANMARNET system has evolved to include well over 100 users, representing all departments in the Atlantic region with maritime interests, as well as selected offices in the nation's capital and elsewhere in Canada. At present, the network hosts information and databases from several government departments such as DFO's Fishing Vessel and Small Craft Harbours databases, Transport Canada's Ship Registry, and MARLANT's Merchant Ship Database. As well, concerned OGDs can submit via CANMARNET email reports of ship movements. These reports are captured and displayed on the Enhanced Link Virtual Information System (ELVIS). This provides an unclassified portion of the RMP that is releasable to all government departments that are connected to CANMARNET.

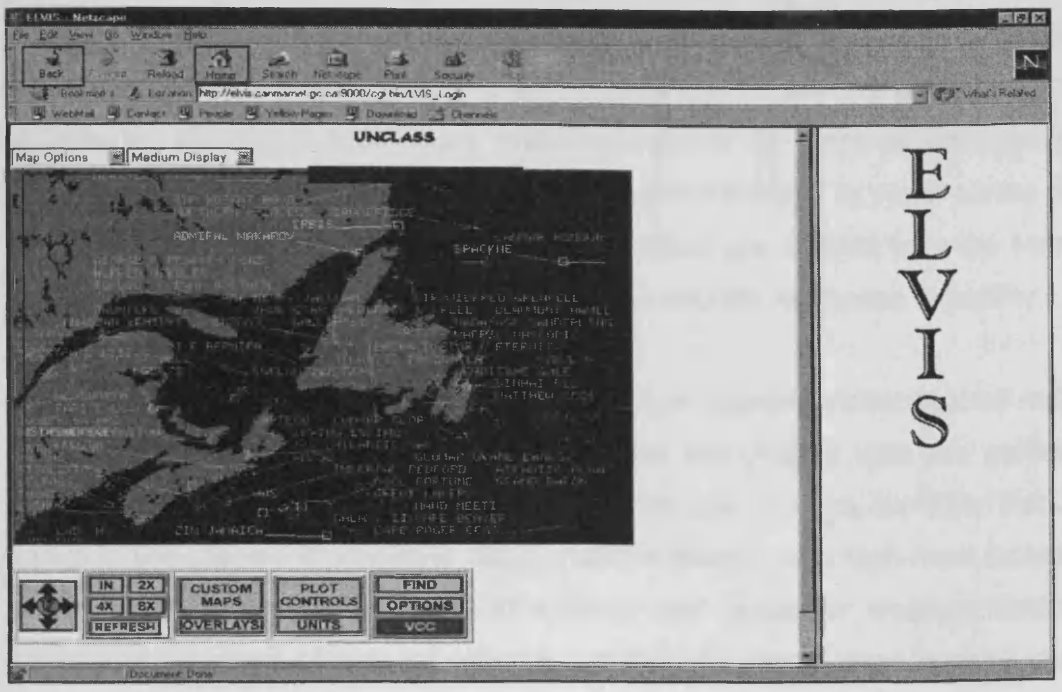


Figure 7-14. ELVIS Unclassified RMP Page – 2001

CANMARNET has proven its worth as an effective, low cost information-sharing tool through repeated use in inter-departmental enforcement and SAR operations. However, security challenges and low data rates continue to be seen as limitations to the system.

7.3.4.2 Route Survey

Marine domain awareness is three-dimensional requiring analysis of the aerospace, sea surface, and undersea environments. So far the discussion has revolved around the surveillance patrol effort, and collection and sharing of data at the surface of the water and, to some degree, in the super-adjacent airspace. What is left for discussion is the underwater dimension.

Some defence analysts have been critical of the Canadian Navy's decision to maintain an anti-submarine warfare capability, with its inherent requirement for sophisticated patrol aircraft, ships, submarines and ship-borne helicopters. However, it is precisely this capability that enables, with the assistance and support of allies, the Navy to monitor and control the sub-surface

portion of Canada's maritime zones. In Canada, only the military has this mandate, and only the military has capability to execute it. While anti-submarine warfare is clearly a defence rather than security task, there is another aspect of underwater situational awareness that implications for maritime enforcement. The Navy exercises seabed monitoring and control through its route survey and seabed intervention capabilities. These capabilities are derived from the Navy's mandate to maintain a limited but credible mine counter measures capability.

Route survey enables the Navy to produce highly-detailed seabed maps. These map are produced in stages. Detailed bathymetric data are gathered initially on a specific area, usually by Fisheries and Oceans Canada, then an image of the seabed is produced using multiple sweeps of a high-resolution side scan sonar system towed astern of a minor war vessel or locally contracted small craft. Seabed objects of interest can then be investigated in detail using the Navy's remotely-operated vehicles (ROV) or clearance divers. The information gathered during these stages is fused together to produce the map. This process is repeated periodically for the area, the frequency of repetition determined by threat level, so that changes to the seabed can be detected. Although the Navy is interested primarily in monitoring the seabed for mine warfare purposes, the route survey capability can contribute to marine domain awareness in other ways. Unclassified seabed data is shared with other government departments and route survey and ROVs have been used for disaster response, such as the search for the downed Swiss Air Flight 111, as well as support to law enforcement.

Route survey has attained greater visibility since the asymmetric terrorist attacks of 9/11. The maritime security concern is that of naval mines. Almost any vessel can lay these explosive devices, and it only takes the threat of one mine to tie up vast mine clearance resources to ensure safe passage of marine traffic Even if terrorists can not obtain sophisticated naval mines, crude mines are easily fabricated. Mining can cause loss of life and economic disruption far out of proportion to the resources invested in the mines. Consider economic and public confidence impact of a cruise ship in the St. Lawrence Seaway that strikes

a mine. Due to Canadian and American co-dependence on certain coastal and inshore seaways, Canada and the United States since 9/11 have embarked on a co-operative route survey effort for shared and adjacent waters. Segments of the St Lawrence Seaway system, which traditionally had been considered safe, have recently been surveyed as part of this effort.

7.4 Summary

Modern navies fulfill three main roles is support of government objectives. These are the military, diplomatic, and policing roles. The military role is a navy's *raison d'être*; the ability to apply coercive force in concert with a navy's military character is what enables it to achieve the other two roles. Moreover, it is the capacity to bring force to bear that is what differentiates the Navy from other departments with enforcement mandates. As more and more maritime claims are extended throughout the world, the policing role for navies is becoming of increasing importance to coastal states.

Canadian naval policy identifies six functions that its Navy should expect to execute in fulfillment of the constabulary role. These functions are sovereignty patrols, Aid of the Civil Power, assistance to other government departments, search and rescue, disaster relief, and oceans management. The Canadian Navy's operations fulfill all of these mandates; this chapter highlighted the Navy's contribution to maritime domain awareness. Domain awareness, which incorporates the presence element of sovereignty, also demands co-operation and assistance to other government departments through sharing of data and intelligence. The Navy's contribution to maritime enforcement is also a contribution to oceans management.

The Canadian Navy was engaged in developing maritime domain awareness long before the terrorist attacks of 9/11 or the promulgation of the National Security Policy in 2004. Canadian defence policy required that the Navy be capable of monitoring activity in Canada's maritime zones for the purposes of national defence. In order to meet this obligation, the Navy established coastal surveillance centres, and became the *de facto* lead for

development of maritime domain awareness. This occurred because other government departments with maritime surveillance interests carried out their monitoring efforts in isolation from each other. Only the Navy attempted to integrate the data, information, and intelligence from all sources. The operational and technical contribution to the recognised maritime picture by the Navy is significant. The Navy facilitates co-ordination of all of government maritime surveillance planning through the Marine Security Operations Centres, and provides the backbone for electronic information sharing systems such as the Canadian Maritime Network.

The two key departments with surveillance mandates, DND and DFO, expend considerable resources to achieve aerial presence in the Canadian maritime zones and approaches. When the presence of military and DFO maritime patrol aircraft is estimated and presented in a spatial context, and then compared against the concentrations of marine vessel activity, one concludes that the government surveillance effort is directed to the areas of greatest interest for maritime enforcement and sovereignty protection.

The next chapter will examine the patrol and response aspect of the constabulary role, with emphasis on assessing the Navy's role in maritime search and rescue and assistance to other government departments in the form of fisheries patrols.

Chapter Eight
NAVAL CONTRIBUTION TO PATROL AND RESPONSE

8.1 Introduction

The previous chapter identified the Navy's role in both contributing to the recognised maritime picture as well as being a crucial enabler of whole of government maritime domain awareness. The purpose of this chapter is to examine the Navy's contribution to maritime enforcement in the context of patrol and response activities.

The chapter opens with a discussion of the structure of the search and rescue system in Canada, with reference to the resources assigned to the Atlantic region. This is followed by an examination of the spatial distribution of SAR incidents, an analysis of SAR operations in the year 2002, and how the Department of National Defence contributed to that SAR mission.

Next, the Navy's support to fisheries enforcement through patrol activities is examined. An analysis of patrol patterns is offered, as well as spatial analyses of at-sea inspection data. The chapter closes with a synopsis of the naval enforcement patrol effort.

8.2 Contribution to Search and Rescue

In all locations on the globe, the activities of work and recreation often produce situations in which individuals find themselves in distress. In urban areas, this assistance is normally provided by municipal emergency services. However, beyond the populated areas, it normally the remit of government agencies to perform these search and rescue activities, the objective of which is to prevent loss of life and injury. Incidents that generate the need for rescue occur on land, on the water, or in the air. In broad terms, search and rescue is broken into these three categories, each referring to the medium in which the incident is initiated: ground SAR, marine SAR, and aeronautical SAR. In many cases there will be an obvious overlap; for example, an aeronautical incident will eventually become either a marine ground SAR incident depending upon the geographic location of an aircraft when the effects of gravity are fully

realized.

8.2.1 Search and Rescue Structure in Canada

Coverage for SAR in Canada includes the nation's landmass, and extends approximately 1,000 nautical miles into the Atlantic, 800 nautical miles into the Pacific, and north to the North Pole. Under Canada's constitutional arrangements, coastal and ocean search and rescue has been assumed by the federal government, and inland ground and water searches are the responsibility of provincial and territorial governments.

There are six federal departments or agencies involved in SAR response. These are the Department of National Defence, Environment Canada (Meteorological Service of Canada), Fisheries and Oceans Canada (Canadian Coast Guard), Parks Canada Agency, Royal Canadian Mounted Police, and Transport Canada.

Ground SAR is treated differently the other two categories of SAR, and is the responsibility of individual provinces and territories. Operational authority for ground SAR is delegated to the RCMP everywhere except Ontario, Quebec, and parts of Newfoundland and Labrador. In those provinces, the provincial police forces have operational authority, and the operational response is normally delegated to the police service of the jurisdiction in which the ground SAR incident has occurred. The Canadian Navy plays no real role in ground SAR; accordingly, only marine and aeronautical SAR will be examined further.

In Canada, the federal government is the authority for marine and aeronautical SAR. This responsibility was conferred first upon the Royal Canadian Air Force in 1947. Later, in 1976, the Minister of National Defence was designated as the Lead Minister for SAR (LM-SAR). Cabinet reconfirmed this appointment in 1982 and again in 1986.[271] In 1986, the federal government established the National SAR Program to co-ordinate, promote, and review the activities of departments and agencies that deliver SAR services, with the

[271] Canada, Department of National Defence/Fisheries and Oceans Canada,B-GA-209-001/FP-001 DFO 5449, *National Search and Rescue Manual* (Ottawa, May 2000), Ch. 1, p. 4.

overall aim of improving SAR prevention and response. The focus of the National SAR Program is on research, provision of information, application of technology, and saving of lives through prevention of SAR incidents.[272]

There are two independent bodies that provide advice to the Lead Minister for SAR. The first of these is the Interdepartmental Committee on SAR (ICSAR), made up of senior officials representing departments and central agencies that execute the National SAR Program. The Committee facilitates interdepartmental co-ordination, and is the primary forum for development of advice to the LM-SAR in the areas of SAR policy and planning.[273]

The second is an independent body outside of the departmental line authorities for SAR delivery. This body is the National SAR Secretariat (NSS), and it serves to co-ordinate, promote and review the National Search and Rescue Program among federal authorities, and to develop and standardize provincial and territorial SAR service.[274]

Under the federal SAR structure, DND is required to provide the aircraft and aeronautical services for SAR. Although DND has overall responsibility for marine and aeronautical SAR, the Canadian Coast Guard component of Fisheries and Oceans Canada is responsible under the *Oceans Act* to co-ordinate maritime search and rescue with DND, and is responsible for the provision of the maritime component of the federal SAR program. Moreover, within the joint rescue co-ordination centres (RCC), military and CCG personnel operate together as a team to co-ordinate and control marine and aeronautical SAR responses.

The Commander of a Search and Rescue Region (SRR) is appointed to co-ordinate, control and conduct SAR operations within his SRR. These SRRs

---

[272] Canada, National Search and Rescue Secretariat, *Who We Are: National Search and Rescue Secretariat*, 9 September 2007 <http://www.nss.gc.ca/site/whoWeAre/nssorg_e.asp> (27 December 2007).
[273] Canada, National Search and Rescue Secretariat, *Who We Are: International Committee on Search and Rescue*, 6 July 2007 <http://www.nss.gc.ca/site/whoWeAre/icsar_e.asp> (27 December 2007).
[274] National SAR Secretariat, *Who We Are: National Search and Rescue Secretariat*, 9

are established in accordance with the International Maritime Organization (IMO) and International Civil Aviation Organization (ICAO) agreements. In Canada, there are three SRRs: Victoria, Trenton, and Halifax. The SRR Commander may appoint a Senior Military Officer to oversee on his behalf the Officer-in-Charge of the Joint Rescue Co-ordination Centre.[275]

Smaller maritime rescue sub-centres (MRSC) have been established in the Halifax SRR to reduce the JRCC's workload and to maximize local knowledge and resources for SAR response.[276] MRSC St. John's is responsible for an area 200 nautical miles adjacent to Newfoundland and Labrador, and MRSC Québec is responsible for an area that includes the St Lawrence River and the northern Gulf of St. Lawrence. These two centres report to Halifax and Trenton respectively.

Within DND, responsibility for the execution of SAR rests with the Commander, Canada Command. The Chief of the Air Staff (CAS) is responsible for providing search and rescue aircraft to the Commander, Canada Command to whom all of the SRR Commanders report. The CAS also is responsible for strategic SAR policy within DND, liaison with the National SAR Secretariat, providing a DND representative to ISCAR, and liaison with other national and international SAR departments. A simplified organization chart depicts these relationships at Figure 8-1.

September 2007.

[275] The researcher exercised the duties of Senior Military Officer for the Halifax SRR from July 2001 to August 2003.

[276] Figures 3-9 and 3-10 in Chapter Three depict the SRRs and MRSCs in the Atlantic region.

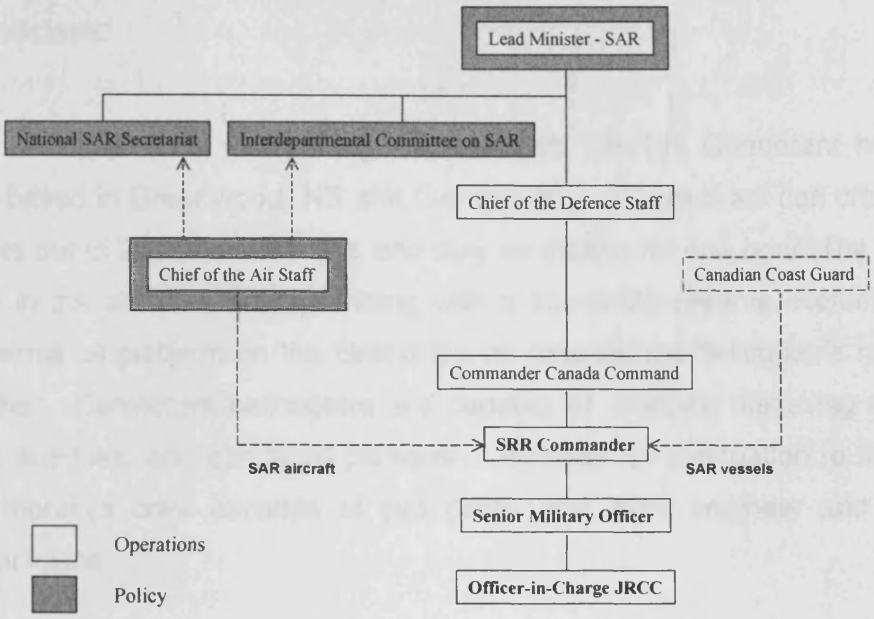


Figure 8-1. Search and Rescue Structure within DND

8.2.2 Search and Rescue Resources

For maritime SAR, both air and marine resources are designated as primary and secondary SAR assets. In the case of air resources in the Halifax SRR, primary resources are one helicopter each at the two SAR squadrons in the Atlantic region, holding at 30-minute response times during normal working hours, and two hours notice during quiet hours. Secondary air assets are all federal government aircraft available for tasking, such as military CP-140 Aurora long range patrol aircraft and ship-borne Sea King helicopters, as well as CCG, RCMP, DFO, and TC aircraft, in addition to the resources of the Civil Air Search and Rescue Association (CASARA).

The primary fixed wing SAR aircraft is the CC-130 Hercules transport plane. Based in Greenwood, NS, and Trenton, Ontario, a Hercules can cruise at 300 knots out to 3,600 nautical miles and stay in the air for 12 hours. This aircraft is used for localization of persons in distress in a large area, and can parachute drop lifesaving equipment such as rafts, other supplies, and SAR personnel. The Hercules has no capability to rescue persons who have been located. The Hercules' SAR crew consists of two

pilots, a navigator, a flight engineer, a load master and two SAR technicians.

The primary rotary wing SAR aircraft, CH-149 Cormorant helicopters, are based in Greenwood, NS and Gander, NL. A Cormorant can cruise at 130 knots out to 200 nautical miles and stay on station for one hour. The helicopter can in the air for 6 hours, landing with a 30-minute reserve. Refueling at the Hibernia oil platform on the Grand Banks extends the helicopter's range even farther. Cormorant helicopters are capable of dropping lifesaving equipment and supplies, and can hoist persons in distress for evacuation to safety. The Cormorant's crew consists of two pilots, one flight engineer and two SAR technicians.

The CH-146 Griffon helicopters based in Gander, NL are also an often used SAR resource. The Griffon's main missions are to support the Army as tactical troop transports, and as SAR support to the Air Force's F-18 fighter squadrons. Griffons are tasked routinely to respond to any SAR incident. In its SAR configuration, a Griffon's crew consists of two pilots, one flight engineer and one SAR technician.

Although not designated as primary SAR assets, CP-140 Aurora maritime patrol aircraft respond to SAR incidents, and are capable of dropping life-saving equipment, marking the location of a persons in distress, and co-ordinating the arrival of other SAR assets to the scene.

On the water, primary marine SAR resources are CCG lifeboats and CCG ships multi-tasked to SAR duties that are on a 30-minute standby posture. Secondary marine assets include all vessels of the federal government that are not specifically dedicated to SAR, but which may be tasked to aid in the resolution of a SAR incident. Usually these are naval and DFO/CCG vessels, and boats of the Canadian Coast Guard Auxiliary.

The primary marine SAR vessels in the Halifax SRR are five large CCG

cutters (over 180 feet), nine 16-metre Arun lifeboats, eight 14-metre lifeboats, and nine 8-metre inshore rescue boats. The disposition of the cutters is normally one in the Gulf of St. Lawrence, one to the east and one to the south of Nova Scotia, and two to the east of Newfoundland. The lifeboats are based in various locations around the region to provide minimal gaps in SAR coverage as depicted in Figure 8-2. The inshore rescue boats are based in the Newfoundland communities of Notre Dame Bay, Conception Bay, Bonavista Bay, and the Nova Scotian communities of Pictou, Mahone Bay, Halifax. There are also inshore rescue boats in Saint John and Shediac New Brunswick, and Charlottetown, PEI. The circles in Figure 8-2 represent the approximate range of the vessels from their home bases.

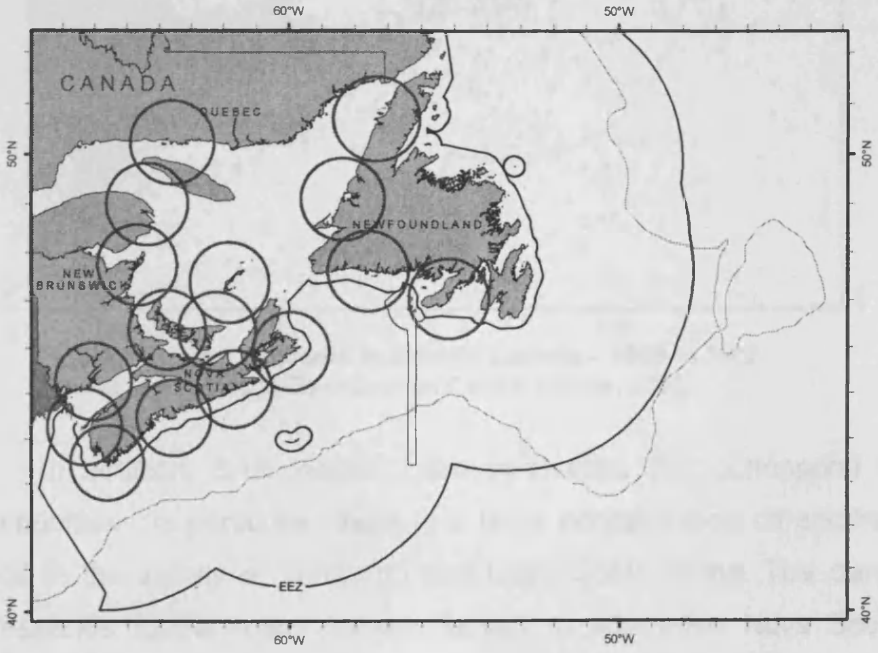


Figure 8.2. Coast Guard Lifeboat Locations – Atlantic Region
Source: Joint Rescue Co-ordination Centre Halifax, 2007.

8.2.3 Search and Rescue Activity Results

Having reviewed the SAR structure and resources allocated to the Halifax SRR, the next several paragraphs will examine the region's SAR incidents in a spatial context.

8.2.3.1 Spatial Aspect of Search and Rescue Support

Figure 8-3 is a point plot that shows the distribution of all categories of

SAR incidents in Atlantic Canada in during the period 1999-2002. Visually inspecting the map, one sees that the majority of the incidents appear to be very close to the coasts of all of the Maritime provinces, and the incidents disperse farther away from the coastline.

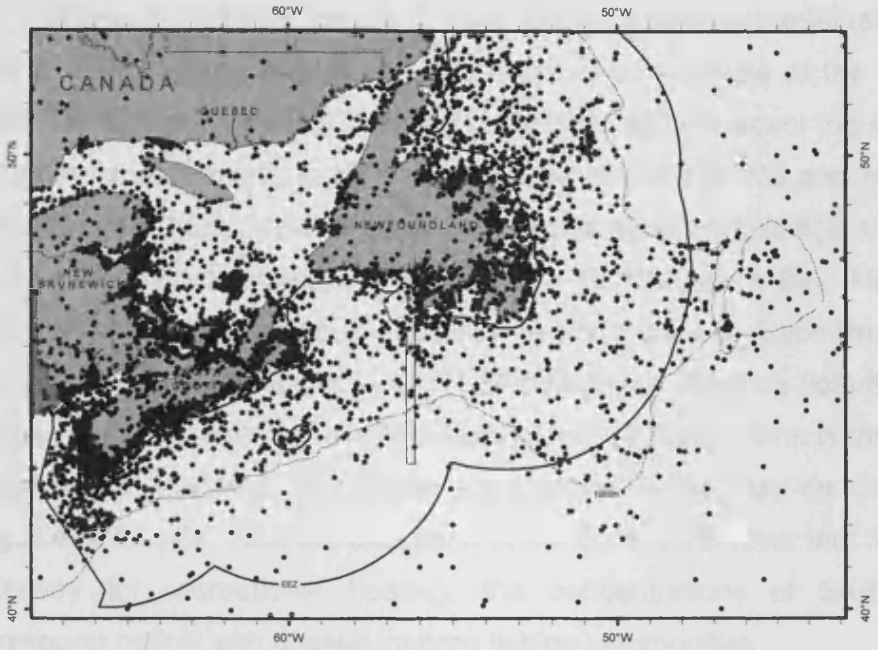


Figure 8-3. SAR Incidents in Atlantic Canada – 1999 to 2002
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

In addition, SAR incidents are in clusters that correspond to coastal communities. In particular, there is a large concentration off southwest Nova Scotia in the vicinity of Yarmouth and Cape Sable Island. This dense cluster corresponds to the major lobster fishery in southwest Nova Scotia. Other concentrations appear along the NS, PEI and eastern NB coastlines and the Magdelene Islands. Again, these clusters are associated with fishing communities. There are small concentrations of SAR incidents on the east coast of Newfoundland that correspond with the inshore fishery there but, surprisingly, there are very few incidents in comparison to Nova Scotia. In the waters off of Newfoundland, there are relatively few incidents that appear beyond the Canadian EEZ and, in particular, the Grand Banks. This is intriguing because there was considerable fishing activity on the Grand Banks, but it has not caused a corresponding number of SAR incidents. The most likely explanation is that the fishing vessels that ply the Grand Banks tend to be

larger ocean-going trawlers from foreign nations rather than the much smaller Canadian inshore fishery vessels. The smaller vessels that fish inside of the Canadian EEZ are more susceptible to the effects of the rough sea states common in the continental shelf waters of the North Atlantic.

Figure 8-4 depicts the same data, but as a surface model rather than a point plot. This figure and provides a much clearer picture of the "hot spots" where the concentrations of SAR incidents have occurred over the period. The concentrations correlate to the general coastline of NS, NB and in particular Yarmouth and Cape Sable Island. Also more apparent in this figure than in the point plot are concentrations of incidents in St. Margaret's Bay, Mahone Bay and Halifax, as well as Sydney, Louisbourg and Canso on Cape Breton Island. There is also concentrations in the Northumberland Strait on both the NS and southern PEI coastline. In New Brunswick, the Saint John River is the source of a number of incidents, and there are clusters in the Bay de Chaleur and Magdalene Islands. With the exception of the Saint John River that is a popular waterway for recreational boating, the concentrations of SAR incidents correspond mainly with coastal inshore fishing communities.

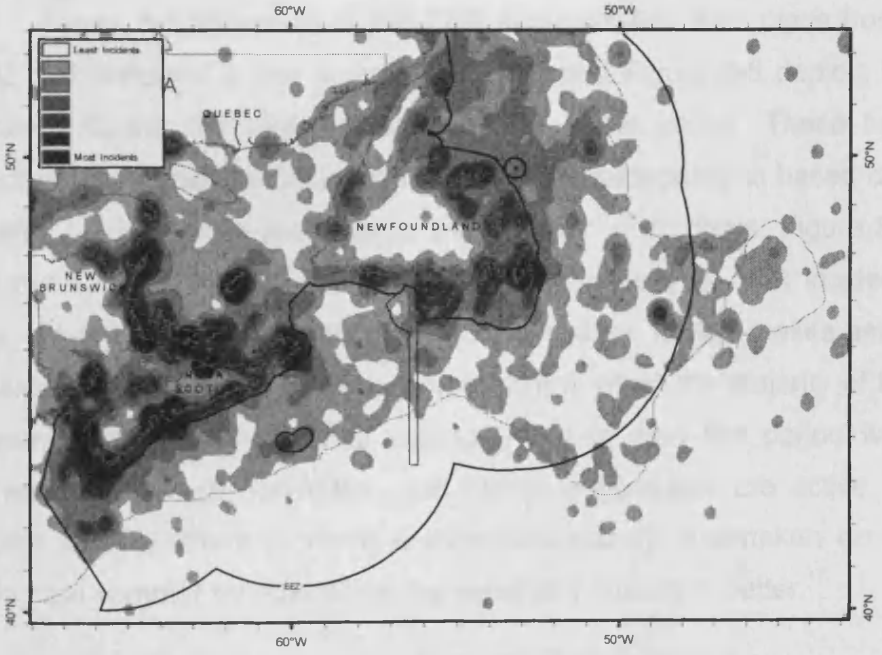


Figure 8-4. SAR Incidents – 1999 to 2002 Surface Model
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

Maps containing point data for each individual year 1999, 2000, 2001, and 2002 were examined to determine whether there are changes in incident pattern by year. Visual inspection shows essentially the same pattern of clusters year after year, and there don't appear to be any major differences based upon a specific year. SAR incidents broken down by year are found at Appendix E, Figures E-3, E-4, E-5, and E-6.

The corresponding surface models for each year are found at Figures E-7, E-8, E-9, and E-6-10. The surface models do not reveal any discernable change in pattern on yearly basis.

Figures 8-5 and 8-6 are point data maps that show search and rescue incidents by season. For the purpose of this study, summer is defined as the months of June, July, and August. The months of September, October and November constitute the fall season. December, January and February are winter. The spring season is made up of the remaining months of March, April and May.

Figure 8-5 shows all of the SAR incidents that took place from 1999 to 2002 that occurred in the summer months, and Figure 8-6 depicts those that occurred during the winter months of the same period. These two figures effectively demonstrate differences in SAR incident patterns based on season. Clearly, by the simple measure of the number of incidents, Figure 8-5 shows that the summer months are when the vast majority of SAR incidents occur. This is fairly obvious by looking at the point data. It also makes sense if one considers that it is during the summer months when the majority of the fishing seasons are open in Atlantic Canada, and is also the period when most recreational boaters, kayakers, and canoe enthusiasts are active. To some degree as well, there is more commercial activity undertaken on the water during the summer months when the weather normally is better.

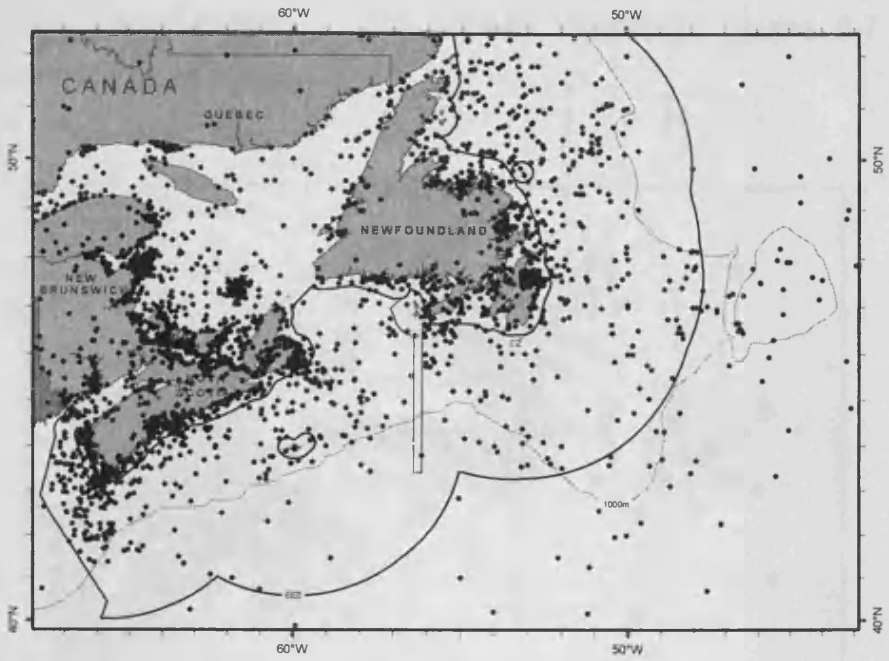


Figure 8-5. SAR Incidents 1999-2002 – Summer Months
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

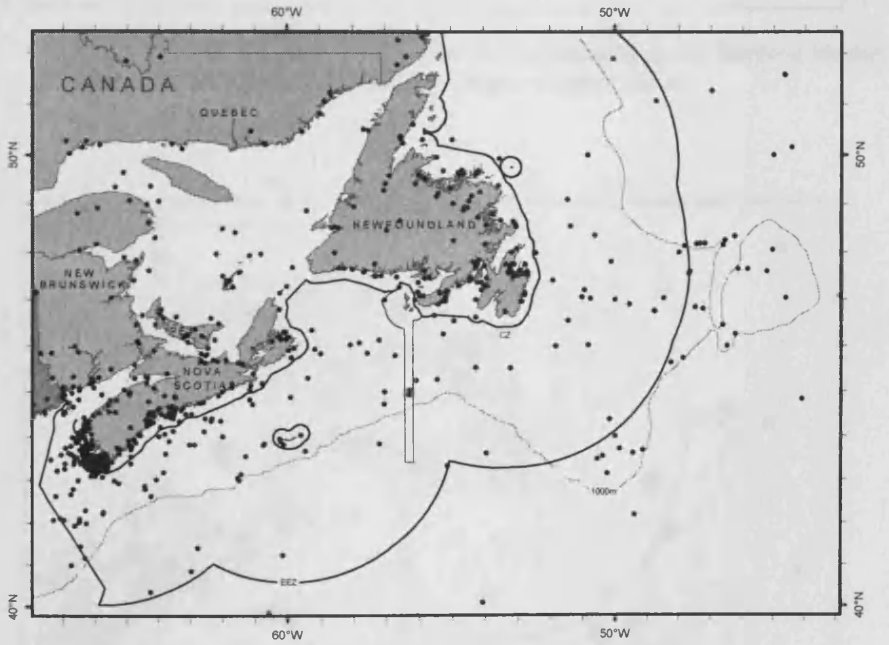


Figure 8-6. SAR Incidents 1999-2002 – Winter Months
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

The point data concentration in Figure 8-6 shows that during the winter months there are far fewer incidents, and there appears to be only one major

concentration, that being the Yarmouth area with minor clusters of incidents occurring off of Halifax. The surface models in Figures 8-7 and 8-8 corroborates these findings.

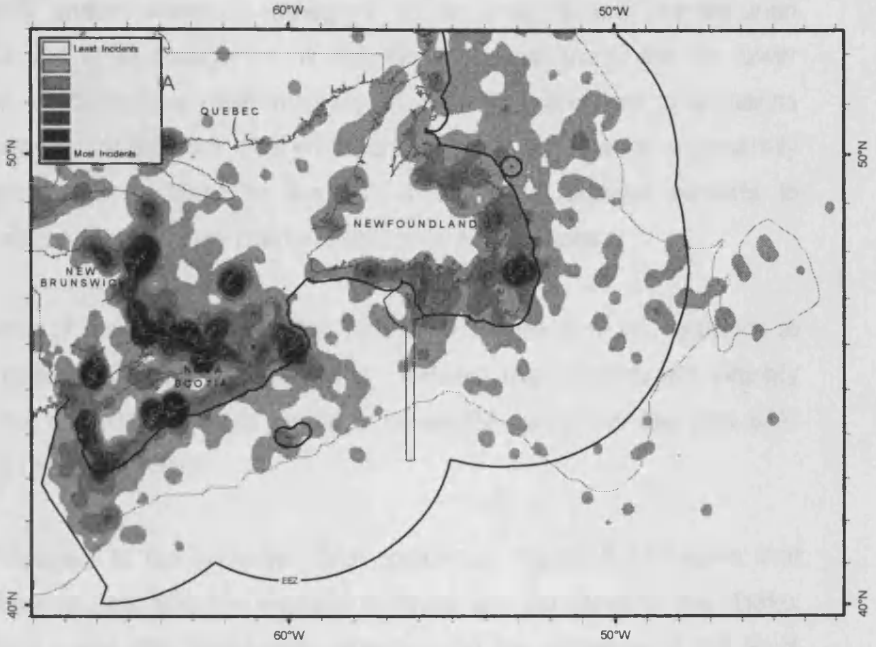


Figure 8-7. SAR Incidents 1999-2002 – Summer Months Surface Model
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

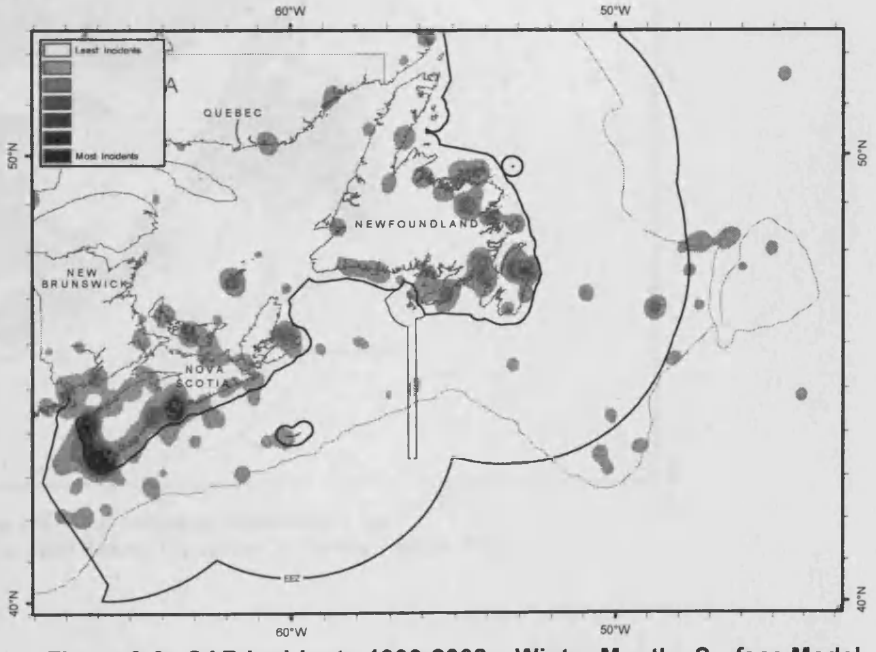


Figure 8-8. SAR Incidents 1999-2002 – Winter Months Surface Model
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

Figures 8-9, 8-10, and 8-11 depict the search and rescue incidents for 1999 to 2002 broken down by category of air, marine and humanitarian incident. Of the three categories, it can be seen that there are far fewer humanitarian incidents; the clear majority of SAR incidents are of a marine origin. In terms of air incident concentrations, Figure 8-9 reveals a generally random pattern with clusters at the St. John's, and Gander Airports in Newfoundland, and the Sydney Halifax Airports in Nova Scotia.

In terms of marine incidents, the pattern in Figure 8-10 corresponds to the overall pattern depicted in Figure 8-3. Indeed, the patterns are virtually identical. This correlation makes sense because 84 percent of the total SAR incidents are marine in origin.

With respect to humanitarian SAR incidents, Figure 8-11 shows that there are fewer at sea, and the majority of these are clustered in the Halifax and St. John's areas, the Magdalene Islands, and the entrance of the Saint John River in New Brunswick.

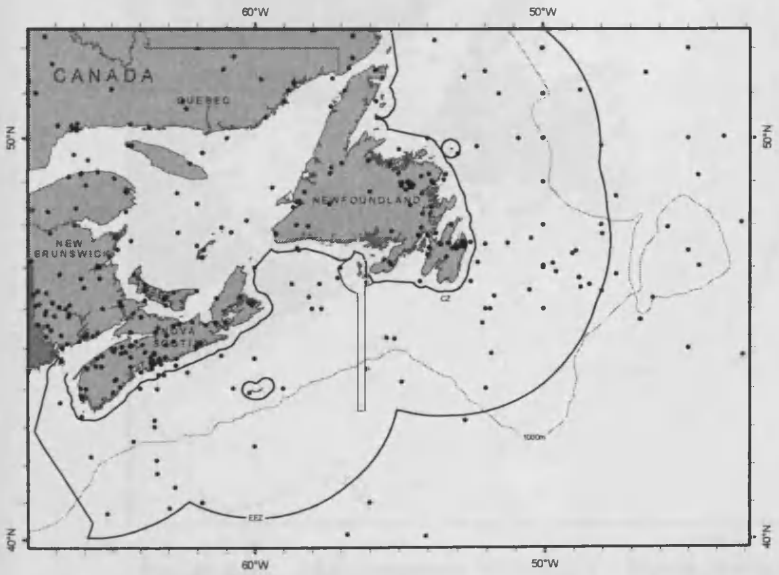


Figure 8-9. SAR Incidents 1999-2002 – Air
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

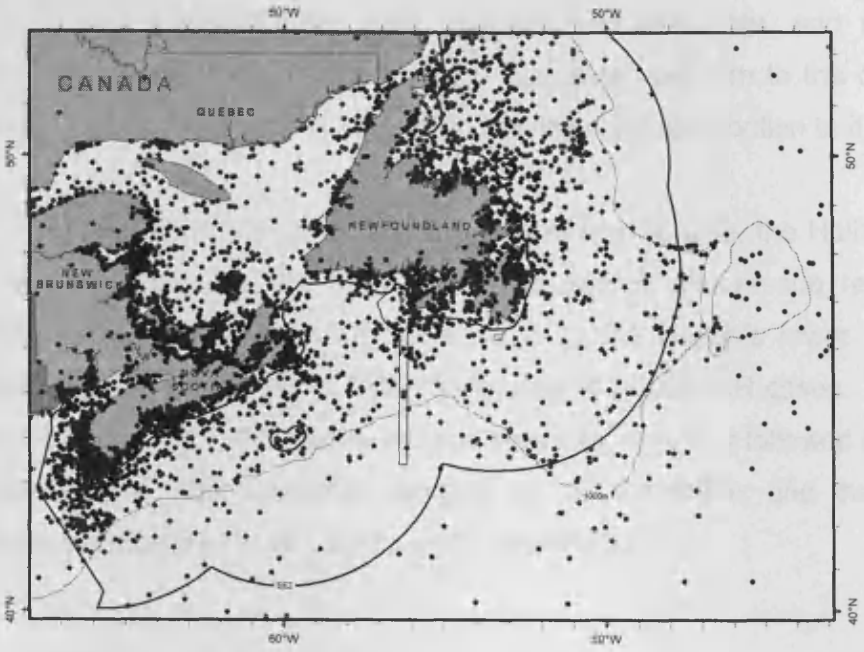


Figure 8-10. SAR Incidents 1999-2002 – Marine
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

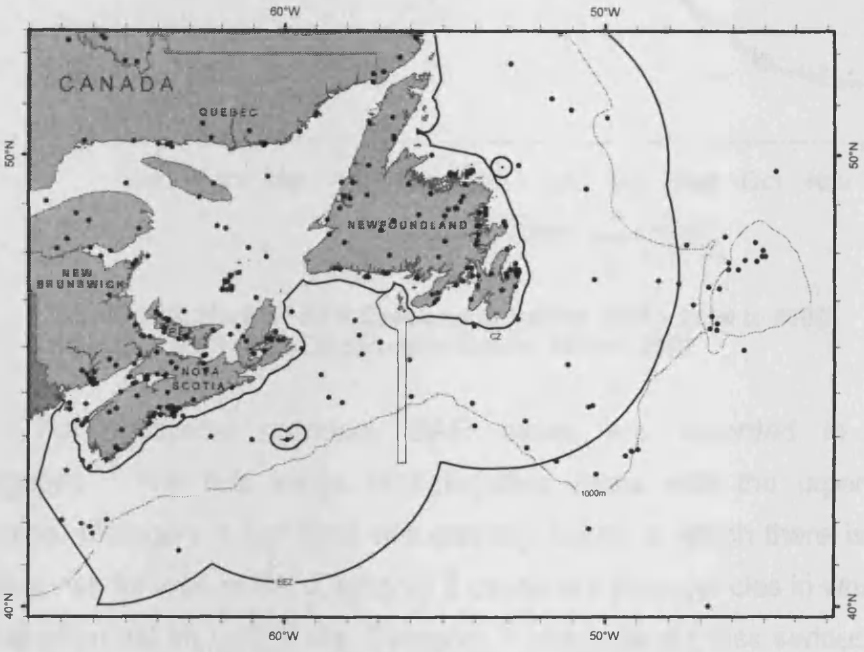


Figure 8-11. SAR Incidents 1999-2002 – Humanitarian
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

Additional maps of SAR point data and surface models can be found at Appendix E.

8.2.3.2 Search and Rescue Output

Having examined the SAR structure and resources, and the spatial aspect of SAR incident distribution, the discussion will turn to the operational execution of the SAR task in 2002, and the military's contribution to it.

As was seen at Figure 3-9, in terms of overall area, the Halifax SRR is the second largest of the three Canadian search and rescue regions, but generally has slightly fewer incidents due to the region's lower population density. In 2002, the Halifax SRR responded to 2,328 SAR cases. As can be seen at Figure 8-12, this was a normal caseload, one that followed the normal distribution for SAR incidents handled by JRCC Halifax and the Maritime Rescue Sub-Centres at St. John's and Québec City.

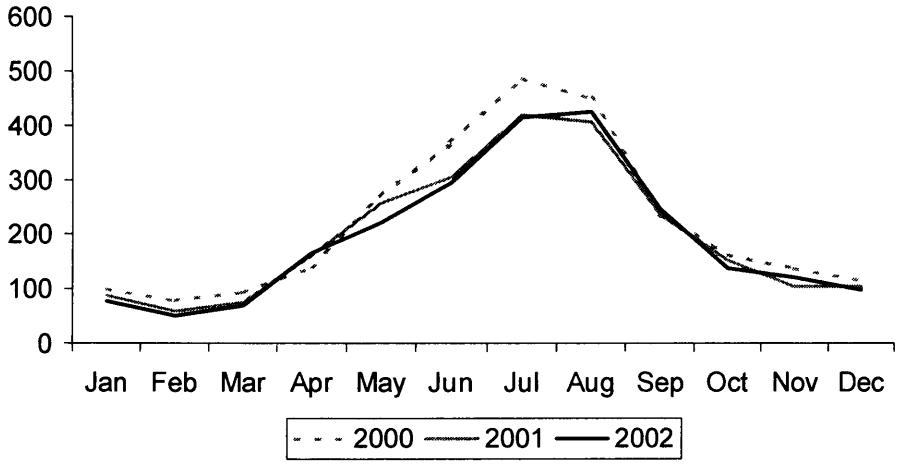


Figure 8-12. Monthly SAR Caseload in Halifax SRR – 2000 to 2002
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

For statistical purposes SAR cases are recorded in numerous categories. The first series of categories deals with the urgency of the situation. Category 1 incidents are distress cases in which there is clear and present risk for loss of life. Category 2 cases are emergencies in which there is strong potential for loss of life. Category 3 incidents are less serious situations such as vessel breakdowns. Category 4 covers false alarms and hoaxes. Figure 8-13 depicts the Halifax SRR incidents by category. The percentages for each category during that period are consistent with the other SRRs in the country and imply no trends or irregularities. Category 3 cases, the less serious

incidents, form the majority of cases in the Halifax SRR, again consistent with Trenton and Victoria SRRs.

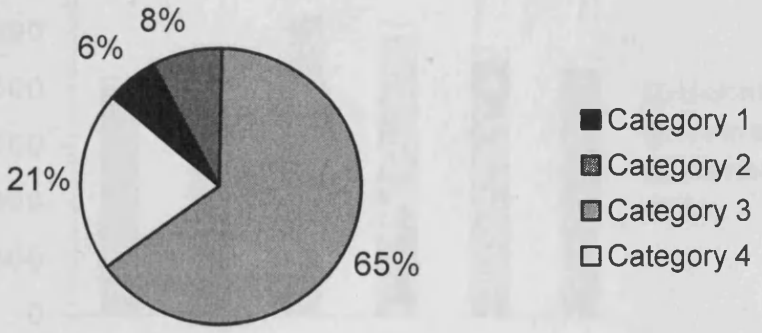


Figure 8-13. SAR Incidents by Urgency – Halifax SRR 2002
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

SAR incidents are also categorised for statistical purposes based on whether they originate as air or marine SAR cases. In cases of medical evacuation, the event is recorded as a humanitarian SAR case. In some cases, the category of the incident cannot be ascertained before it is resolved and is recorded as "unknown." For example, an emergency position indicating radio beacon (EPIRB) may be inadvertently activated in a garage, hangar, or at dockside and the signal is detected. SAR resources may be brought to bear to search for the transponder, but the EPIRB may be switched off before SAR assets launch. Figure 8-14 breaks down the 2002 SAR incidents in the Halifax SRR by type. For comparison, Figure 8-15 does the same for the period 1997 to 2002.

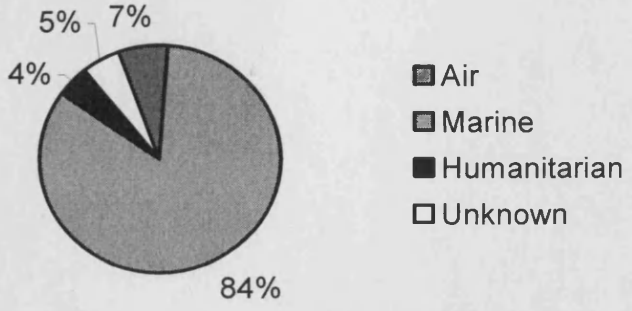


Figure 8-14. SAR Incidents by Type – Halifax SRR 2002
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

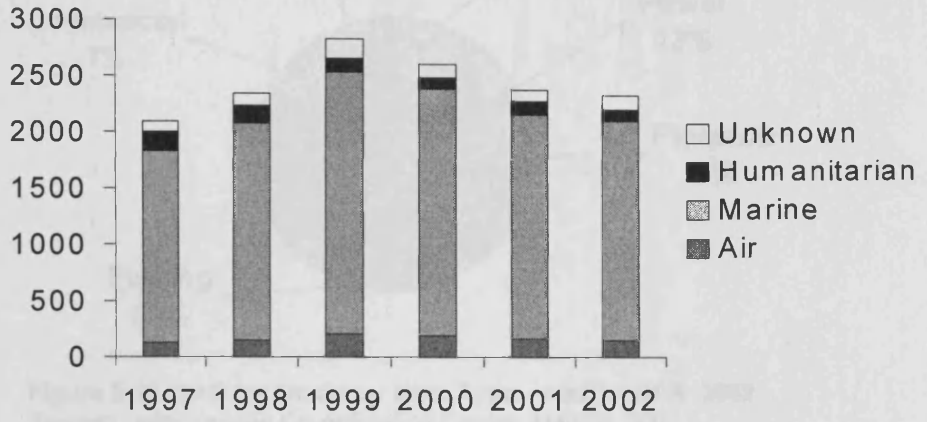


Figure 8-15. SAR Incidents by Type – Halifax SRR 1997 to 2002
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

The number of SAR incidents in 2002 was fewer by two percent from the year previous and even fewer than the years 1999 and 2000. However, a five-year trend suggests that 2002 was an "average" year; thus, the total number of SAR incidents in 2002 represent normal fluctuations in marine activity.

Figure 8-16 depicts the type of vessel associated with marine SAR cases in 2002. Fishing activity continues to be the source of the majority of cases in the Halifax SRR, which is not surprising given the fishing industry's significance to the economy of the Atlantic region. The relationship between fishing vessel SAR cases and other user categories in the Halifax SRR has remained relatively constant in recent years.

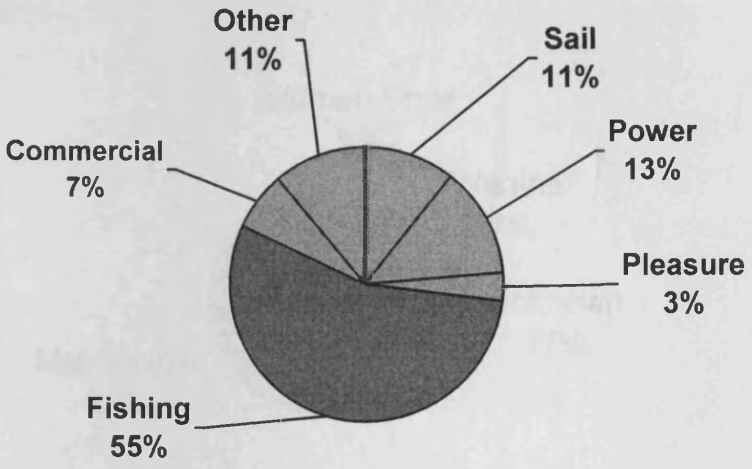


Figure 8-16. SAR Incidents by User Type – Halifax SRR 2002
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

Interestingly, the predominance of fishing vessel SAR cases is not replicated on Canada's West Coast. There the relatively sheltered inside passages and more temperate climate encourage a greater number of recreational boaters. Accordingly, the majority of SAR incidents in the Victoria SRR are caused by power-driven pleasure craft. Fishing vessels account for only 14 percent of the cases on the West Coast.[277]

The JRCC also compiles statistics pertaining to the source of the indidents to which they respond. Figure 8-17 shows that mechanical and equipment breakdowns are the root cause of the majority of marine SAR cases in the Halifax SRR.

[277] Power-driven pleasure craft account for 53 percent of all SAR cases in the Victoria SRR. See Appendix R for the breakdown by user group.

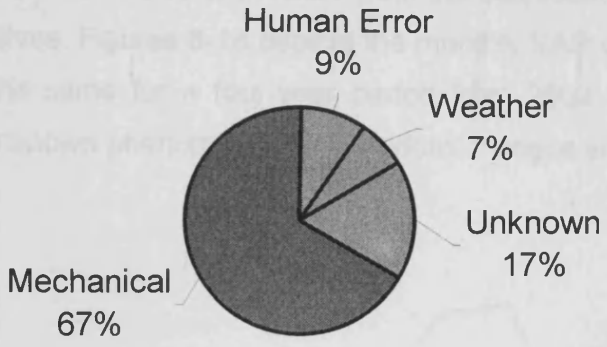


Figure 8-17. SAR Incidents by Root Cause – Halifax SRR 2002
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

Most marine SAR activity is concentrated in the Nova Scotia area of the SRR, and since marine cases comprise the majority of total incidents, Nova Scotia records the majority of total incidents. Table 8-1 shows that Nova Scotia and Prince Edward Island dominate the marine cases while Quebec is the leader in air incidents. Nova Scotia and Newfoundland record the greatest number humanitarian incidents, most of which require aerial medical evacuations in NL.

TABLE 8 – 1

DISTRIBUTION OF SAR CASES – HALIFAX SRR 2002

Province	Marine	Air	Humanitarian	Other
QC	7	38	10	11
NL	54	23	27	17
NS	707	40	28	44
NB	0	11	3	12
PEI	529	4	10	20
Offshore	93	10	2	4

Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

The summer months of July and August generate the largest number of SAR incidents. This is to be expected, given the larger number of people participating in recreational activities such as pleasure boating, kayaking, sail boarding, and private aircraft operation. Figure 8-18 shows that January, February and March of 2002 recorded the fewest incidents largely due to the severe winter weather that normally reduces marine activity levels. Indeed, the

SAR incidents that occur during the winter months tend to be serious ones because of the bad weather in which both the distressed vessel and responder find themselves. Figures 8-18 depicts the monthly SAR caseload and Appendix R shows the same for a four-year period from 2002 to 2005. This monthly pattern is a known phenomenon and seldom changes significantly from year to year.

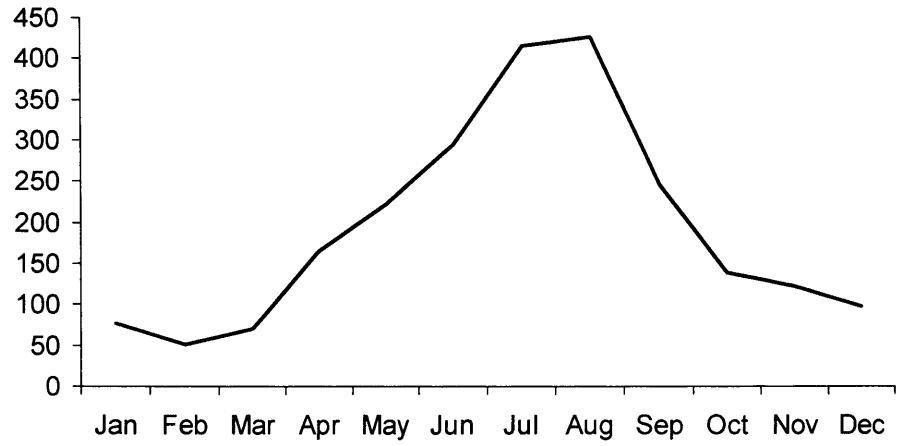


Figure 8-18. Monthly SAR Cases in Halifax SRR – 2002
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

Table 8-2 lists the type of vessel that responded in support of SAR incidents in the Halifax SRR. The table and Figure 8-19 below it clearly show that Canadian Coast Guard assets responded to the majority of incidents in 2002.[278] The Canadian Coast Guard Auxiliary was the next most active organisation in terms of both SAR taskings and hours engaged in SAR activities. The 2002 statistics are consistent with data recorded for the years prior to and after 2002.

[278] The two CCG Marine categories includes light station keepers, the Inshore Rescue Boat program, and all vessels belonging to DFO/CCG.

TABLE 8 - 2

MARINE RESPONDERS IN SAR CASES - 2002

Halifax SRR Marine Resources	Taskings	Hours
CCG Marine (SAR)	947	3,418
CCG Marine (non-SAR)	164	855
CCG Auxiliary	146	397
Federal Vessel (Other)	1	1
Provincial Vessel	1	1
Police Vessel	10	9
Commercial Vessel	16	266
Fishing Vessel	90	278
Other	163	446
Pleasure Craft (Private)	9	24

Source: Joint Rescue Co-ordination Centre, Halifax, 2002

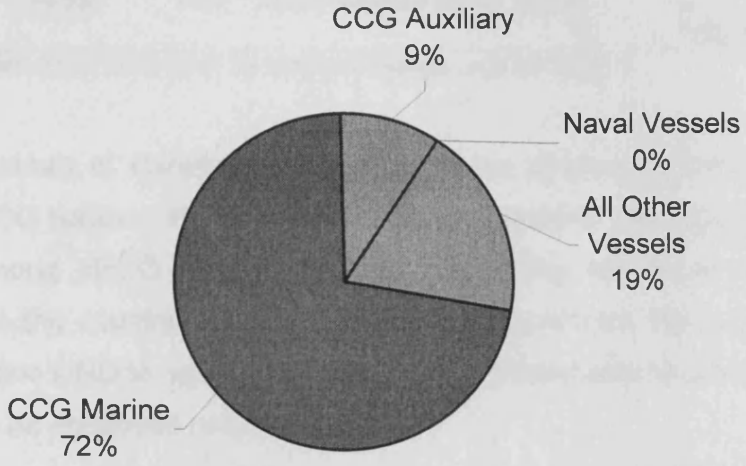


Figure 8-19. Marine Responders in SAR Cases - Halifax SRR 2002
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

Table 8-2 and Figure 8-19 were compiled from records obtained from the Canadian Coast Guard national headquarters, and reflect the SAR incidents as reported by JRCC Halifax staff. There is one statistic in Table 8-2 that implies that only one federal vessel other than those of the CCG or CCG Auxiliary was tasked for SAR support, and it was on task only for one hour in the entire year. This statistic was considered suspect. Accordingly, the 2002 Halifax JRCC daily SAR message summaries were retrieved from the National Library and Archives office and a review of the 365 daily summaries revealed that naval vessels were tasked to respond to several SAR incidents in 2002. This naval support to SAR is reflected in Table 8-3. These revised statistics

would increase in Figure 8-19 the percentage that naval vessels responded to SAR incidents from zero percent to one percent based on hours on task. The whole number figure of total number of taskings would be unchanged. Although these figures are more accurate, they do not alter the weight of the relative participation of Canadian naval vessels in SAR incidents in the Atlantic.

TABLE 8 – 3

NAVAL RESPONDERS IN SAR CASES - 2002

Date	Warship	Type	Nature of Response	Hours
27-May-02	*Toronto*	FFH	Medical evacuation from fishing vessel	25.3
25-Jun-02	*Kingston*	MCDV	Tow of pleasure craft	1.8
25-Jun-02	*Summerside*	MCDV	Tow of pleasure craft	1.8
28-Sep-02	*Moncton*	MCDV	Search for overdue fishing vessel	4.8
29-Oct-02	*Toronto*	FFH	Investigate "ball of fire" on water	1.1
8-Dec-02	*Halifax*	FFH	Assist disabled fishing vessel	16.0
			Total	50.8

Source: Halifax JRCC Daily SAR Summary Message Logs for 2002.

The anomaly in statistics was brought to the attention of the Officer-in-Charge of JRCC Halifax. He explained that the method of recording is neither consistent among JRCC staff in Halifax, nor among rescue co-ordination centres across the country. This is a long-standing problem that requires the Coast Guard and DND to agree to a common set of standards for interpretation of incidents to be employed nation-wide.[279]

As it can be seen in the table, naval vessels played a very minor role in SAR response in 2002. However, naval ships frequently respond to SAR incidents even though they are not specifically tasked by the JRCC for a particular case. Usually, this entails a warship suspending whatever activity it is undertaking at the time, and altering course and closing the SAR scene at best speed. Normally a tasked SAR aircraft will arrive at the scene long before the warship; as such, the warship will return to its previous activities, and the diversion will not be recorded by the JRCC as a statistic for tasking or hours.

[279] Major John Van Oosten, OIC JRCC Halifax, interview by author, 7 December 2007.

The 2002 statistics for warship responses to SAR incidents are slightly higher in the Pacific than in the Atlantic. In the Victoria SRR, naval vessels were tasked with 33 incidents and participated for 48 hours in SAR events as compared to six taskings for 50.8 hour in the Atlantic. However, in terms of the overall percentages, naval vessels on both coasts made up less than one percent of the SAR taskings.[280]

Table 8-4 lists by category the type of air asset that responded in support of SAR incidents in the Halifax SRR. Primary SAR air units provided response to the majority of incidents, garnering support from other secondary aircraft from time to time. CH-124 Sea King helicopters from Shearwater, NS and CP-140 Aurora maritime patrol aircraft based at Greenwood, NS provided SAR contribution when primary SAR aircraft were unavailable.

Table 8-4 and Figure 8-20 below it clearly show that in 2002 Canadian Forces aircraft responded to the majority of SAR incidents in the Halifax SRR. The Civil Air SAR Association (CASARA) was the second largest contributor with respect to hours flown. The 2002 statistics are consistent with data recorded for the years prior to and after 2002.

TABLE 8 - 4

AIRCRAFT RESPONDERS IN SAR CASES - 2002

Halifax SRR Air Resources	Taskings	Hours
Canadian Forces (SAR)	281	933
Canadian Forces (non-SAR)	36	101
CASARA	14	23
Chartered Aircraft	21	3
Commercial Aircraft	2	9
Federal Aircraft	2	3
United States Coast Guard (Air)	1	1

Source: Joint Rescue Co-ordination Centre, Halifax, 2002

[280] In the Halifax SRR, naval vessels were tasked 6 times out of 1553 taskings (0.04 percent) and in the Victoria SRR naval vessels were tasked 33 times out of 3726 taskings (0.9 percent).

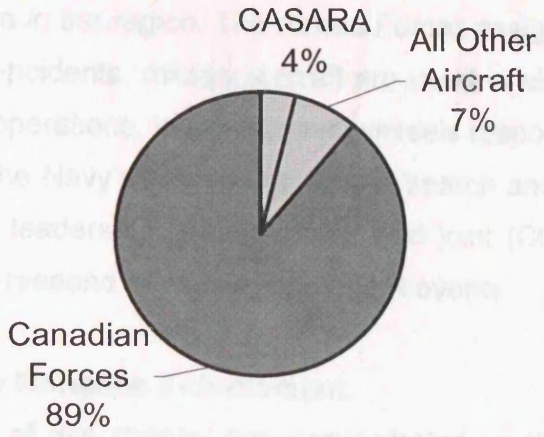


Figure 8-20. Aircraft Responders in SAR Cases – Halifax SRR 2002
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

The spatial distribution of SAR incidents throughout the region, as well as the operational responses recorded for the year 2002, lead to the conclusion that SAR resources are geographically positioned appropriately to respond to public need. Indeed, if Figure 8-2 is overlaid onto Figure 8-3, it is apparent that CCG lifeboats are stationed to provide full coverage of the coastline. The exception is the northeast coast of Newfoundland, but two large CCG cutters cover this area.

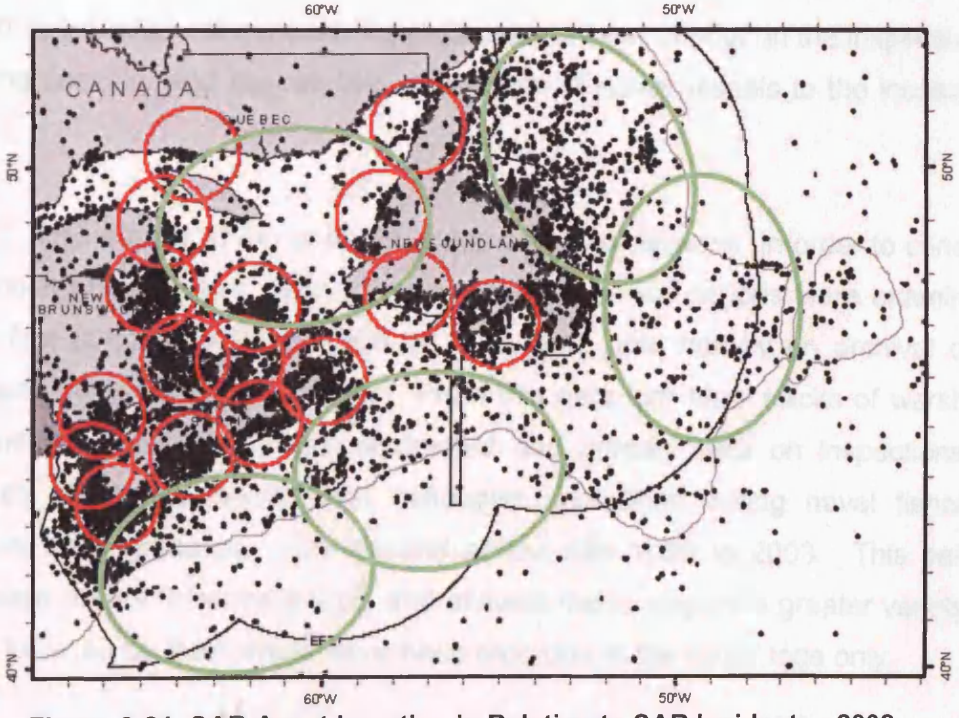


Figure 8-21. SAR Asset Location in Relation to SAR Incidents - 2002

The preceding material has shown that the Navy plays an important role in search and rescue in the region. The Armed Forces assign aircraft and ships to respond to SAR incidents; military aircraft are used in almost 90 percent of search and rescue operations, whereas naval vessels respond to less than one percent. However, the Navy's key contribution to search and rescue is through the provision of the leadership, infrastructure, and joint (CCG) command and control apparatus to respond effectively to all SAR events.

8.3 Contribution to Fisheries Enforcement

The first half of this chapter has concentrated on the significant effort that the Department of National Defence expends in providing oversight, co-ordination, and resources to search and rescue in Canada. The remaining pages of the chapter will focus on the Navy's other main contribution to maritime enforcement.

The objective of this part of the study is to examine the naval contribution to fisheries enforcement through spatial analysis and determination of level of effort of naval fisheries in Chapter Seven, the research will look at three aspects of enforcement support in Canada's maritime zones and approaches. These are the patterns of naval vessel presence and level of effort in enforcement support, the patterns and level of effort in the inspection of fishing vessels, and the relative contribution of naval vessels to the inspection effort.

This aspect of the analysis spans over two decades. In order to conduct an inquiry that covers such a lengthy timeframe, two periods were examined. The first period was from 1980 to 1997, and drew heavily on archival data extracted from naval ships' logs. From this data individual tracks of warships on fisheries patrols were reconstructed and primary data on inspections of vessels, SAR responses, and helicopter operations during naval fisheries patrols were gathered. The second period was 1999 to 2003. This period reflected recent fisheries patrols and allowed me to acquire a greater variety of data for analysis than would have been recorded in the ships' logs only.

The data from these two periods allowed maps to be created that depicted the individual tracks of naval ships over a 23-year period, as well as showed the cumulative tracks of naval ships during the periods 1980 to 1996 and 1999 to 2002. From these maps the patterns indicated the relative enforcement presence of naval vessels on fisheries support operations.

In order to show the locations of inspections conducted by both DND and DFO vessels over an extended period, a data "pull" from the Canadian Fisheries Information Network System (CFINS) was achieved for the years 1990 to 2002, This allowed an analysis of cumulative inspections over a 12-year period and facilitated the analysis of the spatial relationship between the fisheries inspections and the 200 nautical mile Exclusive Economic Zone, as well as the relationship between inspections and the bases for patrol aircraft and ships.

8.3.1 Enforcement Contribution to Maritime Domain Awareness

There is a symbiotic relationship between maritime surveillance for fisheries enforcement and that conducted for overall maritime domain awareness. The Navy's significant aerial surveillance contribution and provision of the architecture to support whole of government MDA was discussed at length in Chapter Seven, and will be given no further treatment. Naval vessels at sea also feed information about marine traffic encountered to the Maritime Operations Centre, and thereby advance the recognised maritime picture. Thus, any naval vessel at sea in support of fisheries enforcement contributes to maritime domain awareness, but that contribution was not examined in this project because of the likelihood that any marine traffic detected by naval vessels would have already been reported by the aerial surveillance effort.

8.3.2 Naval Fisheries Patrols

In addition to the surveillance and maritime domain awareness aspects, there is another component of support to fisheries enforcement that warrants a detailed examination. This element is the support to fisheries patrols, a longstanding and traditional commitment that the Canadian Navy has undertaken since its inception.

8.3.2.1 Historical Context

In the examination of the naval contribution to maritime enforcement it is worthwhile to review, from a historical perspective, the relationship between the Navy and Fisheries and Oceans Canada, the lead federal department responsible for the management of Canada's fisheries resources. Indeed, it was the need for fisheries protection from American interests in the waters of the Dominion of Canada that was a major driving factor in the creation in 1910 of a home-grown naval service.[281]

The establishment of a Canadian marine fleet came about with the rejuvenation of the Fisheries Protection Service in 1885, and it continued to expand under the aegis of the Department of Marine and Fisheries, originally instituted in 1868. By 1904, this department had become the largest in the Canadian government, and operated eight armed cruisers and over two dozen other large vessels.[282] Of note, when the *Naval Service Act* of 1910 officially established the Royal Canadian Navy, the Minister of Marine and Fisheries was appointed to a concomitant post as Canada's first Minister of Naval Services. Moreover, with the ratification of the *Act*, the new Navy assumed responsibility for fisheries enforcement, tidal survey and hydrography, although in the ensuing ninety-two years since, these responsibilities have vacillated among the Navy and various departments.[283] The lengthy sequence of administrative changes among departments is listed at Table 8-5.

---

[281] Marc Milner, *Canada's Navy: The First Century* (Toronto: University of Toronto Press, 1999), 8.

[282] Nigel D. Brodeur, "L.P. Brodeur and the Origins of the Royal Canadian Navy" in *The RCN in Retrospect, 1910-1968,* ed. James A. Boutilier (Vancouver: University of British Columbia Press, 1982), 15.

[283] Charles D. Maginley and Bernard Collin, *The Ships of Canada's Marine Services* (St. Catherines: Vanwell Publishing, 2001), 15.

TABLE 8 - 5

CHRONOLOGY OF CHANGES TO DEPARTMENTAL RESPONSIBILITY

Date	Event
1868	Department of Marine and Fisheries established.
1884	Marine and Fisheries split into separate Departments.
1892	Marine and Fisheries amalgamated. Assigned responsibility for hydrography and tidal surveys.
1904	Canadian Hydrographic Survey established.
1910	Department of Naval Service established. Fisheries patrol, lifeboat service, hydrography, tidal survey, and wireless telegraphy transferred to Royal Canadian Navy.
1920	Fisheries patrol and lifeboat service returned to Marine and Fisheries.
1922	Hydrography, tidal survey, and wireless telegraphy returned to Marine and Fisheries.
1927	Marine and Fisheries become separate branches.
1930	Marine and Fisheries split into separate Departments.
1936	Department of Transport is established. Takes over Department of Marine fleet, except Hydrographic Service vessels that go to Department of Mines and Resources.
1939	Majority of fisheries patrol vessels taken over by the Navy for use as patrol craft.
1946	Requisitioned vessels returned to original departments.
1962	Department of Transport's Canadian Marine Service fleet becomes Canadian Coast Guard.
1971	Department of Environment takes over fisheries responsibilities. In 1976 renamed Department of Fisheries and the Environment.
1979	Department of Fisheries and the Environment splits into separate Departments.
1995	Canadian Coast Guard subsumed by Department of Fisheries and Oceans.

Source: Charles D. Maginley and Bernard Collin, *The Ships of Canada's Marine Services* (St. Catherines: Vanwell Publishing, 2001), 15, 119.

As articulated in Chapter Five, at present the level of naval support to DFO is formalized in a Memorandum of Understanding. Every year for the past few decades, the MOU is re-negotiated to plan the number of ship-days and flying-hours allocated to fisheries enforcement by DND. However, the actual execution of this MOU differs between the east and west coasts.

In the Atlantic, the Navy provides the agreed-upon number of sea days to DFO for either frigates or the smaller maritime coastal defence vessels (MCDV) in which Conservation and Protection officers embark for enforcement duties that constitute dedicated fisheries patrols. In the Pacific, an alternate arrangement exists. The waters of Canada's West Coast are divided into three zones for the administration of search and rescue. The Canadian Coast Guard

maintains a vessel as SAR standby in each of those zones. Rather than provide ships for fisheries patrols, Maritime Forces Pacific fulfils its traditional obligation of thirty sea days to DFO by scheduling coverage by an MCDV of the three SAR zones at mutually-agreeable times with the Coast Guard. This permits the Coast Guard to re-task some of their ships during that period, providing that department with better flexibility for other maritime tasks.[284]

8.3.2.2 Level of Effort in Support of Fisheries Enforcement

Over the past decade on the Atlantic coast, Canadian naval vessels spent between 1500 to 2500 days at sea per year, many of them on overseas deployments, but the majority of them within the Exclusive Economic Zone. While many of the sea days were devoted to training and exercises, they provided many "eyes on the water" and constituted a distinct federal presence in Canada's maritime approaches. In recent years, the trend for naval vessel days at sea has been a decreasing one due to a reduction in the size of the naval fleet, and annual budgetary constraints. Table 8-6 shows the downward trend in naval sea days in general.

TABLE 8 - 6

NAVAL VESSEL TOTAL DAYS AT SEA - ATLANTIC

Vessel Type	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Destroyer	659	512	367	284	157	254	166	178	115	205	128
Frigate	794	827	753	718	718	552	620	839	824	636	735
Submarine	264	275	242	228	169	85	58	25	0	88	76
Minor Warship	664	531	562	521	741	592	611	600	608	634	607
Other types	133	110	118	103	100	57	117	168	90	16	0
Totals	2514	2255	2042	1854	1885	1540	1572	1810	1637	1579	1546

Source: Maritime Forces Atlantic Sea Operations staff, 2004.

Note: Destroyer totals include *Annapolis*-class and *Improved Restigouche*-class destroyers prior to 1999. Minor warship totals include *Kingston*-class Maritime Coastal Defence Vessels (MCDV) and, prior to the year 2000, HMC Ships *Anticosti*, *Cormorant*, and *Moresby*, as well as Gate vessels used for naval reserve training.

Table 8-7 shows the annual number of sea days allocated to DFO support. These totals are based on the MOU targets of 125 sea days and between 500 to 720 aircraft hours. Note the reduction of fishery patrol days by

[284] Captain(N) Richard Harrison, Plans and Operations Officer - MARPAC, interview by author,

major warships in 2002 and 2003, the years that Canadian major warships were deployed to the Arabian Sea on Operation APOLLO. Notwithstanding this requirement for expeditionary operations, from 1990 to 2004 the Navy delivered 99 percent of planned ship days to DFO; the Armed Forces provided DFO with seven percent more aircraft hours than the MOU required.

TABLE 8 - 7

DND FISHERIES PATROL ASSET ALLOCATION - ATLANTIC

Fiscal Year	A Ship Days (Planned)	B Ship Days (Actual)	C Aircraft Hours (Planned)	D Aircraft Hours (Actual)
1990	65	78	420	406
1991	65	83	420	691
1992	125	138	720	806
1993	125	145	720	733
1994	125	115	700	822
1995	125	141	700	745
1996	125	150	700	731
1997	125	124	700	630
1998	125	108	700	733
1999	125	121	539	549
2000	125	125	539	540
2001	125	101	539	539
2002	125	97	400	398
2003	125	99	400	403
2004	125	110	539	539
Totals	1755	1735	8736	9265

Sources: Column A - Canada. Department of National Defence. *1990-91 Estimates, Part III: Expenditure Plan.* Ottawa, 1990. Followed by each annual report thereafter. Column B - Annual totals kept by Maritime Forces Atlantic Sea Operations staff for all ship classes. Columns C and D - Annual totals kept by Maritime Air Component (Atlantic) Operations staff for Aurora maritime patrol aircraft.

Note: In Column A, from 1994 to 1997, HMCS *Cormorant* and her submersibles supported fisheries research for DFO.

The distribution of sea days between major and minor warships in support of DFO varies year to year depending upon the demand for major warships in defence tasks. The breakdown in the number of days allocated is shown at Figure 8-22. Note the increased percentage of minor warship days in support of DFO in the post-911 timeframe, when the Canadian Navy directed its major warships into the Persian Gulf.

13 March 2001.

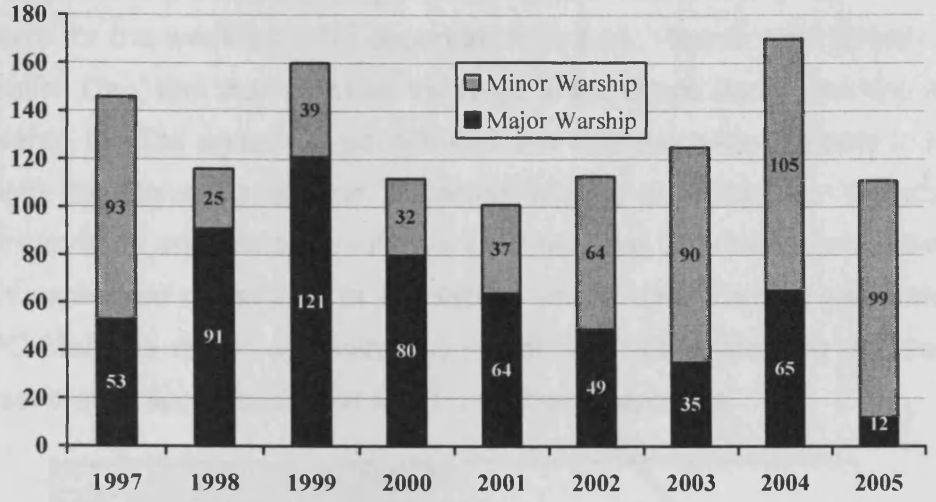


Figure 8-22. Naval Fisheries Patrol Sea Days - Atlantic
Source: Maritime Forces Atlantic Sea Operations staff, 2005.

8.3.2.3 Spatial Aspect of Fisheries Patrol Effort

The next few paragraphs will examine the spatial context of the naval support to fisheries enforcement in the Atlantic region. The first element will be a discussion of the patterns of typical patrols for minor and major warships. This will be followed by an analysis of the presence of these patrol vessels for fisheries enforcement.

8.3.2.3.1 Typical Warship Fisheries Patrol

In the Atlantic region, most fisheries patrols are of two weeks duration.[285] In the case of frigate fisheries patrols, the DFO Conservation and Protection officers embark aboard the warship in Halifax, and sail directly for DFO's designated area of interest on the Grand Banks. Typically, the frigate patrols a specific area of the Grand Banks, then proceeds to St. John's to allow the Conservation and Protection officers to return to home port for the weekend. The ship normally sails early Monday morning, and either returns to the area previously patrolled, or a new area of interest designated by the Conservation and Protection officers. Figure 8-23 is the track of a typical frigate fisheries patrol that took place in May 2000. *HMCS Toronto* sailed from Halifax, passed north of Sable Island, and proceeded directly to the Tail of the Grand Banks.

[285] Table J-3 at Appendix J contains the length of days for each patrol studied for this project.

After inspecting several fishing vessels on the Tail, the ship steamed for St. John's for the weekend. On departure from port, *Toronto* went directly to the Flemish Cap, and then patrolled the Nose of the Grand Banks, working its way towards the Tail again. At patrol's end, the ship proceeded directly to Halifax where the Conservation and Protection officers disembarked. Of note, the Conservation and Protection officers were from the DFO Newfoundland region, and expressed no interest in any fishing vessel once *Toronto* was inside the DFO Maritime region administrative jurisdiction, notwithstanding the presence of several fishing vessels that could have been inspected.

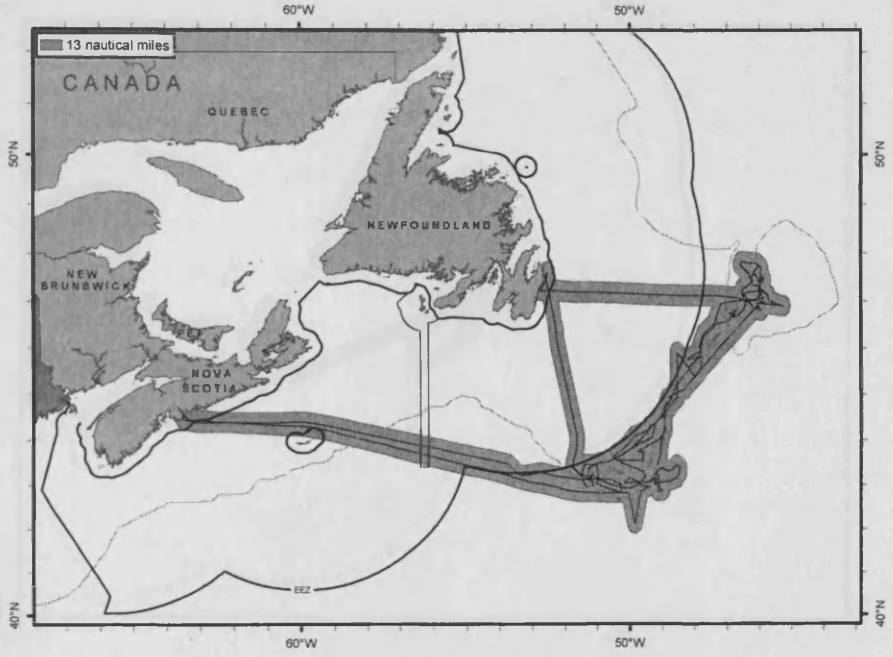


Figure 8-23. Typical Frigate Fisheries Patrol – 1999 to 2002
Sources: Derived from data collected on 16 frigate fisheries patrols.

The 15 nautical mile buffer shown in Figure 8-23 depicts the average range at which a small fishing vessel will be detected by a frigate's navigation radar. The 15 nautical mile figure is based on records kept by 16 frigates that conducted fisheries patrols during the period 1999 to 2002. Interestingly, the data show that ships tended to overestimate their ability to detect fishing vessels by as much as an additional 15 nautical miles. The 15-mile figure also reflects all atmospheric conditions and technical states of radar; in many cases fishing vessels were detected at 20 to 30 nautical miles.

Figure 8-24 depicts a typical MCDV fisheries patrol. Normally the vessel departs Halifax and proceeds to a small port in Newfoundland where the Conservation and Protection officers are embarked. The minor warships then conduct a patrol of the inshore fishery. From time to time, MCDVs are tasked for patrols on the Grand Banks, but they are not as well suited for the offshore patrols due to lesser ability for sea keeping, and they do not have the speed advantage that the frigates possess. In addition, DFO Conservation and Protection officers prefer frigates for the offshore for reasons of connectivity with shore authorities and personal comfort.

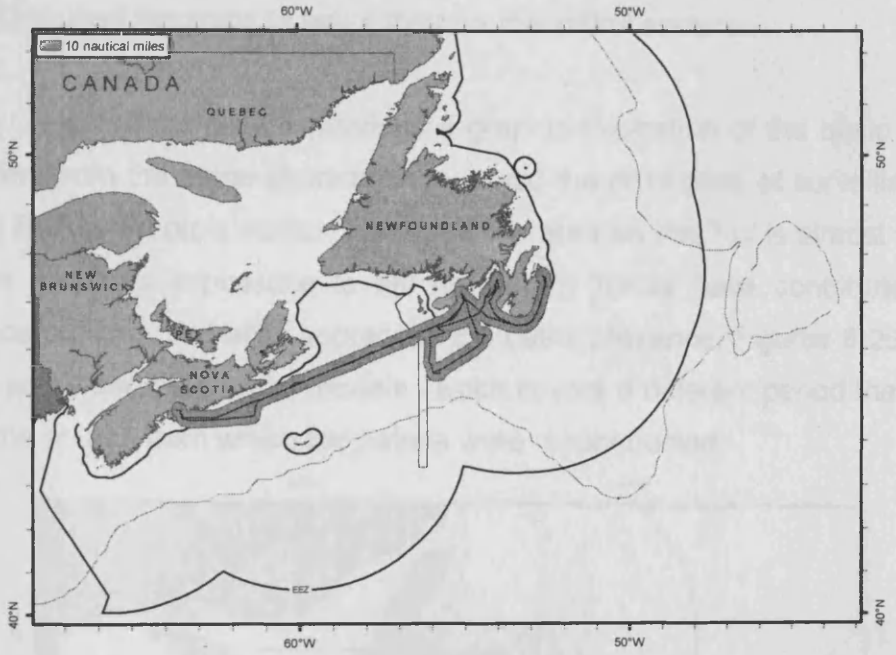


Figure 8-24. Typical MCDV Fisheries Patrol – 1999 to 2002
Sources: Derived from data collected on 9 MCDV fisheries patrols.

The 10 nautical mile buffer in Figure 8-24 reflects the average detection range of an MCDV's navigation radar against a small inshore fishing vessel. It is based on data collected during nine MCDV fisheries patrols during the period 1999 to 2002. The 10-mile figure also reflects all atmospheric conditions and technical states of the MCDV's radar; in many cases fishing vessels were detected at much greater ranges than 10 nautical miles.

8.3.2.3.2 Naval Fisheries Patrol Patterns

Historically, the Navy has focussed its fisheries patrol effort on the Grand Banks of Newfoundland, although periodically patrols are conducted

along the Hague Line on Georges Bank. Figure 8-25 is a reconstruction of the raw tracks of all classes of naval vessels that conducted 119 fisheries patrols between 1980 to 2003. Clear patterns emerge in Figure 8-25; there is obvious attention paid to the Tail of the Grand Banks, as well as to some parts of the Nose and the Flemish Cap. The departure and return transits from and to Halifax appear as well worn paths passing to the north and south of Sable Island, and there appears to be a focus on St. John's as well. Figure 8-25 also shows individual ship tracks straying from the main concentration of tracks; these are fisheries patrols that were interrupted by search and rescue events that required the ships to leave their normal patrol sectors.

While Figure 8-25 provides a graphic illustration of the basic pattern, it suffers from the same shortcomings as did the point plots of surveillance effort and SAR point plots earlier. Note that the area on the Tail is almost black with lines and it is impossible to tell how many tracks have contributed to that concentration. To better appreciate the patrol presence, Figures 8-26 and 8-27 are presented as surface models. Each covers a different period that is based on the source from which the patrols were reconstructed.

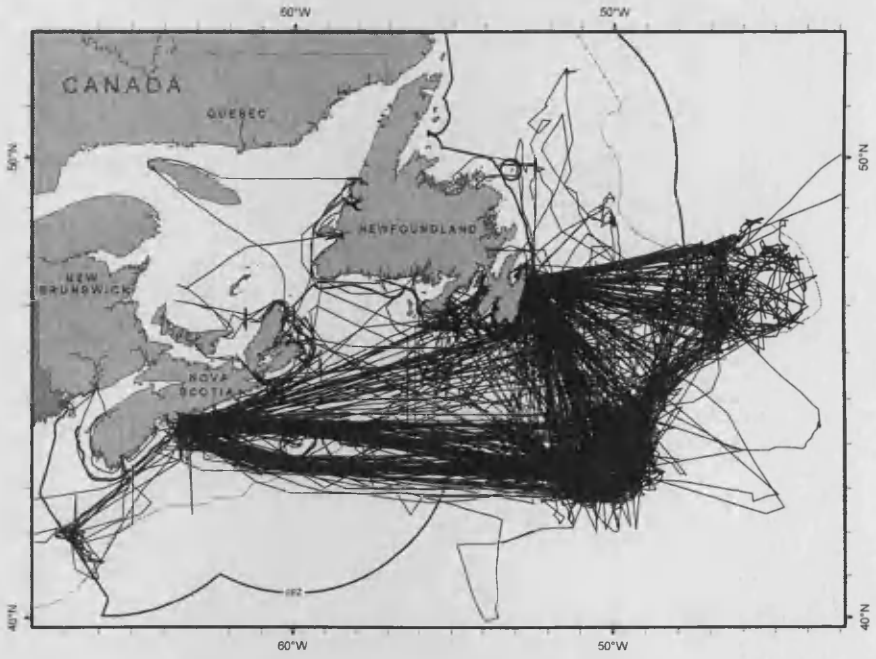


Figure 8-25. Naval Ships on Fisheries Patrol: 1980 to 2003
Source: National Library and Archives of Canada and shipboard data (119 tracks).

Figure 8-26, covering the years from 1980 to 1997, shows a concentration of patrol effort on the Tail of the Grand Banks, with increased presence on the routes to and from Halifax and St. John's. The focus on the Tail was due in large measure to the plethora of foreign vessels attracted to this particularly abundant fishing ground, and then later in the 1990s to the requirement to enforce the moratorium imposed on the Tail as a result of plummeting groundfish stocks.

Figure 8-26 was drawn from data recorded by 87 warships that conducted fishery patrols during the period from 1980 to 1997. Geographic positions of the warships were extracted manually from the ships' logs. These co-ordinates were imported into the ArcView 3.2 geographic information system software, and the Spatial Analyst module was used to measure the relative densities of the positions of the warship tracks, and a choropleth map was rendered that depicted track density in five orders of magnitude. The shades on this map represent the amount of enforcement presence by naval vessels over a 17-year period.

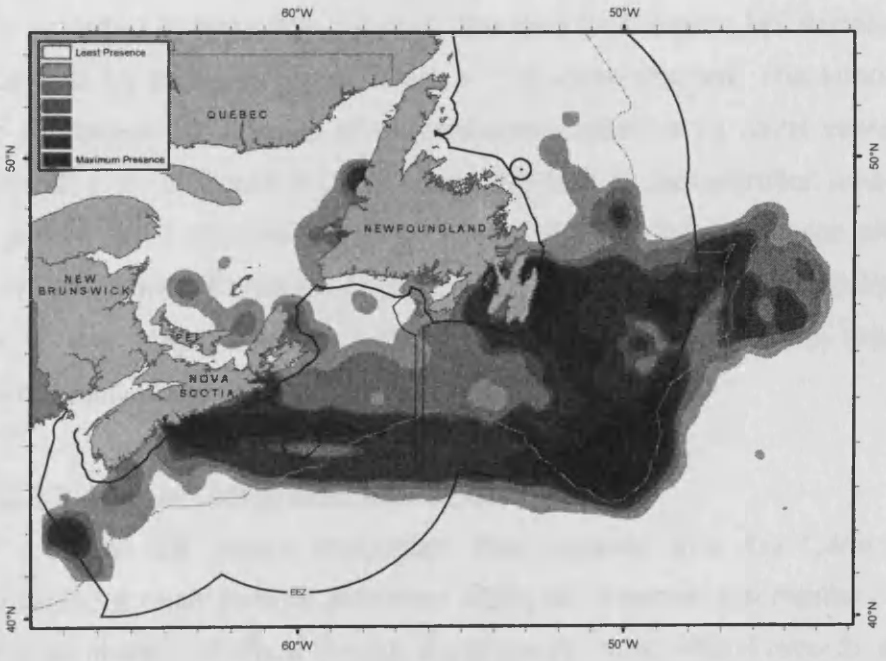


Figure 8-26. Naval Ships on Fisheries Patrol: 1980 to1997
Source: National Library and Archives of Canada (87 tracks).

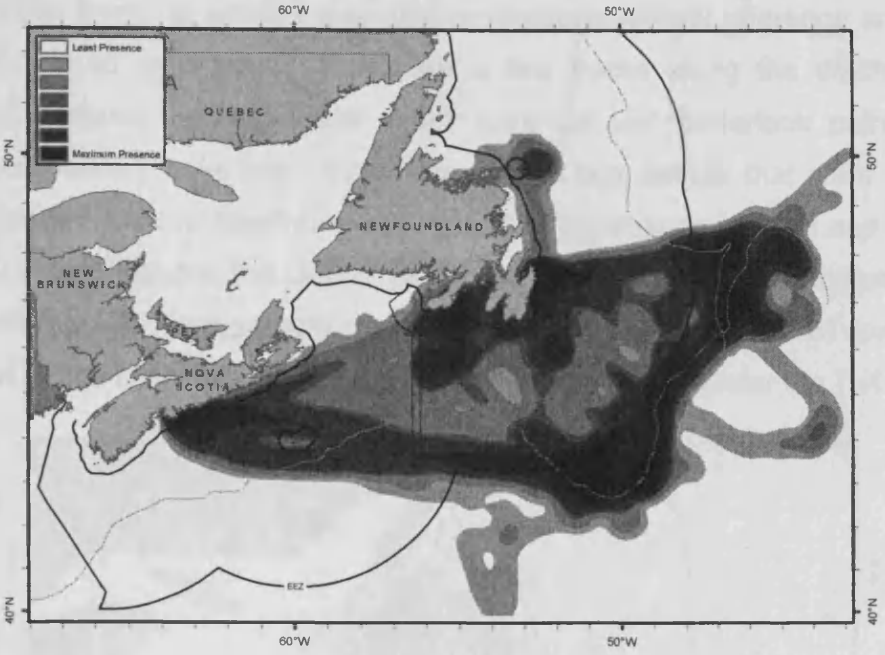


Figure 8-27. Naval Ships on Fisheries Patrol: 1999 to 2003
Source: Ship track logs (33 tracks).

Figure 8-27 map was drawn from data recorded by 33 warships that conducted fishery patrols in support of the Fisheries and Oceans Canada during the period from 1999 to 2002. Geographic positions of the warships were recorded at sea once per hour into electronic logs in MS Access and then processed by the ArcView software in the same manner. The shades on this map represent the amount of enforcement presence by naval vessels over a 15-month period. Figure 8-27 captures the shift in concentration away from the Tail where, by 1999, there was only a small total allowable catch allocated by the North Atlantic Fisheries Organization. The shift was towards the Flemish Cap where other species such as shrimp and crab were and still are commercially viable.

8.3.2.3.3 Hague Line Fisheries Patrols

There are many anecdotes that suggest that the Canadian Navy maintained a considerable presence along the international maritime boundary to the southwest of Nova Scotia. Surprisingly, from official records there were very few naval fisheries patrols that deployed from Halifax and proceeded along the Hague Line that delimits George's Bank. Figure 8-28 contains all of the naval fisheries patrols that spent a segment of patrol time in the vicinity of

Georges Bank, to which I was able to locate an official reference and which I was able to reconstruct. There are a few tracks along the south coast of Newfoundland that represent minor warships that undertook patrols in the inshore fishery. As well, there are one or two patrols that went along the southwest coast of Newfoundland, noting one that passed north and then west of Anticosti Island in the Gulf of St. Lawrence. Figure 8-28, in conjunction with earlier figures, demonstrates clearly that the concentration of enforcement effort by the Navy has been on the Grand Banks, in particular the Tail.

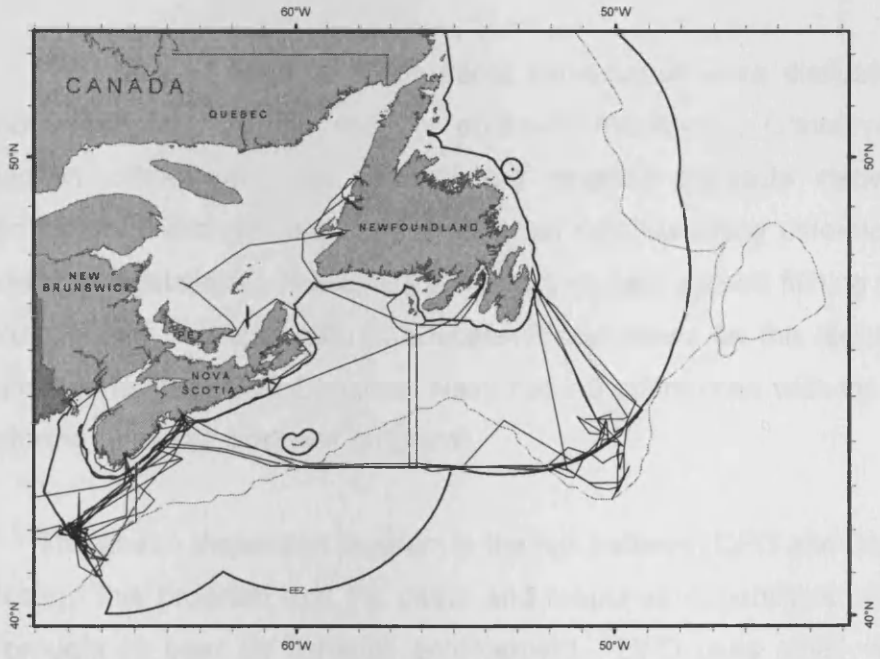


Figure 8-28. Hague Line Fisheries Patrols: 1980 to 1997
Source: National Archives of Canada (7 tracks).

8.3.2.3.4 Naval Enforcement Presence

The analysis of the reconstructed tracks shows that over twenty years there was little or no naval enforcement presence that was not in a direct path from Halifax to the Tail of the Grand Banks, or from St. John's to the Nose or the Tail of the Grand Banks. There was no naval enforcement presence in the Gulf of St. Lawrence, and limited presence to the northeast of Newfoundland. As well, there was virtually no naval enforcement presence in the EEZ directly south of mainland Nova Scotia. However, that is not to say that naval vessels were not present at all. Far from it, in fact. As depicted in Figure 3-6, the main naval exercise and operations areas lie directly south of Halifax and are used extensively by naval vessels and aircraft. So while there may have been few

warships on fisheries support operations in this area, there was a strong naval presence in this section of the Canadian EEZ.

8.3.2.4 Boardings / Inspections

Fisheries and Oceans Canada undertakes several measures to control and regulate fishing activity in the Canadian maritime zones. To ensure compliance, DFO's key tools are its aerial surveillance, dockside monitoring, at-sea observers, and at-sea inspection programs.

The relevant aspects of the aerial surveillance were discussed in the previous chapter. In the case of dockside monitoring, Conservation and Protection officer carry out random and directed dockside inspections to confirm that all licences are correct, and that catches being unloaded comply with extant regulations. The at-sea observers embark aboard fishing vessels to monitor fishing practices, and to educate vessel crews on the regulations for sustainable fishing. The Canadian Navy has no connection with the dockside monitoring or at-sea observer programs.

The at-sea inspection program is the link between DFO and the Navy. It is through this program that the patrol and response capabilities of the Navy are brought to bear for fisheries enforcement. DFO uses naval vessels as platforms from which its Conservation and Protection officers can mount boardings and inspections of a wide range of fishing vessels. [286]

Table 8-8 contains the total number of at sea fisheries inspections that were carried out by Conservation and Protection officers in the Maritimes/Scotia-Fundy and Newfoundland regions by all government agencies during the period 1990 to 2002. The CFINS extract obtained through DFO records 7,193 inspections during that period.

[286] The Navy uses the term "boardings" whereas DFO employs the term "inspections".

TABLE 8-8

FISHING VESSEL INSPECTIONS BY DEPARTMENT – 1990 TO 2002

Platform	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
DFO NF Ships	347	546	464	396	461	280	341	249	309	254	127	240	204
DFO SF Ships	204	470	274	487	327	356	214	-	-	-	-	-	-
DND Ships	10	62	23	58	29	64	53	57	25	60	53	68	18
Charter Service	-	17	36	-	-	-	-	-	-	-	-	-	-
RCMP Ships	-	-	-	-	-	-	-	-	-	-	-	2	-
NAFO Patrol	4	-	-	-	-	-	-	-	-	1	-	-	-
Other	-	-	1	2	-	-	-	-	-	-	-	-	-
Total	565	1095	798	943	817	700	608	306	334	315	180	310	222

Source: Fisheries and Oceans Canada, Newfoundland Region, 2002.

Notes: In the table above, Newfoundland Region is abbreviated to NF, Scotia-Fundy is abbreviated to SF. The vessel engaged in DFO Charter Service was the *Casaco*. The RCMP vessel that conducted the inspections was the *Simmonds*. The NAFO patrol vessel *Commandante Blaison* conducted 4 of the 5 inspections; the *Commander Amalie* conducted the fifth.

Of the total number, Conservation and Protection officers conducted 3,883 at-sea inspections under Canadian jurisdiction (54 percent), another 2,264 under NAFO jurisdiction (31 percent), and the records did not indicate the authority under which the remaining 996 were carried out. Table 8-9 shows the breakdown by country of registration of fishing vessels subjected to the inspections. Over the 12-year period examined, the country of registration of most likely to be inspected by Canadian authorities in the study is Canada (50 percent).

TABLE 8-9

FISHING VESSEL INSPECTIONS BY NATIONALITY – 1990 TO 2002

Country	Number	Country	Number	Country	Number
Canada	3,568	Latvia	64	Belize	13
Spain	1,552	U.S.S.R.	45	Poland	5
Portugal	567	United States	44	Vanuatu	5
Russia	279	SIL	43	Caymans	2
Faroes	167	Panama	41	Italy	2
Estonia	151	Greece	26	New Zealand	2
Norway	148	Honduras	23	Antigua	1
Cuba	115	France	21	Morocco	1
Lithuania	93	Korea	20	Ireland	1
Iceland	92	Germany	19	Unknown	4
Japan	79			Total	7,193

Source: Fisheries and Oceans Canada, Newfoundland Region, 2002.

Over the past several years DFO has begun to rely increasingly on the Navy for support, notably since DFO reduced its offshore enforcement fleet.

Figure 8-29 shows the number inspections carried out each year by Conservation and Protection officers using naval vessels as the transport medium. Of the 7,193 inspections carried out during this period, Canadian naval vessels were used in 580 at-sea inspections (8 percent). Of the 580 in total, major warships were used in 364 inspections (63 percent), minor warships took part in 184 inspections (32 percent), and naval auxiliary vessels were employed for 32 inspections (5 percent).

Figure 8-30 depicts the slight upward trend in the overall percentage of inspections that are carried out by naval vessels. While the number of inspections carried by DFO officers embarked aboard naval vessels remains relatively constant, the overall percentage of inspections instigated by fisheries officers embarked in naval vessels is increasing. Fisheries and Oceans Canada is facing a major challenge in dealing with the "rust out" of the DFO/CCG fleet and acquiring replacement vessels, so it is reasonable to expect that Fisheries and Oceans Canada will continue to rely heavily on naval vessels to support its inspection goals.

Table 8-10 shows the number of inspections attributed to each warship during the 1990 to 2002 timeframe. With the exception of HMCS *Anticosti*, all of the naval vessels that carried out 30 or more boardings were major warships, i.e., frigates or destroyers. Regrettably, the DFO statistics for 2003 onwards were unavailable; they would show an increased percentage of boardings carried out by minor war vessels as the larger combatants deployed abroad to the Persian Gulf.

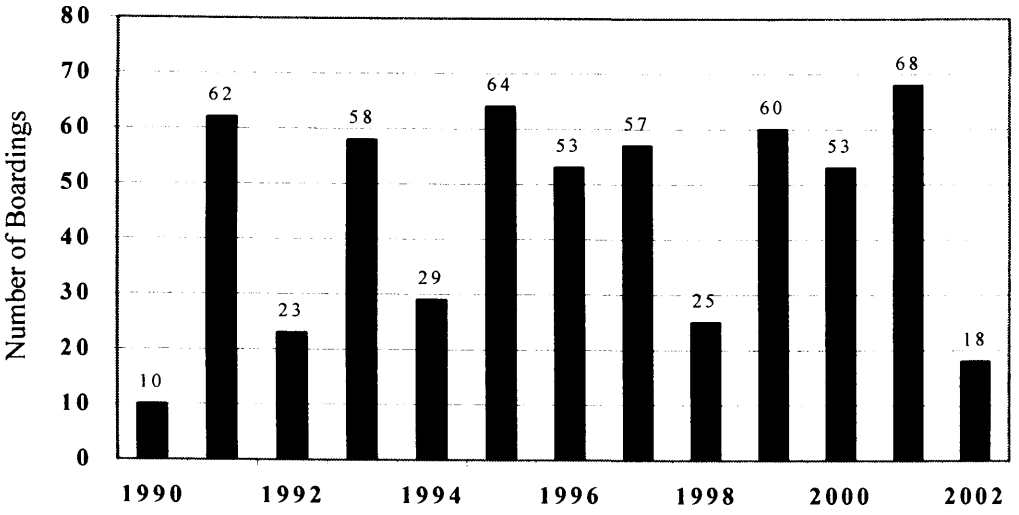


Figure 8-29. Boardings by Fisheries Officers aboard Naval Ships – 1990 to 2002
Source: Fisheries and Oceans Canada, Newfoundland Region, 2002.

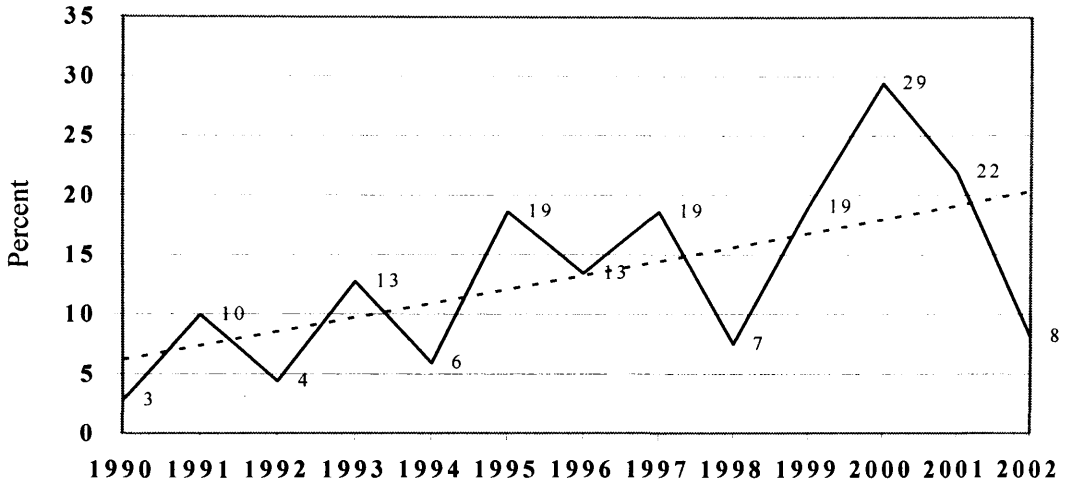


Figure 8-30. Navy's Percentage of Total DFO Boardings for Nfld Region
Source: Fisheries and Oceans Canada, Newfoundland Region, 2002.

TABLE 8 - 10

NAVAL FISHERIES PATROL BOARDINGS BY SHIP – 1990 TO 2002

Ship	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Anticosti	-	-	-	11	16	3	4	1	6	-	-	-	-
Athabaskan	-	-	-	-	-	-	-	-	-	-	5	-	-
Charlottetown	-	-	-	-	-	-	-	-	15	5	-	-	-
Cormorant	7	10	-	-	-	8	-	-	-	-	-	-	-
Fredericton	-	-	-	-	-	-	-	2	-	9	-	-	7
Gatineau	-	5	-	13	13	20	-	-	-	-	-	-	-
Glace Bay	-	-	-	-	-	-	-	22	-	-	1	-	2
Goose Bay	-	-	-	-	-	-	-	-	-	-	13	10	-
Halifax	-	-	-	-	-	12	-	-	2	-	-	-	3
Kingston	-	-	-	-	-	-	-	6	2	8	-	-	2
Margaree	-	3	-	-	-	-	-	-	-	-	-	-	-
Moncton	-	-	-	-	-	-	-	-	-	2	1	-	-
Montréal	-	-	-	-	-	-	-	6	-	15	8	9	-
Moresby	-	-	-	7	-	9	4	-	-	-	-	-	-
Nipigon	-	6	10	5	-	12	-	-	-	-	-	-	-
Ottawa	-	9	-	-	-	-	-	-	-	-	-	-	-
Riverton	-	3	8	-	-	-	-	-	-	-	-	-	-
Skeena	-	5	5	22	-	-	-	-	-	-	-	-	-
St. Charles	-	21	-	-	-	-	-	-	-	-	-	-	-
St. John's	-	-	-	-	-	-	-	-	-	11	4	-	-
Summerside	-	-	-	-	-	-	-	-	-	-	-	25	4
Terra Nova	3	-	-	-	-	-	15	14	-	-	-	-	-
Toronto	-	-	-	-	-	-	30	-	-	-	18	-	-
Ville de Québec	-	-	-	-	-	-	-	6	-	10	3	24	-
Totals	10	62	23	58	29	64	53	57	25	60	53	68	18

Source: Fisheries and Oceans Canada, Newfoundland Region, 2002.

8.3.2.4.1 Spatial Aspect of Inspections / Boardings

Figure 8-31 maps the locations of all government inspections of fishing vessels at sea that took place in the Maritimes (Scotia-Fundy) and Newfoundland DFO administrative regions over the 12-year period. The map clearly demonstrates that the heaviest concentration of inspections took place on the Flemish Cap and on the Nose of the Grand Banks, with some concentration on the Tail. DFO enforcement effort also was undertaken to the southwest of Nova Scotia. These inspections correspond to the lobster fishery discussed earlier. The concentration of boardings to the east and southeast of Newfoundland correspond to the ground fish, shrimp and crab fisheries beyond the EEZ. There are some inspections that take place in the inshore fishery off of eastern Newfoundland, but the number of these is not of the same magnitude as those inspections that are undertaken beyond the EEZ. Figures

8-33 and 8-34 are surface models of the same data, and depict the same concentrations.

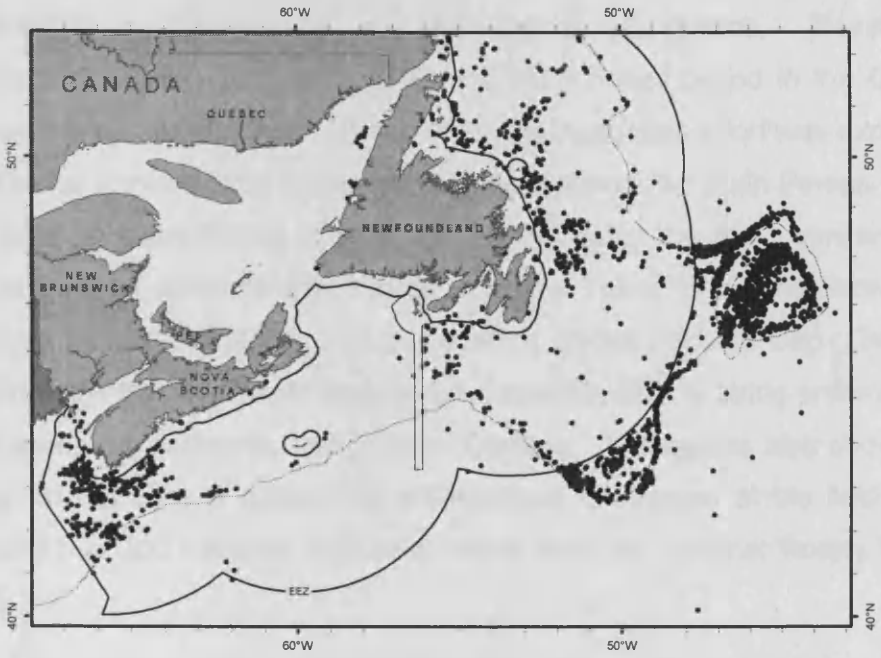


Figure 8-31. Cumulative Boardings by Government Vessels – 1990 to 2002
Source: Fisheries and Oceans Canada, Newfoundland Region, 2002.

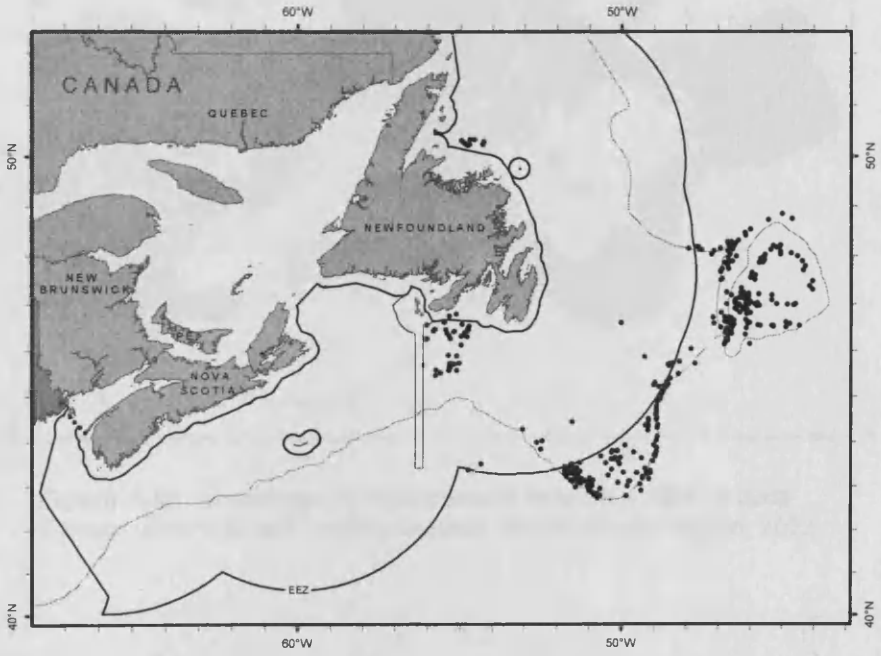


Figure 8-32. Cumulative Boardings by Naval Vessels – 1990 to 2002
Source: Fisheries and Oceans Canada, Newfoundland Region, 2002.

Figure 8-32 shows concentration of inspections that were undertaken from naval vessels only. In comparing Figures 8-31 and 8-32, there are differences in the number and location of inspections. Naval vessels conducted virtually no boardings during the 12-year period in the Gulf of St. Lawrence, nor on George's Bank. All of the inspection effort was expended on the Grand Banks with a lesser effort to the south of the Burin Peninsula, and to the east of Saint-Pierre et Miquelon. Specifically, the main concentration of inspections by naval vessels has been on the Tail of the Grand Banks and the western part of the Nose, with some effort on the Flemish Cap. These maps confirm that the southwest area of the Canadian EEZ is being enforced almost exclusively by Fisheries and Oceans Canada. The figures also show that the thrust of the Navy's support to enforcement is directed at the NAFO fishery beyond the 200 nautical mile limit, rather than the national fishery inside the EEZ.

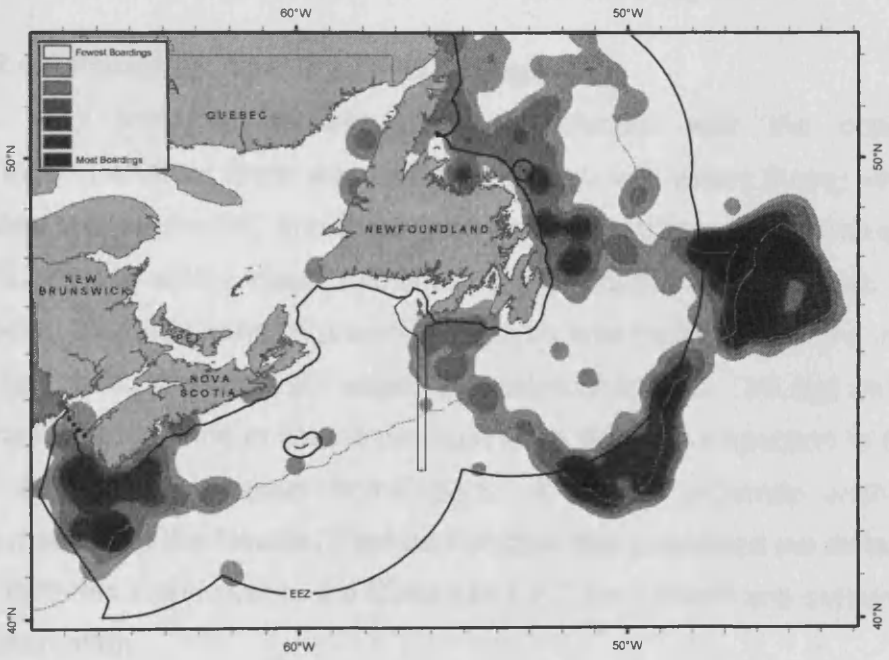


Figure 8-33. Boardings by Government Vessels – 1990 to 2002
Source: Fisheries and Oceans Canada, Newfoundland Region, 2002.

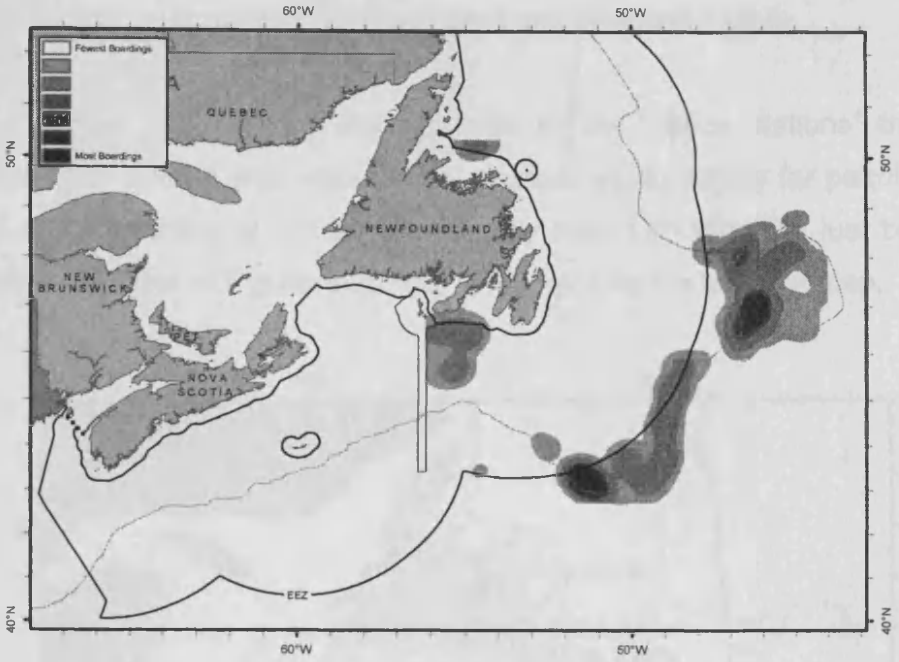


Figure 8-34. Boardings by Naval Vessels – 1990 to 2002
Source: Fisheries and Oceans Canada, Newfoundland Region, 2002.

8.3.2.4.2 Proximity Analysis of Boardings

Two proximity analyses were conducted with the objective of determining whether there was a correlation between where fishing vessels are boarded and inspected, and their proximity to the bases of government patrol assets, as well as the major maritime political boundary that defines the outer Canadian maritime zone. A proximity analysis was performed on the inspection data sets using the Nearest Feature Extension of ArcGIS. This tool was used to calculate the distance in kilometres from each fisheries inspection to DND and DFO airfields and vessel home ports. A similar proximity analysis was performed using the Nearest Feature Function that calculated the distance from each fisheries inspection to the Canadian EEZ, both inside and outside the line of demarcation.

8.3.2.4.2.1 Distances from Patrol Bases to Boardings

On land, few people become victims of armed robberies on the steps of the village police station. The likelihood of being robbed increases with distance from the base of the local constabulary. Can the same be said in a maritime context? The proximity analysis tested the supposition that the probability of a boarding / inspection increases the farther that a fishing vessel is from the

home airfield or homeport of known government patrol assets.

Figure 8-35 shows the locations of the "police stations" from which surveillance aircraft and enforcement vessels would deploy for patrol activities. One military airfield is not shown; Goose Bay, Labrador lies just beyond the northern neatline of Figure 8-35, but is incorporated in the next map.

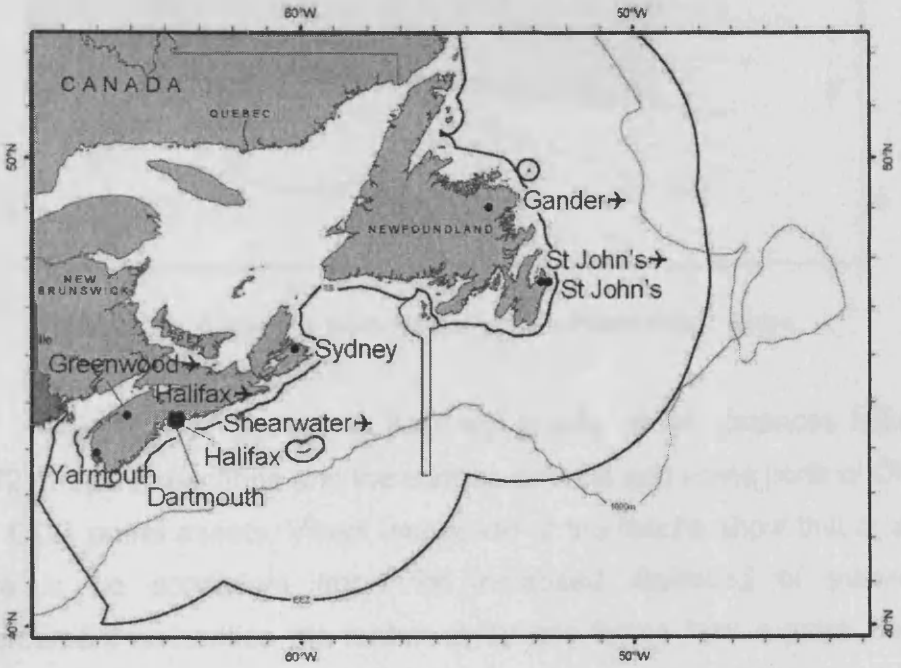


Figure 8-35. Locations of Patrol Asset Airfields and Home Ports

Figure 8-36 depicts the software's calculation of the straight-line distance from the position of each inspection to the various bases of DND and DFO patrol assets. Inspections carried out by all federal departments were included in this calculation. A total of 2,972 inspections were used in this analysis that covered the period 1995 to 2002.

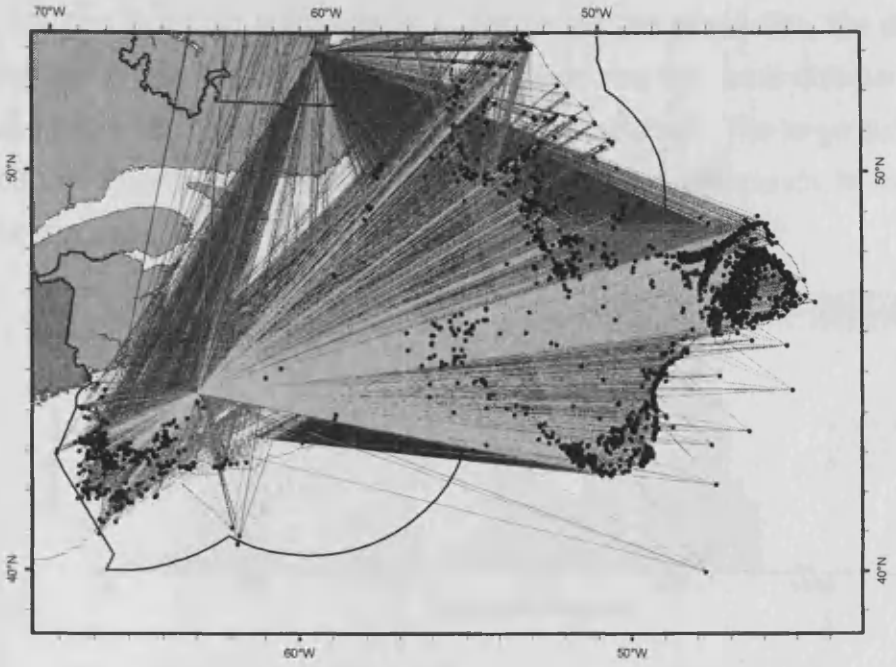


Figure 8-36. Distances from Inspections to Patrol Asset Bases

Figures 8-37 through to 8-41 are graphs of the distances between the 2,972 at-sea inspections and the various airfields and home ports of DND, DFO and CCG patrol assets. Visual inspection of the results show that in all cases, there is no consistent trend for increased likelihood of inspection by enforcement authorities the farther away one fishes from a patrol base. The exception, one could argue, is the airfield in Goose Bay, Labrador at Figure 8-40. However, the number of inspections is more or less the same from Goose Bay until roughly 650 nautical miles, and then there is an exponential increase.

By contrast, all of the graphs are punctuated by spikes that correspond to the distances from patrol bases to the inner and outer limits of the Tail of the Grand Banks, and the inner and outer dimensions of the Flemish Cap.

The distances from inspections to the PAL facility at the Halifax International Airport and the naval base in Halifax Harbour are portrayed in Figure 8-37. The two graphs are similar because the distance to from the sea bases to the airport is only 17 nautical miles. In Figure 8-37, the first spike at approximately 200 nautical miles corresponds to the distance to the Hague Line scallop fishery on Georges Bank and the lobster fishery off southwest

Nova Scotia. The next spike occurs at 550 to 600 nautical miles, the distance from Halifax to the Tail of the Grand Banks, and also the same distance to the inshore fishery off of the northeast coast of Newfoundland. The large number of inspections occurring 780 to 880 miles from Halifax corresponds to the inner and outer reaches of the Flemish Cap.

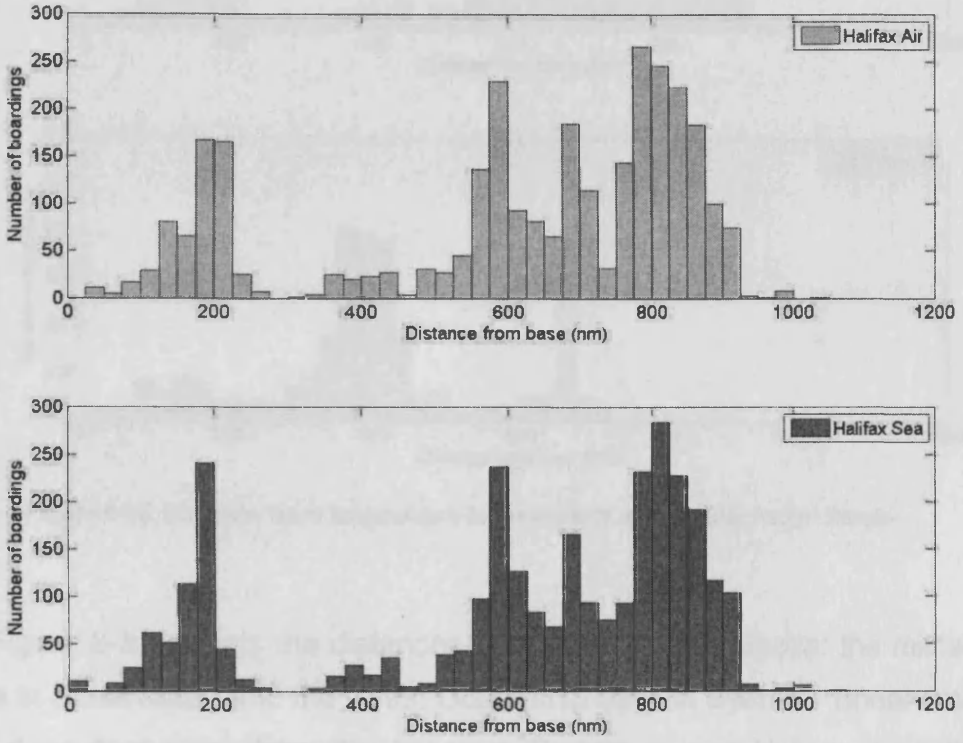


Figure 8-37. Distance from Inspections to Halifax Patrol Bases

Figure 8-38 contains the graphs of distances from the Coast Guard base in Dartmouth, Nova Scotia, and from the military airfield in Gander, NL. The Dartmouth graph appears identical to the Halifax graphs in Figure 8-37 because the Coast Guard base and the naval dockyard are within two miles of each other in Halifax harbour. As such, my observations on Figure 8-37 are applicable to the Dartmouth graph. With respect to the Gander graph, the inshore fishery to the northeast of Newfoundland is reflected by the frequency of inspections between 50 to 200 nautical miles. The large concentration 50 to 75 miles either side of the 400 nautical mile mark reflects the inspections carried out on both the Flemish Cap and the Tail of the Grand Banks. The spike at 650 miles from Gander is the fishery on Georges Bank.

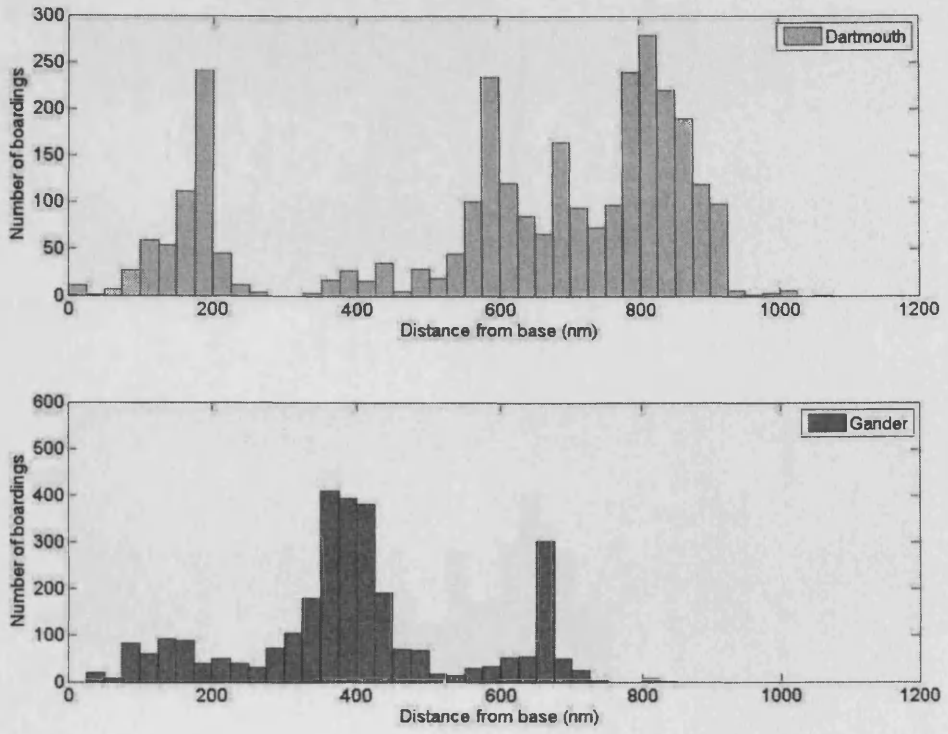


Figure 8-38. Distance from Inspections to Dartmouth and Gander Patrol Bases

Figure 8-39 depicts the distances from sites in Nova Scotia: the military air base in Shearwater, and the Coast Guard ship base in Sydney. Shearwater is only 4 nautical miles from the bases in Dartmouth and Halifax, ergo the resemblance to these two. Thus, Shearwater graph will be affected by the same influences. The Sydney results are interesting. What the graph shows is the concentration of inspections that start on the Tail at approximate 350 nautical miles and continue through to about 475 miles, then at 520 nautical miles the inner part of the Flemish Cap becomes apparent right out to 750 miles. The spike at 360 miles is the where the concentration on Georges Bank and southwest Nova Scotia coincide with the large concentration of inspections on the Tail.

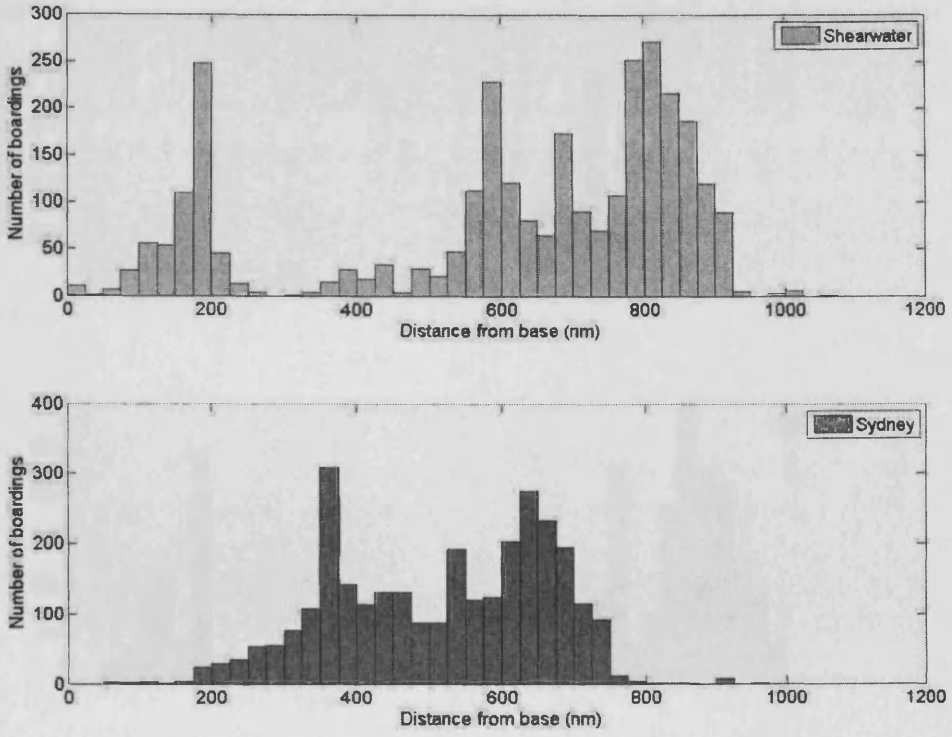


Figure 8-39. Distance from Inspections to Shearwater and Sydney Patrol Bases

Figure 8-40 contains the graphs of distances from the military air bases in Goose Bay, NL and Greenwood, Nova Scotia. The Goose Bay graph is interesting because the Georges Bank, and the inner and outer reaches of the Tail and Flemish Cap are all roughly the same distance from the military airfield. That is the cause of the concentration on the graph at 680 to 780 nautical miles. The spike at approximately 750 miles occurs because it is at that distance that the concentration of inspections along the EEZ on the Tail coincide with heavy enforcement activity on the inner part of the Flemish Cap.

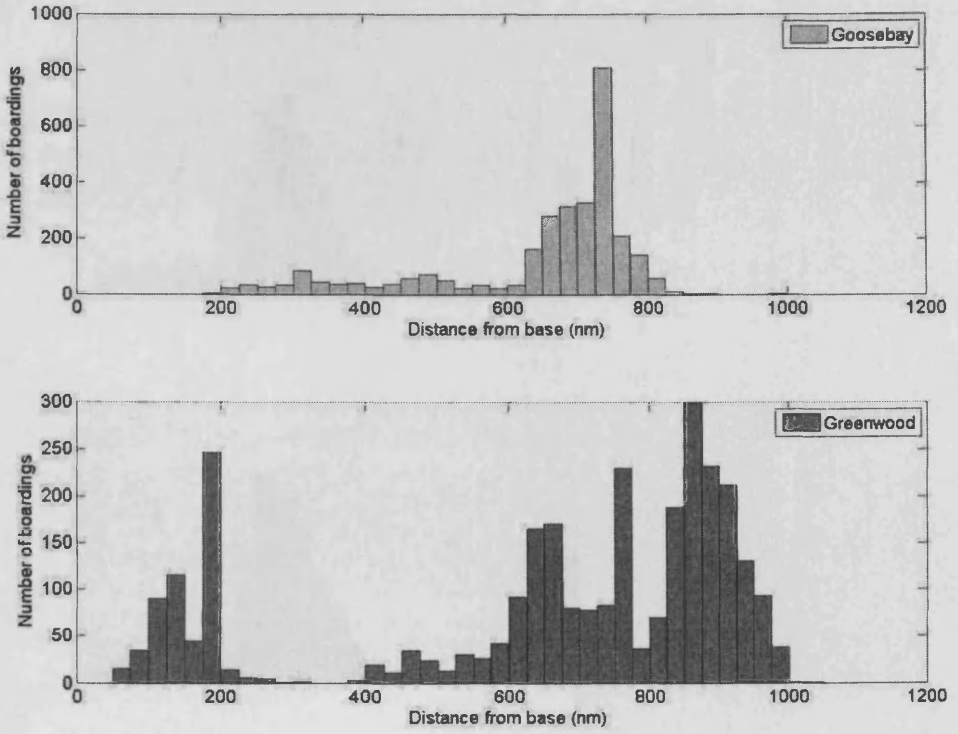


Figure 8-40. Distance from Inspections to Goose Bay and Greenwood Patrol Bases

The distances from inspections to the PAL facility at the St. John's Airport and the Coast Guard base in St. John's Harbour are portrayed in Figure 8-41. The two facilities are only 3.5 nautical miles apart, so the graphs should appear almost identical as was the case with Halifax. From St. John's the inner edge of the Tail is approximately 220 nautical miles and concentration of inspections on the Flemish Cap is roughly the same distance. This coincidence explains the large number of boardings that appear on the graph from 240 to 350 nautical miles. The spike at 700 miles corresponds to the distance from St. John's to Georges Bank.

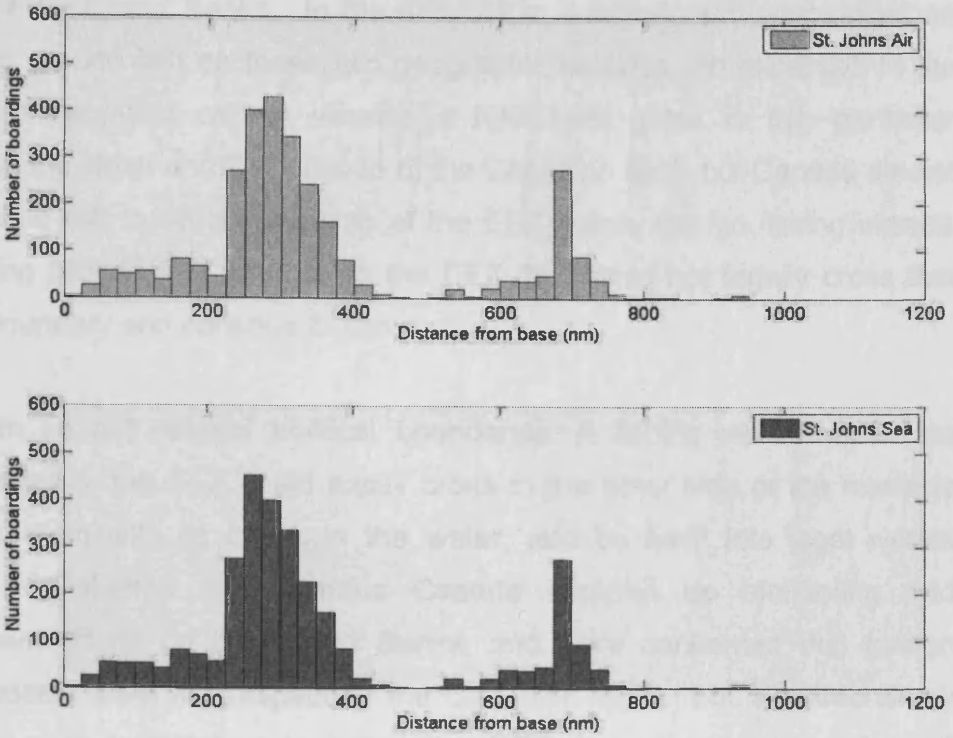


Figure 8-41. Distance from Inspections to St. John's Patrol Bases

The shortcomings of this type of proximity analysis must be borne in mind when analysing these results. In the case of airfields, straight line distances would have included some portion over land, meaning that an at-sea inspection would not have been possible for this segment of the line. However, had the overland segments been subtracted from the overall distances, the result would have been the same. The graphs would not have portrayed a scaled increase in boardings over distance. This is because, as visual inspection of the maps at Figures 8-31 and 8-32 demonstrated earlier, at-sea boardings occur in well-defined clusters anchored around specific geographic features. There appears to be no correlation between the location of a patrol base and where Conservation and Protection officers choose to conduct inspections.

8.3.2.4.2.2 Distances from EEZ to Boardings

Since the 1977 declaration of Canada's 200 nautical mile Exclusive Fishing Zone that later became the Exclusive Economic Zone, distant water fleets have fished in close proximity of this maritime boundary on the Nose and

the Tail of the Grand Banks. In the mid-1990s, a moratorium was placed on harvesting ground fish on these two geographic features. An exception to the moratorium permitted certain vessels a NAFO-set quota to fish particular species on the Nose and Tail outside of the Canadian EEZ, but Canada did not allow ground fish to be taken inside of the EEZ. Soon, foreign fishing vessels were taking ground fish right up to the EEZ, but could not legally cross that political boundary and continue to fish.

Fish do not respect political boundaries. A fishing vessel within ten nautical miles of the EEZ could easily cross to the other side of the maritime boundary, even with its trawls in the water, and be back into legal waters quickly. Fisheries and Oceans Canada stepped up monitoring and enforcement efforts on the Grand Banks, and were concerned that foreign fishing vessels were not respecting the Canadian EEZ. Some extraordinary measures were undertaken to patrol the EEZ, including the use of naval submarines to determine whether unscrupulous fishing boat captains were using the cover of darkness or fog and reduced visibility to slip across the line to fish illegally.[287] This leads to the supposition that since the mid-1990s, DFO and naval patrol assets focussed greater effort on boarding fishing vessels to the area immediately adjacent to the Canadian EEZ.

The proximity analysis tested the supposition that there is a correlation between the location of an at-sea inspection and its distance from the EEZ. As in the previous section, this analysis used 2,972 inspections carried out by all federal departments between 1995 to 2002. Figure 8-42 is a map that depicts the GIS software's calculation of the straight line distance from the geographic position of each inspection to the closest point along the Exclusive Economic Zone. Figures 8-43 through to 8-45 are graphs of the distribution of distances between the at-sea inspections and the EEZ.

[287] In 1994, I commanded the submarine *HMCS Okanagan* during fisheries patrol of the Grand Banks. See Laurence M. Hickey "The Submarine as a Tool of Maritime Enforcement," *Integrated Coastal Zone Management* 1 (Spring 2000): 117-122.

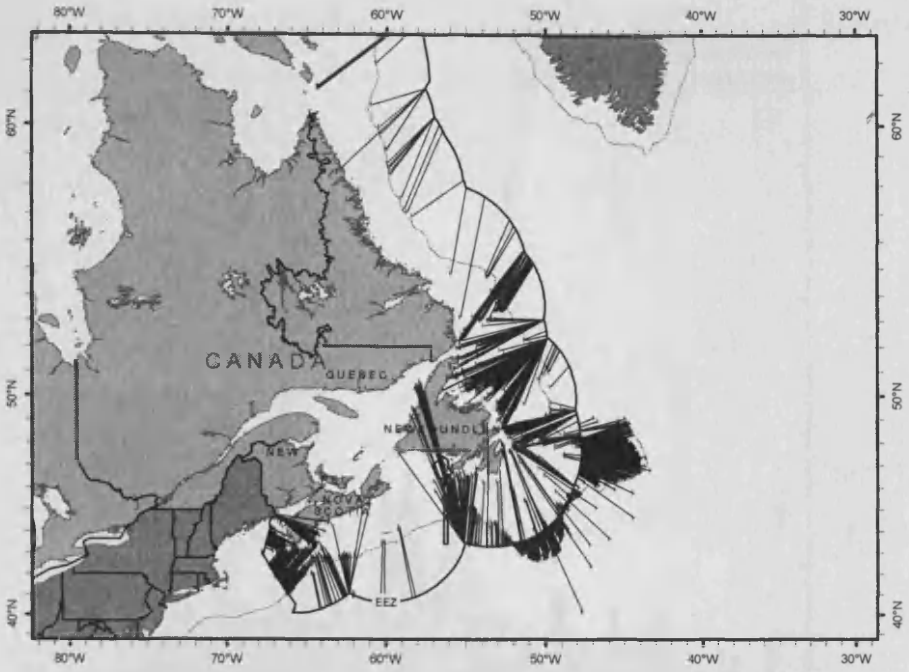


Figure 8-42. Distances from Boardings to Exclusive Economic Zone

Figure 8-43 shows the distribution of distances between inspections and the 200 nautical mile limit, both inside and beyond that maritime boundary. While it appears that the frequency of inspections increases towards the EEZ on the outside of the maritime boundary, there are three features on that part of the graph that warrant explanation. The first is the concentration of boardings that occur between 5 to 35 miles from the EEZ. These distances correspond to the to the majority of inspections that were conducted on the Tail of the Grand Banks. The Flemish Cap is also discernable on the graph, with the spikes at 50 through 65 nautical miles. Those distances correspond to the inner edge of the Flemish Cap and the outer edge is distinguishable at 120 nautical miles.

Referring to the inside the EEZ part of Figure 8-43, there is a marked spike of over 200 inspections at 60 nautical miles from the EEZ. This corresponds to the distance from the Hague Line to the inshore lobster fishery close to the southwest coast of Nova Scotia.

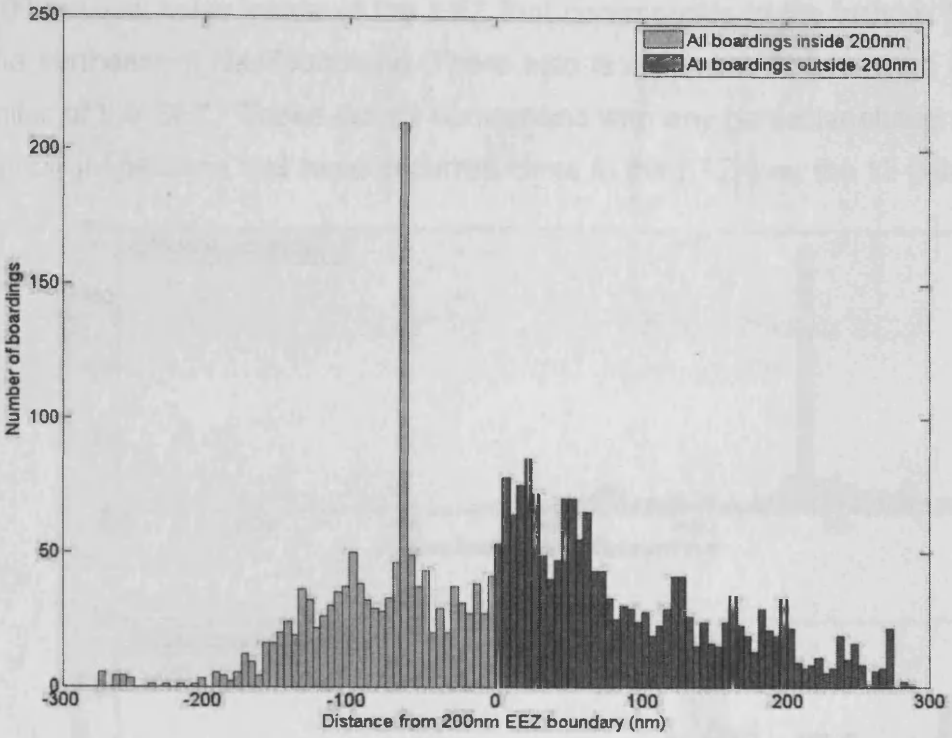


Figure 8-43. Distances from Boardings to Canadian EEZ – 1995 to 2002

Figure 8-44 shows the distribution of distances based on region in order to separate the Georges Bank and southwest Nova Scotia fisheries from those of the Grand Banks. There are very few inspections that are conducted by Scotia-Fundy region beyond the Hague Line that separates the maritime zones of Canada and the United is less than 200 nautical miles from coast the Canadian coast. Thus, what is displayed on the Scotia-Fundy graph at Figure 8-44 are those inspections undertaken inside of the EEZ. The spike at 60 nautical miles discussed earlier is evident in this figure.

The other graph in Figure 8-44 depicts the inspections that occurred in the Newfoundland administrative region. In this region, DFO Conservation and Protection officers carry out inspections under the authority of Canadian law inside the EEZ. Beyond the 200 nautical mile limit, the same fisheries officers take down their national flag, hoist the NAFO pennant, and conduct inspections on behalf of the North Atlantic Fisheries Organisation. Depicted in Figure 8-44 are the inspections carried out under national jurisdiction, inside the EEZ. The graph shows two main features. The first is a large concentration at roughly

100 nautical miles inside of the EEZ that corresponds to the inshore fishery to the northeast of Newfoundland. There also is a number of boardings within 15 miles of the EEZ. These do not correspond with any particular cluster, and are simply inspections that have occurred close to the EEZ over the 12-year period.

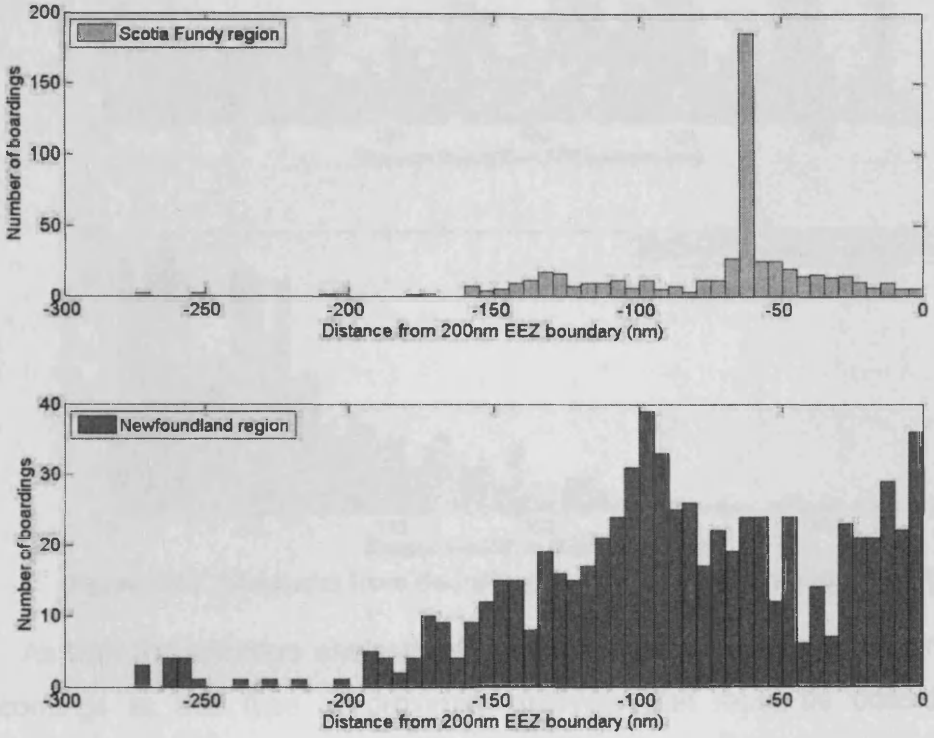


Figure 8-44. Distances from Boardings to Canadian EEZ – By Region

The distribution of distances beyond the EEZ is found at Figure 8-45. The upper graph depicting national jurisdiction boardings shows that the inspections were spread out from 5 to 275 nautical miles. The median distance is 158 nautical miles. The spikes in the graph at 125 and 175 nautical miles correspond to the cluster in the middle of the Flemish Cap and the Cap's outer edge.

The lower graph in Figure 8-45 paints a different picture, with a large number of boardings carried out relatively near to the EEZ, decreasing in number farther afield. The median distance in this case is 50 nautical miles. This graph suggests that when Conservation and Protection officers conduct inspections on behalf of NAFO, they do indeed conduct more boardings closer

to the EEZ.

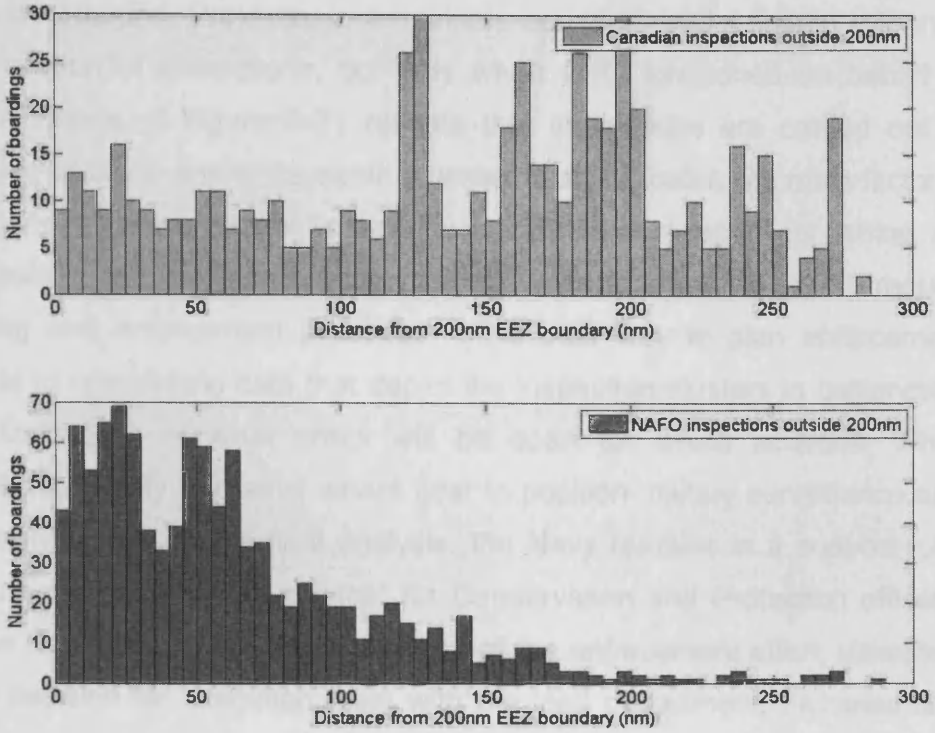


Figure 8-45. Distances from Boardings to 200 nm Limit from Beyond EEZ

As with the previous analysis of the distance to patrol bases, there are shortcomings to this type of proximity analysis that must be considered. Distances were calculated along the entire length of the EEZ contained within the study area. There are areas in which relatively little commercial fishing activity occurs such as the near Arctic, yet the few inspections recorded in these areas were included in the overall calculation. It could be argued that it would have been better to divide the EEZ into sections in the vicinity of inspection clusters, carry out the calculations, and then compare the sections. This process would have likely yielded results that could be considered more accurate. This approach was not pursued because the greater degree of granularity would have offered little more insight into the results than had been already obtained.

From the perspective of allocation of naval resources, an understanding of where inspections are likely to occur assists in the planning of enforcement support, particularly with regard to minor war vessels less capable of sustained operations on the edge of the continental shelf. The analyses in this chapter

demonstrated that proximity to patrol bases had no impact on where fishing vessels are boarded. Proximity to a maritime boundary had a limited influence on the location of inspections, but only when DFO functioned on behalf of NAFO. A review of Figure 8-31 reveals that inspections are carried out in geographic clusters, and while depth of water is an indicator, the main factor is whether or not there is a legal fishery, i.e., an area that is "open" for fishing. An open season attracts commercial fishing vessels that, in turn, require monitoring and enforcement presence. The best way to plan enforcement support is to use historic data that depict the inspection clusters in conjunction with a knowledge of what areas will be open for which seasons. While developing an ability to predict where best to position military surveillance and enforcement assets, in the final analysis, the Navy remains in a support role, essentially providing a "taxi service" for Conservation and Protection officers. While the Navy may influence the location of the enforcement effort, ultimately the final decision for execution rests with the lead department, Fisheries and Oceans Canada.

8.3.2.5 Naval Fisheries Patrols Statistics

So far, in this section of the thesis, the Navy's contribution to fisheries enforcement has been presented in the geographic context of naval vessel patrol presence and the disposition of at-sea inspections. A study of patrol and response would not be complete without having some measure of the outcomes of fisheries patrols by which achievement of mission goals might be assessed. Tables 8-11 and 8-12 contain statistics compiled in the reconstruction of the fisheries patrols for this project.

Table 8-11 contains the averages of patrol statistics taken from 87 individual ship's logs held in the National Library and Archives. The length of the each patrol was determined by reviewing the start and stop days of the each patrol, and subtracting the number of days mid-patrol that a vessel spent on a port call. Distance of each patrol was calculated by summing the distance run recorded on each page of the ship's log. Number of helicopter hours flown was determined by noting in the narrative of the ship's log the time at which a helicopter was launched and later recovered. The number of boardings carried

out was determined by noting in the narrative of the log when a ship's boat was launched and recovered, with an accompanying annotation that the boat was being used for transporting DFO officers to a fishing vessel. The number of arrests was determined by review of the narrative of the log and noting entries that indicated that an arrest had been carried out. The number of search and rescue missions undertaken on fisheries patrol was determined by review of the narrative of the log. Time spent on SAR activities was subtracted from the figure for patrol length. Statistics for each patrol can be found in Tables J-3 and J-4 at Appendix J.

TABLE 8 - 11

NAVAL FISHERIES PATROL AVERAGES – 1980 TO 1997

	Major Warship	Minor Warship
Patrol Length (days)	15.0	22.4
Days in port	1.7	2.2
Distance (nm)	3,112	3,517
Helicopter Hours	20.1	0
Boardings / Inspections	6.1	9.2
Arrests	.07	< .01
Search and Rescue Events	.35	< .01

Note: An arrest is an event in which a fishing vessel was diverted under escort to a Canadian port for further judicial processing.

TABLE 8 - 12

NAVAL FISHERIES PATROL AVERAGES – 1999 TO 2002

	Major Warship	Minor Warship
Area Covered (km^2)	218,022	73,327
Contacts Detected	115	24
Boardings / Inspections	7.1	5.5
Violations Detected	1.1	1.0
Fuel ($)	104,991	17,090
Coverage per dollar (km^2)	2.1	4.3
Cost per Detection ($)	913	712
Cost per Violation ($)	91,855	17,090
Cost per Arrest ($)	771,587	N/A

Note: Costs for fuel based on price paid by Navy at time of patrol. Violations are offences for which, at minimum, a warning or citation was issued by fisheries officers.

The patrol averages in Table 8-12 are drawn from the data collected aboard 11 frigates and 8 minor war vessels on fisheries patrol from 1999 to 2002. Electronic templates were provided to warship Commanding Officers for the collection of positional information, fuel consumption, detection ranges of vessels, location of inspections and other related information. The templates for this data collection are found at Appendix L.

One of the objectives in collecting data from naval vessels conducting current patrols was to develop an appreciation for the amount of ocean area that major and minor warships were actually monitoring in comparison to the theoretical. One naval analyst had postulated that Canadian frigates could monitor 32,000 km^2 (12,335 square miles) for eight to ten days without refueling.[288] In discussion with this analyst, I learned that he arrived at that figure by calculating the distance that a frigate would travel in a straight line over 10 days at a medium cruising speed. He used that distance as length of a rectangle, and double the ship's estimated radar range as the width, then employed the basic mathematical formula for determining the area of the rectangle.

Naval vessels never patrol in a straight line. Normally they favour one part of an area, passing several times over the same ground. I believed that a more realistic assessment would be obtained by averaging the observed coverage of several patrols over a multi-year period. Thus, the area coverage of naval fisheries patrols at Table 8-12 was obtained by using the GIS to reconstruct the ship's tracks at using hourly positions supplied by the ships, then connecting the positions with a straight line. The GIS was employed to create a "buffer" corresponding to the measured radar detection range on either side of the track, then the software carried out an area calculation. A buffer of 30 miles was used initially to test the method. This figure was based on the frigates' estimation of the maximum detection range of a small fishing boat by navigation radar at the frigates' antenna height. The buffer was changed once the actual detection range for each patrol was ascertained based on analysis of

[288] Peter T. Haydon, "Canadian Naval Policy: Still Stalled, Still Contentious, and Still Political," *Canadian Defence Quarterly* 26 (Summer 1997): 6-13.

the researcher's contact log maintained by the operations staff aboard the ships. While almost every frigate estimated an ability to detect a fishing vessel at 30 nautical miles, the actual detection ranges varied from 6.5 to 18.8 nautical miles, with a mean of 14.7 nautical miles. These results showed that frigates were over-estimating their ability to detect fishing vessels. In fact, they were detecting the contacts at only half the range that they'd anticipated.

Minor warships also over-estimated their ability to detect fishing vessels. Most MCDVs reported that they expected to gain contact by radar at 15 nautical miles. The contact logs revealed that actual detection ranges varied from 6.7 to 14.2 nautical miles, with a mean of 10.4 nautical miles.

The mean figure for area coverage of the 1999 to 2002 frigate fisheries patrols was 218,465 km^2. To put this in perspective, it could be said that on a fisheries patrol, a Canadian frigate monitors an area the size of the country of larger than Syria, but slightly smaller than Uganda. For minor warships, the mean figure for area coverage was 73,327 km^2, an area larger than Ireland but smaller than Panama. Area coverage by individual patrols is found at Table J-7 in Appendix J.

The cost metrics contained at Table 8-12 are not those used for performance measurement of operational activity. However, they are useful to demonstrate how expensive it is for a government to maintain a serious monitoring and enforcement regime. The figures also show the benefits and disadvantages of employing major combatants for constabulary operations, as opposed to smaller coastal patrol vessels. In the conduct of fisheries patrols, minor warships are roughly six times less expensive to operate yet they cover about one third of the territory as a frigate. However, they detect about one fifth of the number of contacts, bearing in mind that they tend to patrol the inshore fishery rather than the offshore fishery that is the realm of the frigates. The costs per violation detected and per arrest were calculated by summing the fuel costs for all of the patrols studied during 1999 and 2002, and dividing by the number of violations and arrests made. Arrests by Conservation and Protection officers embarked aboard naval vessels are rare and, as such, drive

the cost per arrest to approximately three-quarters of a million dollars in 2002 currency.

Although not reflected in the 2002 search and rescue statistics, it is interesting to note that, based on data spanning a 20-year period, a major warship on a fisheries patrol has a 35 percent chance of being dispatched on a SAR mission at some time during the patrol. While the positioning of a major combatant for the purposes of SAR alone is not a cost -effective proposal for maritime planners, the statistic nevertheless underscores the how the conduct of one type of enforcement activity has tertiary benefit to another.

8.4 Summary

This chapter examined the Navy's contribution to maritime enforcement in the context of patrol and response. Within the framework of maritime enforcement, search and rescue is considered a response activity, and the provision of vessels for the embarkation of fisheries officers to sea clearly constitutes a patrol activity.

The federal government is the authority for marine and aeronautical SAR. Under the federal SAR structure, the Department of National Defence provides aircraft and aeronautical services for SAR. Although DND has overall responsibility for marine and aeronautical SAR, the Canadian Coast Guard is responsible co-ordinate maritime search and rescue with DND, and is responsible for the provision of the maritime component of the federal SAR program. Joint rescue co-ordination centres bring together military and CCG personnel operate as a team to co-ordinate marine and aeronautical SAR responses. SAR fixed and rotary wing aircraft are based at two locations in the Atlantic provinces, and several lifeboats are stationed strategically in ports throughout the region. Five large Coast Guard cutters augment the SAR coverage of these lifeboats.

The majority of SAR incidents originate on the water, and tend to be clustered around small inshore fishing communities throughout the region. Most marine search and rescue incidents occur while local fishing seasons are

open, and the majority of calls for assistance take place in the summer months when fishing, recreational, and other commercial activities are at their peak. The geographic distribution of SAR incidents varies from season to season, but is consistent from year to year.

The Navy contributes to SAR in four ways: command and control, infrastructure, provision of SAR aircraft, and provision of naval vessels. The Canadian official responsible for SAR in the Atlantic region is a senior naval officer. The Navy provides an operations centre and communications capability for the command and control of all SAR operations. Military aircraft are tasked with the lion's share of SAR responses, and participate in almost 90 percent of all SAR incidents. This is not the case in the utilization of ship resources. Canadian Coast Guard vessels respond to just under three quarters of marine SAR cases, whereas naval vessels participate in less than one percent of these incidents. Analysis indicated that marine SAR resources are distributed effectively around the region.

Commercial ocean fishing activity is concentrated in six main locations in the study area. There are a string of inshore fisheries that extend from the coast to approximately the outer limit of the contiguous zone, most notably along the northeast coast of Newfoundland, and in the Northumberland Strait area of Nova Scotia and PEI. The other significant area of inshore fishing is to the southwest of Nova Scotia extending from the coast to the Hague Line. In the offshore fishery, there are three areas of concentrated activity. These areas lie on the continental shelf beyond the Canadian Exclusive Economic Zone, and are referred to as the Nose and Tail of the Grand Banks, and the Flemish Cap.

Fisheries and Oceans Canada is the lead federal department for fisheries management in Canada, but is assisted by DND for support to fisheries enforcement. In addition to aerial surveillance, the Navy provides major and minor warships for fisheries patrols, from which DFO Conservation and Protection officers board and conduct inspections of fishing vessels in Canada's maritime zones and the waters enforced by the North Atlantic

Fisheries Organization.

A geographic analysis of DFO/DND enforcement practices shows that the government effort has been characterized by clusters of at-sea inspections in southwest Nova Scotia, as well as the Grand Banks, and the Flemish Cap. A multi-year review of fisheries patrol data demonstrates that the Navy has concentrated its resources in the offshore fishery on the Grand Banks and Flemish Cap, and analysis of reconstructed ship tracks show that limited or no naval enforcement presence was demonstrated away from these geographic features. Analysis also shows that the proximity to the EEZ or to patrol bases have little influence on where government at-sea inspections are conducted.

Fisheries and Oceans Canada is becoming increasingly reliant on the Navy to assist with enforcement tasks. Over a 12-year period, the Navy conducted eight percent of at-sea inspections throughout the Atlantic provinces, and as much as 29 percent of the inspections for the Newfoundland region of DFO.

Analysis of data collected from warships during the 1999-2000 timeframe demonstrate that over a two-week fisheries patrol, a frigate typically maintains surveillance over an area of nearly 200,000 square kilometres, and a minor warships averages roughly half of that. Major combatants are six times more costly than minor warships to employ in a fisheries support role, but or more effective due to their speed advantage, better sea-keeping ability, and superior detection and communications capabilities.

Thus far, the Navy's commitment to developing maritime domain awareness for the whole of government, maintaining a robust search and rescue posture, and provision of support to fisheries enforcement have been explored in detail. The next chapter will examine what benefit the Navy accrues from its involvement in domestic maritime enforcement, and whether the status quo is a forgone conclusion.

Chapter Nine
NAVAL BENEFIT FOR SUPPORT TO MARITIME ENFORCEMENT

9.1 Introduction

Up to this point in the study, the research has examined how the Navy contributes to domestic maritime enforcement operations as part of the grander scheme of marine security in Canada. Put another way, the emphasis so far has been on what the Navy puts in to the equation, and not what it gets in return. This chapter will explore that aspect; what benefit does the Navy derive from its support to maritime enforcement?

This issue will be examined through two exploratory studies that address the perceived deterrent value of naval support to fisheries enforcement, and public opinion as it pertains to naval support to constabulary operations. In addition, the effect that fisheries support has on the combat readiness of warships, i.e. the ability of ships to complete combat readiness training on patrol will be examined to determine whether the Navy obtains any training benefit from this type of employment.

9.2 Estimation of Deterrent Effect of Naval Forces in Enforcement

A recurring theme throughout this project is the Navy's key role in the maintenance of Canadian sovereignty through its maritime enforcement activities. The previous chapter identified the level of effort expended in support of fisheries enforcement by a variety of measures, including the allocation of a number of days at sea, and the relative expense per fisheries patrol. However, Canadian frigates and destroyers were built with sea combat as the primary design factor. Speed and firepower are important characteristics in the design of successful warships, but the achievement of these attributes in greater magnitude usually demands higher fuel consumption, or greater initial cost at build. Thus, from an accountant's perspective, the employment of frigates and destroyers for relatively benign patrol duties is not a cost effective means of contributing to maritime enforcement, unless the overall effect of their patrols outweighs the cost of this type of employment.

How can the effect of patrols be measured? A simple tally of the number of citations issued or violators arrested provides some indication, but caution must be exercised in interpreting these numbers. Canadian naval vessels do not act independently during fisheries patrols; they respond to the direction of embarked DFO Conservation and Protection officers. Thus, violations or arrests attributed to naval vessels are a sub-set of the overall DFO effort, and do not constitute a true picture of the independent effect of naval vessels to the enforcement effort.

Earlier in this thesis, the policy framework and departmental responsibilities were discussed, as well as legal limitations for law enforcement by the Armed Forces. The naval enforcement presence and surveillance effort were covered in Chapters Seven and Eight. What is not readily apparent, though, is the impact of this naval presence, both ships and aircraft, on those who would challenge national sovereignty by violating Canadian law. In essence, the question is, "Are military aircraft or naval vessels a deterrent to law-breaking?" If the deterrent effect is minimal, then it can be argued that a review of the employment of naval assets for this type of sovereignty operation is overdue.

9.2.1 Prior Studies on Deterrence in Canadian Fisheries

As explained in the methods chapter, to address the issue of the deterrent effect, views were sought of those individuals who spend considerable time on the water in the Canadian maritime zones. These persons could comment upon the perceived presence of maritime patrol ships and aircraft, as well as the observed effect of this presence on those who would be inclined break the law. For the reasons identified in Chapter Two, the individuals chosen to provide the data for this aspect of the research were commercial fisherman.

There is a limited amount in the literature pertaining to deterrence of fisheries violations by commercial fishermen in the Canadian context. In the mid-80s, Fisheries and Oceans Canada conducted evaluations of fisheries

enforcement programs in on the east and west coasts of Canada to determine the extent to which the programs deterred non-compliance. One such study found that non-compliance was a real problem in fisheries management, one that had the potential for depletion of fish stocks through over-fishing, reduced long-term yields, and long-term economic losses for the region.[289] In 1985, DFO-sponsored researchers consulted with the RCMP and other government departments that had enforcement responsibilities and learned that, until then, no government department had attempted to measure deterrence in the fisheries.[290]

The DFO studies defined deterrence as a "non-event," or the amount of illegal activity that does not take place because of the threat of sanctions. Edwin Blewett notes that in the case of the fisheries, fishermen find themselves with opportunities to violate the law but, on weighing all the alternatives, decide that breaking the law is simply not worth it. He suggests that the commission of any offence presents a set of perceived gains and losses to the offender. There is always the possibility of being caught and prosecuted, so a violator's attitude towards risk is an important factor in the decision to commit an offence.[291]

Most law enforcement agencies use probability of arrest as a performance measure where the output of law enforcement is interpreted as the number of crimes not committed because of the threat of punishment. Blewett states that this cannot be done in the fisheries because the number of offences is not known as they would be in the case of an offence such as homicide. In the fisheries, the number of offences not committed is unobservable since the majority of them occur at sea, there are seldom witnesses and, as Blewett remarks, "fish don't squeal."[292] He adds that the extent of non-compliance with fisheries regulations cannot be directly

---

[289] Canada. Department of Fisheries and Oceans. *Optimization and Implementation Plan for Offshore Fisheries Surveillance,* by Donald J. Clough, Ottawa, 9 June 1980, p. P-2.
[290] Canada. Department of Fisheries and Oceans. Program Evaluation Branch. *Canada's Experience in Measuring the Deterrent Effect of Fisheries Law Enforcement,* by Edwin Blewett, William Furlong, and Peter Toews, Ottawa, 1985, 2.
[291] Ibid., 3.
[292] Ibid., 4.

measured, but rather must be estimated.[293]

Federal enforcement activities attempt to provide a credible deterrent through three main methods: aerial surveillance, sea patrols, and observers aboard fishing vessels. Each method has its own attributes. Aerial patrols provide photographic and eye-witness evidence of violations as well as acting as a visible deterrent due to the requirement to decrease altitude in order to read the vessel name off the hull.[294] The deterrent effect of aerial patrols depends on the potential violator's perception of the potential gain from committing the offence, the likely penalties if the offence is detected, and the chance that the fisherman will be detected breaking the law. One DFO study suggests that aerial surveillance can prevent short-term violations such as crossing a political boundary to fish illegally, then return quickly to legal waters.[295]

Both vessel and aerial patrols demonstrate national presence on and above fishing grounds. Earlier studies indicate that vessel patrols provide a different deterrent than aerial patrols. Rather than commit an offence such as temporarily fishing in a restricted area close to a boundary for a short time, a fisherman might decide to increase revenue by using illegal gear over longer period, perhaps a couple of weeks. Vessel patrols exercise the capability to intercept suspected violators at sea and board them with fisheries officers. At sea inspections discourage such practices such as prolonged use of illegal gear.[296]

In order to gauge the deterrent effect of DFO's enforcement programs, Blewett conducted personal interview surveys with fishermen in the Atlantic, Pacific, and Quebec regions. The Pacific study was conducted first. Blewett found that the sample size was too small, and he had no way of correlating enforcement effort with deterrent effect on anything but a local basis. When

---

[293] Ibid.
[294] While the Automatic Identification System (AIS) makes identification of vessels easier, to successful prosecute a violator, the positive identity of the vessel must be established. Visual identification remains the best method.
[295] Clough, *Optimization and Implementation Plan for Offshore Fisheries Surveillance,* P-2.

the study team conducted the Atlantic study, they chose to focus on several fisheries, and sample those intensively, rather than sampling a wide population but with little depth. Blewett interviewed 150 lobster fishermen out of a population of 8,000 lobster licences in the region. He found that expectation of apprehension was very low, only three percent across the Atlantic DFO regions.[297]

TABLE 9 - 1

FISHERIES VIOLATIONS – EXPECTATIONS OF CONSEQUENCE

Region	Perceived Probability of Apprehension and Punishment	Perceived Probability of Licence Suspension	
		1st Offence	2nd Offence
Scotia-Fundy	2.9 %	40 %	100 %
Gulf	2.1 %	91 %	100 %
Newfoundland	4.0 %	75 %	98 %

Source: Edwin Blewett et al. *Measuring the Deterrent Effect,* p. 13.

In Blewett's survey, fishermen were asked questions about the probability of being caught by a fisheries officer and, if caught, what was the likelihood of being prosecuted and convicted. Blewett's research was very much concerned with the economic consequences of an offence, and he summarized the study by offering strong support for the economic model of criminal behaviour, with the underlying assumption that lawbreakers weigh the costs against benefits.[298]

9.2.2 Deterrence Survey for this Research Project

To ascertain the deterrent effect of naval patrol assets, as opposed to those of other government departments, it would be necessary to determine whether the visual or radar presence of a maritime patrol vessel or aircraft in the immediate area would deter a person from committing a serious violation. The perception of presence was not an element of the either the Blewett or Clough studies, in which legal and illegal revenue from fishing were weighed against the probability of loss of income from detection or prosecution, irrespective of which department's enforcement resource had made the

[296] Ibid., P-3.
[297] Edwin Blewett, et al, *Measuring the Deterrent Effect*, 13.
[298] Ibid., 30.

apprehension.

In deciding on the best manner to approach the research question, a number of methods were considered. Personal interviews such as Blewett had used were one approach. The benefit of personal interviews is the face-to-face contact that provides an ability to probe for clarification or expansion, and thus is a versatile and flexible method.[299] The disadvantage of this research technique is that respondents are not anonymous to the researcher, and they may be reluctant to provide sensitive information to another person.[300] Telephone interviewing was not considered an option for this project. The type of questions required for this survey would not be as non-threatening as would be for a researcher who might ask for which candidate the respondent intended to vote in the next election. Rather, the subject matter of the interviews would be about potential law breaking. In addition, since the human and fiscal resources that Blewett had at his disposal were not available for this project, it was decided that another method would be employed to attempt to gauge the deterrent value.

William Zikmund identifies the self-administered mail questionnaire as a potential method for gathering this type data. The two advantages of this research method are that mail questionnaires can reach a geographically dispersed sample simultaneously, and at relatively low cost. Respondents in isolated or difficult areas to reach can easily be contacted by mail, such as the case of coastal fishing communities, particularly in out ports in Newfoundland. Mail questionnaires can be filled out at the respondents' convenience, whenever they have the time. Moreover, he suggests that there is a better chance that respondents will put more thought into their replies than they would in a personal or telephone interview.[301]

Zikmund asserts that a mail survey is the best medium for gathering extremely sensitive information because it is anonymous. The main

---

[299] William G. Zikmund, *Business Research Methods* (Orlando: Dryden Press, 1997), 232.
[300] Ibid., 235.
[301] Ibid., 244-245.

disadvantage of this survey method is that higher non-response rates are experienced with mail surveys than personal or telephone interviews.[302] Accordingly, for the reasons above, as well as financial resource constraints, it was decided to employ a mail questionnaire to collect the data. The process for developing the questionnaire was outlined in Chapter Two.

9.2.3 Purpose of Key Questions in Deterrence Questionnaire

A copy of the questionnaire used for the deterrence survey is found at Appendix P. The next few paragraphs will explain the intent behind the most important questions of the questionnaire.

Questions 1 through 8 solicited background information on the respondent, and were structured to put the respondent at ease, as well as determine two things. First, did the respondent spend a lot of time on the water in pursuit of his or her livelihood? If so, the credibility of the respondent's observations in the questionnaire would be greater since he or she would have been more likely to have seen patrol assets while fishing than a person with little cumulative experience, or one who spent little time on the sea. Second, did the respondent fish in the inshore or offshore fishery? This was important information since most of the DND surveillance and enforcement effort is dedicated to the offshore fishery. If the majority of the respondents worked the inshore fishing grounds only, the results would be less conclusive since the respondents would be less likely to see the patrol assets, and thereby formulate opinions about enforcement presence.

Question 9 was designed to determine the presence of patrol assets from the respondent's perspective. This question presented the respondent with ten photographs of naval and other government department ships and aircraft, then asked the respondent how many times per week each type of patrol asset was visually observed. Having determined in Chapter Seven what the actual military presence had been, it would be possible to compare the respondents' perspectives of the type of patrol asset they observed most

[302] Ibid., 205.

often, and how often DND patrol assets in particular had been observed?

Central to the issue of deterrence, Question 11 was structured to determine relative deterrent value of patrol assets from the fishermen's perspective. In Question 11, the respondent was presented with the same ten photographs of naval and other government department ships and aircraft, then asked in each case whether the visual or radar presence of the vessel depicted in the photo would deter someone from committing a serious offence. From the answers to this question it would be possible to determine what type of patrol asset respondents considered the best deterrent. The responses would also indicate to what degree fishermen perceived DND patrol assets as being a deterrent.

Questions 12a through 12h were designed to determine from the fishermen's perspective the adequacy of monitoring and enforcement efforts. Respondents were asked to either agree or disagree that various government departments were conducting the "right number" of patrols in their fishing areas. If respondents answered that they disagreed, they could elaborate further by choosing "more" or "fewer" patrols. From these questions it would be possible to know whether the respondents believed the government is doing enough surveillance and patrol activity, and whether the respondents felt that the Navy, in particular, should be doing more or less of these activities.

Question 13 was core to the issue of deterrence, and was probably the most important question in the questionnaire. The intent of this question was to determine whether or not respondents believed that law enforcement personnel were carried aboard naval vessels frequently. If so, it could be inferred that naval vessels are a legitimate deterrent. However, if respondents believed that enforcement officers are seldom aboard, then it could be argued that the ships have no deterrent value.

This question asked the respondents what percentage of time they believed that DFO Fisheries Protection officers were embarked aboard naval

vessels for enforcement purposes. The respondent was presented with percentages in five-degree increments from 0 to 100 percent, and was asked to circle the number closest to the respondent's estimate of the percentage. The respondent was then presented with a second set of percentage choices and asked to repeat the process with RCMP officers in mind. Question 14 was identical to Question 13, except it requested respondents' estimates of the amount of time that DFO and RCMP officers were embarked in Air Force aircraft for enforcement purposes.

Question 15 was another core question to the issue of deterrence. In this question, respondents were asked directly which department they considered to be the most effective at deterring illegal activities. Five choices were presented: Canadian Coast Guard, Fisheries and Oceans Canada, Department of National Defence, Environment Canada, and the Royal Canadian Mounted Police.

Questions 16, 17 and 18 were of no real significance to the matter of deterrence, and were included to allow the respondents to express their opinions on broader issues of conservation and protection, in case the respondents had become uneasy with the thrust of the questionnaire up to that point. It was felt that this would increase the likelihood of questionnaire completion and subsequent return by post.

Question 19 asked respondents to list all of the NAFO sub-areas and Canadian regional districts that they fished. This question was necessary for a couple of reasons. First, the survey was expressly designed to be anonymous; therefore it would be impossible to infer in which geographic areas the respondents had fished on an individual basis. While the mailing addresses of the fisheries associations gave some indication regarding the geographic distribution of the survey, many respondents fished in vessels that had the capability to travel far beyond their local fishing areas.[303] Thus,

[303] Most respondents fished from boats less than 45 feet in length (82.4 percent). However 9.8 percent fished in boats 45 to 65 feet in length, and 7.8 percent fished from boats greater than 100 feet.

determining the actual areas fished would indicate whether the survey was representative of the entire Atlantic region in both inshore and offshore fisheries. The NAFO sub-area and Canadian regional district data would show whether the sample population was clustered in areas that received no DND patrol presence, which potentially might correlate to a low number of sightings in Question 9.

9.2.4 Response to Questionnaire

Fisheries associations are organizations of individuals from various fisheries groups that are concerned with the development, conservation, and management of commercial fisheries, and the economic prosperity of their members. There are 88 fisheries associations in the Atlantic region: 54 in Nova Scotia, 12 in New Brunswick, just 7 in Newfoundland and Labrador, and only 2 in Prince Edward Island. Since some fisheries associations in New Brunswick are in French-speaking areas, the initial letter soliciting participation in the study was provided in both English and French. These 88 fisheries associations represent 10,671 core licence holders in the Atlantic region. Table N-2 at Appendix N provides a breakdown of licences by province.

In response to the letter solicitation, 14 fisheries associations agreed to participate in the survey. This number comprised 11 associations in Nova Scotia, none in New Brunswick, only 1 in Newfoundland and Labrador, and 2 in Prince Edward Island. The participation rate of Atlantic region fisheries associations overall was 15.9 percent. A list of fisheries associations and those that participated is found at Appendix N, Table N-1.

Based on the return cards posted back to the researcher, 144 questionnaires were distributed to the 14 fisheries associations. Of this number, 51 completed questionnaires were received back, for a fisheries association questionnaire response rate of 35.4 percent. However, in terms of the 10,671 core licence holders, questionnaires were sent to 1.3 percent of the total number of licence holders rendering only a 0.5 percent response rate in terms of total licences.

In the literature, it is stated that a mail survey is not considered reliable unless it has a minimum of 50 percent response, or unless it demonstrates with some form of verification that the non-respondents are a similar population to those did respond. Zikmund adds that the problem with mail surveys is that it is never really known whether non-respondents have refused to participate or are just indifferent to the subject matter.[304] Thus, the low response rate in terms of overall licences means that there is little inference that can be drawn from the deterrence data because the sample size is small.

It is also worth commenting on the geographic distribution of the respondents. By soliciting over 85 percent of all the fisheries associations in the maritime provinces, it was hoped to attract responses by those who fished throughout the entire Atlantic region, so that conclusions could be drawn about the region rather than just certain geographic sectors. Indeed, if one inspects Figure 9-1, one will note that respondents fished in virtually every NAFO sub-area, except those in the Gulf of St. Lawrence. However, the Canadian fishing districts fished by respondents are depicted in Figure 9-2 and this figure paints a different picture. The majority of respondents fished primarily around the island of Cape Breton on the northern part of Nova Scotia.

[304] Paul L. Erdos, *Professional Mail Surveys* (New York: McGraw-Hill, 1970), 144; Zikmund, *Business Research Methods*, 205.

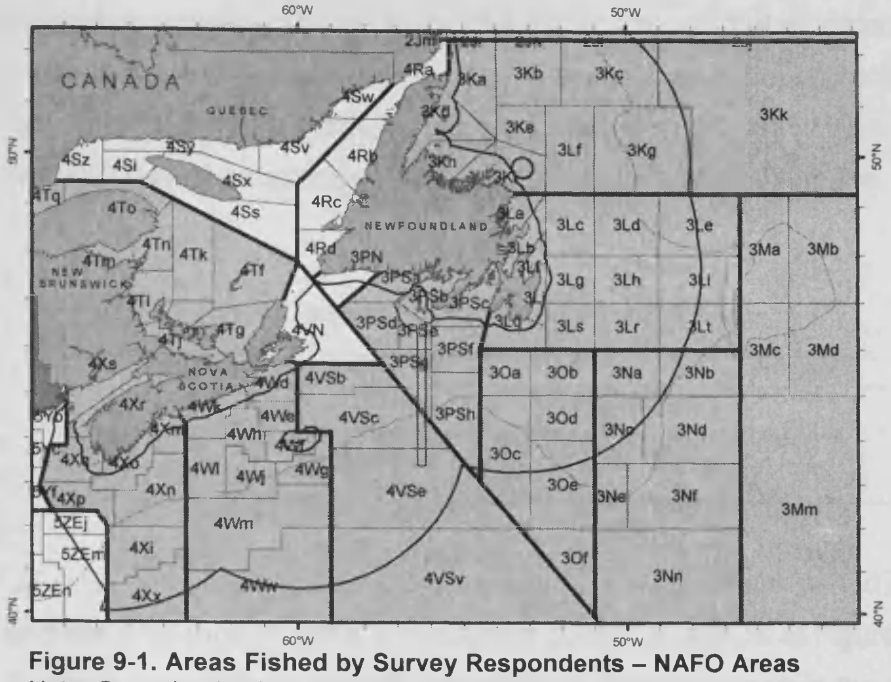


Figure 9-1. Areas Fished by Survey Respondents – NAFO Areas
Note: Grey shading indicates area was fished by at least one respondent.

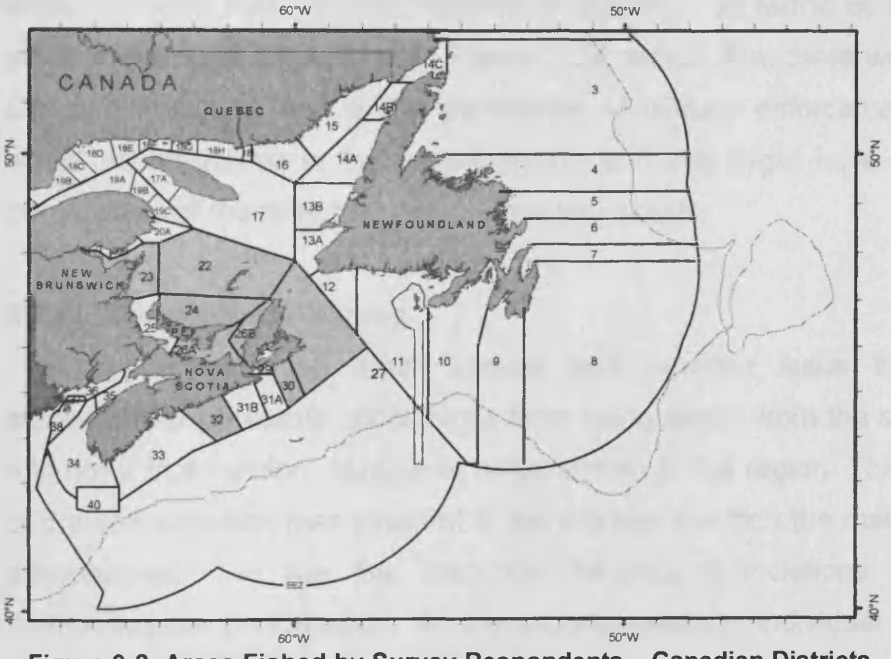


Figure 9-2. Areas Fished by Survey Respondents – Canadian Districts
Note: Grey shading indicates area was fished by at least one respondent.
District 27 is adjacent to the east of District 30, and not where labeled.

Table 9-2 shows that although almost all NAFO sub-areas were reported as being fished in 2003, only five respondents identified the offshore as being their principle fishing destination. The majority of the respondents, over 70 percent of them, reported being inshore fishermen. Almost 18 percent

of the respondents claimed to fish the inshore zones, but recorded NAFO sub-areas that are in the offshore fishery. The most probable interpretation is that they fish the inshore primarily but ventured out to 4X and 4W for flounder (33 percent) based on species licences reported in the questionnaire.

TABLE 9 - 2

AREAS FISHED BY RESPONDENTS

Respondents	Areas Fished	Percent
5	Offshore (2J,3K,3M,3N,3O,4Vs)	9.8
37	Inshore (4T,4Vn,3Ps)	72.5
9	Both	17.7
51		

A comparison of where the majority of respondents fished in Figure 9-2 and the presence of aerial surveillance aircraft presence at Figures 7-4 and 7-7 shows that military aircraft had relatively little presence in the Cape Breton area, whereas PAL aircraft patrolled frequently. In terms of naval vessel presence around Cape Breton, Figure 8-26 reveals that there was very little. One could expect that a low perception of military enforcement presence would be registered in the questionnaire, and that might have an effect on perceptions of the deterrent value of military assets.

9.2.5 Validity of the Survey

Aside from the small sample size, another issue that prevents statistically supportable conclusions from being drawn from the survey is that it is not a true random sample of all fishermen in the region. This is because of the self-selection bias inherent in the manner in which the mail survey was administered. In the first instance, fisheries associations self-selected themselves for participation. In the second instance, individual respondents belonging to the fisheries associations self-selected themselves for participation. Zikmund points out that self-selection will bias a survey because it allows extreme positions to be over-represented while those who are indifferent are under-represented.[305]

A true random sample allows statistical theories to hold. In this

deterrence survey, the sample size is 51 of a population of 10,671 core licences. If the sample were truly random, at a 95 percent confidence level the results would be +/- 14 percent. However, because this is not a true random sample of all fishermen, standard confidence levels that would normally be used cannot be applied in this case.

In view of the small sample size that lends little statistical significance to this data, and the relatively light presence of military patrol assets in the geographic areas fished by the majority of the respondents, this deterrence study should be interpreted as an exploratory study only.

9.2.6 Results of Exploratory Deterrence Survey

As shown in Table 9-3, the majority of respondents had fished for 21 years or more (80.4 percent). Few respondents (2 percent) had 15 or fewer years of fishing experience. Since the majority of the respondents were experienced fishermen, one can deduce that the respondents would be able to recognize and identify the patrol assets if observed.

TABLE 9 - 3

FISHING EXPERIENCE OF RESPONDENTS

Fishing experience	Percent
More than 25 years	49.0
21 to 25 years	31.4
16 to 20 years	17.6
11 to 15 years	2.0

Table 9-4 shows that the majority of respondents had fished between 17 and 32 weeks of the year (62.8 percent). This equates to 4 to 6 months of working on the water, and would have provided ample opportunity for the respondent to observe the activities of government ship and aircraft patrols.

[305] Zikmund, *Business Research Methods*, p. 205.

TABLE 9 - 4

TIME SPENT FISHING PER YEAR

Weeks fishing per year	Percent
17 to 24 weeks	47.1
8 to 16 weeks	21.6
25 to 32 weeks	15.7
33 to 40 weeks	15.7

Table 9-5 shows that the majority of respondents were lobster fishermen (86.3 percent). This result correlates with those who identified themselves as inshore fisherman, as well as with the geographic areas identified as being fished. Not all respondents reported a secondary licence; the percentages in Table 9-5 are calculated from the total of 51 responses, not the percentage of just those who reported a second licence.

TABLE 9 - 5

LICENCES HELD BY RESPONDENTS

Licence	Primary (%)	Secondary (%)
Lobster	86.3	-
Groundfish	7.8	3.9
Clam	3.9	-
Tuna	2.0	11.8
Crab	-	41.2
Oyster	-	3.9
Scallop	-	3.9
Turbot	-	3.9

Table 9-6 lists the areas that the respondents fished by NAFO sub-area or Canadian district. The greatest number of respondents frequented NAFO sub-areas 4Vn and 4T, as well as Canadian District 27. When Figures 9-1 and 9-2 are cross-referenced, it can be seen that these three areas are immediately adjacent to Cape Breton Island.

TABLE 9 - 6

AREAS FISHED BY SUB-AREA OR DISTRICT

NAFO	No.	District	No.
4Vn	28	27	22
4T	15	24	8
4W	4	22	4
4Vs	3	26A	3
3N	2	26B	2
3M	2	19	1
3O	2	23	1
3PS	2	25	1
2J	1	30	1
3K	1	29	0
3L	1		
4V	1		
4WD	1		

All 51 respondents answered Questions 1 through 8 of the questionnaire. However, once finished the general background questions, at Question 9 the number of responses dropped from 51 to between 41 to 44 responses. It is possible that at this point in the questionnaire some respondents became uncomfortable with the thrust of the questions and opted to skip the sensitive questions that focussed on deterrence. Only one of the 51 respondents quit the questionnaire entirely at Question 9.

Table 9-7 lists by type of patrol asset the number of sightings per week that respondents reported observing the ships and aircraft. The numbers in the columns are the raw counts from the questionnaire. The most significant observation from the table is that the majority of respondents reported having never sighted any of the patrol assets of all types. The patrol asset sighted by the greatest number of respondents (27 percent) was the PAL aircraft in the DFO paint scheme, followed by the DFO inshore multi-task patrol vessel (18 percent). The military patrol asset sighted most often by respondents was the DND CP-140 aircraft (16 percent). In all of these cases, respondents reported sighting the ships and aircraft only once or twice per week. Three respondents reported sighting the DFO offshore multi-task patrol cutter five times or more

per week. These three were respondents who self-identified as offshore fishermen who fished out to a maximum of 100 nautical miles from shore.

TABLE 9 - 7

NUMBER OF SIGHTINGS PER WEEK OF PATROL ASSETS

Patrol Asset	0	1 to 2	3 to 4	5 to 6	> 7
CCG PAL Aircraft	44	0	0	0	0
DFO PAL Aircraft	32	12	0	0	0
DND CP-140 Aircraft	38	7	0	0	0
DND Sea King Helicopter	41	0	0	0	0
RCMP Patrol Boat	40	2	0	0	0
DFO Offshore Cutter	36	4	0	1	2
DND Naval Frigate	39	3	0	0	0
DFO Small Patrol Cutter	35	7	0	0	0
DND Naval Minor Vessel	41	1	0	0	0
DFO Inshore Vessel	34	8	2	0	0

Table 9-8 lists by type of patrol asset the perceived deterrent value for each on a 7-point scale, with zero representing no deterrent value, and six representing the maximum deterrent value. Forty-three percent of the respondents rated the DFO inshore multi-task patrol vessel as having the greatest deterrent effect, with 69.2 percent of respondents rating the deterrent value of this vessel at 4 or higher. The RCMP patrol boat also fared well, with 76.2 percent of respondents rating the deterrent value of the RCMP craft at 4 or higher. However, only 28.6 percent of respondents rated this platform as having the greatest deterrent effect. The patrol asset judged to have the least deterrent value was the DND Sea King helicopter (43.9 percent), followed naval frigates and minor warships (33.3 percent).

The percentage of time that respondents perceived enforcement officers to be aboard naval vessels or military aircraft is presented at Table 9-9. Between 40 to 49 percent of respondents believed that enforcement officers were never embarked aboard military patrol assets. For these respondents, military ships and aircraft are clearly not a deterrent to law breaking.

TABLE 9 - 8

PERCEIVED DETERRENT VALUE OF PATROL ASSETS

Patrol Asset	Least			(Values in %)			Most
	0	1	2	3	4	5	6
CCG PAL Aircraft	12.2	26.8	19.5	12.2	26.8	2.4	-
DFO PAL Aircraft	11.9	14.3	11.9	11.9	14.3	23.8	11.9
DND CP-140 Aircraft	21.4	19.0	23.8	7.1	9.5	14.3	4.8
DND Sea King Helicopter	43.9	17.1	12.2	14.6	4.9	2.4	4.9
RCMP Patrol Boat	2.4	-	4.8	16.7	28.6	19.0	28.6
DFO Offshore Cutter	19.5	24.4	4.9	19.5	-	14.6	17.1
DND Naval Frigate	33.3	17.9	15.4	12.8	5.1	10.3	5.1
DFO Small Patrol Cutter	14.6	24.4	4.9	4.9	14.6	9.8	26.8
DND Naval Minor Vessel	33.3	16.7	19.4	5.6	11.1	8.3	5.6
DFO Inshore Vessel	5.1	5.1	5.1	15.4	5.1	20.5	43.6

As indicted in the previous chapter at Table 8-7, for the past several years, the naval operations schedules assign 125 sea days to DFO each year for fisheries support. From Table 8-6, it can be observed that the total number of sea days of Maritime Forces Atlantic ships varies between 1600 to 1800 days for all types of operations. Thus, the actual amount of time that enforcement officers are aboard naval ships is between 7 to 8 percent of the total operations schedule. In 2003, the year that the deterrence survey was carried out, actual sea days devoted to DFO were lower than normal. Only 99 of the planned 125 DFO sea days were executed, set against the total operations schedule of 1,579 sea days in total. Thus, in 2003, fisheries officers were embarked at sea in warships 6.2 percent of the time.

From Table 9-9 it can be seen that 39.8 percent of respondents believed that DFO enforcement officers might have been aboard naval warships 10 percent of the time or more. Almost a quarter of all respondents believed that naval vessels could have been on enforcement missions 25 percent of the time or more. In the case of aerial surveillance, 37.6 percent of respondents believed that DFO enforcement officers might have been aboard CP-140 aircraft 10 percent of the time or more. Twenty-eight percent of all respondents believed that military maritime patrol aircraft could have been on enforcement missions 25 percent of the time or more. It is clear from Table 9-

9 that respondents believed that RCMP officers seldom embarked aboard military patrol assets.

TABLE 9 - 9

ENFORCEMENT OFFICERS EMBARKED ON MILITARY PATROL ASSETS

Dept / Platform	Perceived Percentage of Time Enforcement Officers Embarked						
	0	5	10 to 20	25 to 50	55 to 70	70 to 95	100
DFO on Warship	41.9	18.6	16.3	18.8	-	-	4.7
DFO on Mil Aircraft	37.2	25.6	9.4	9.4	9.4	-	9.3
RCMP on Warship	48.8	31.7	4.9	14.7	-	-	-
RCMP on Mil Aircraft	48.8	26.8	9.8	9.8	4.9	-	-

From Table 9-9, it is clear that 60 percent of respondents believed that enforcement officers were aboard warships and military aircraft five percent of the time or less. Since the actual figure in any given year is between six to eight percent, the majority of respondents believed military patrol assets were engaged in enforcement activity less than the actual time devoted for this support. Even among the 25 to 30 percent of respondents who believed that Conservation and Protection officers were embarked more than 10 percent of the time, the majority felt that the fisheries officers were aboard no more than 50 percent of the time.

In Question 15, when asked to choose among federal departments, 55.3 percent of respondents replied that Fisheries and Oceans Canada was considered the most effective at deterring illegal activities in the Canadian coastal zones. DFO was followed by the RCMP at 31.9 percent, DND by 8.5 percent, and the Canadian Coast Guard at 4.3 percent. Although Environment Canada was listed as a choice, not a single respondent indicated that department being perceived as effective at deterring contraventions to Canadian law.

Based on the data presented at Tables 9-8 and 9-9, as well as the results of Question 15, it is reasonable to suggest that, at least to the 44 lobster fishermen who responded to the questionnaire, Canadian military

patrol assets have little deterrent effect on law-breaking in the inshore fishery around Cape Breton Island. However, this suggestion does not have the statistical robustness upon which to draw a firm conclusion, and it cannot be extrapolated across the Atlantic region for the reasons cited earlier.

9.3 Public Opinion Value

From the exploratory study in the previous section, it was suggested that employment of naval assets in support of fisheries enforcement produces only a limited deterrent effect. The purpose of the next section is to explore whether support to government departments, including fisheries patrols, provides inherent value to the Navy from the perspective of enhancing positive public opinion. Anecdotally, federal departments receive "good press" for their efforts to control the illegal flow of drugs, and to control foreign fishing activities, especially in parts of Canada that have depressed economies tied to the fishing industry.

A media content analysis was employed to answer the question, "How is the Canadian Navy portrayed in its support of other government department operations, in particular, fisheries enforcement?" The rationale and design of this method were covered in Chapter Two; what will be presented here are the results.

9.3.1 Media Content Analysis Results

From 1 Jan to 31 December 2002 the DND Director General Public Affairs website was accessed by a research assistant who read the articles that had been automatically "tagged" by DGPA's software and list of naval key words as having naval subject matter (Appendix Q). The research assistant determined in which of 10 themes the article belonged and, if the subject matter related to naval support of other government departments, the research assistant then categorized the article into one of six types, as listed in Table 9-10. The decision to categorize an article into a specific theme was based on whether the majority of the text or the emphasis was on a particular theme, although other themes might have been present in a minor capacity.

TABLE 9 - 10

MEDIA CONTENT ANALYSIS – THEMES AND TYPES

	Article Theme		OGD Article Type
1	OGD Support	1	Search and rescue
2	Naval operations	2	Environment/pollution
3	Naval exercises	3	Fisheries support
4	Capital projects	4	Counter-narcotics
5	Defence spending	5	Illegal immigration
6	Quality of life	6	Arctic sovereignty
7	Misconduct		
8	People stories		
9	Op APOLLO		
0	Miscellaneous		

The research assistant categorized each article based on how the print media had portrayed the Canadian Navy in its support of other government department operations, and recorded the article as having a positive, negative, or neutral bias towards the Canadian Navy.

During 2002, the media content analysis reviewed 852 new stories that contained a naval thread. Of these, 377 had a positive bias (44.2 percent), 171 had a negative bias (20.1 percent), and 304 were neutral (35.7 percent).

Of the 852 articles, there were far fewer about naval support to other government department than had been anticipated. Only 73 articles touched upon any of the six OGD sub-themes (8.6 percent). Table 9-11 lists the number of articles by theme and bias, and Figure 9-3 shows the percentages in graphic form.

TABLE 9 - 11

MEDIA CONTENT BY THEME - 1 JANUARY TO 31 DECEMBER 2002

Story Theme	Percent	Total	Neutral	Positive	Negative
Support to other govt depts	8.6	73	32	35	6
Naval operations - general	10.4	89	35	20	34
Naval exercises	2.7	23	6	17	-
Capital projects	10.0	85	40	8	37
Defence spending	11.4	97	87	4	6
Quality of life issues	6.5	55	7	9	39
Misconduct / harassment	2.0	17	2	2	13
People stories	15.1	129	17	111	1
Operation APOLLO	18.4	157	18	135	4
Miscellaneous	14.9	127	60	36	31
TOTAL	100.0	852	304	377	171

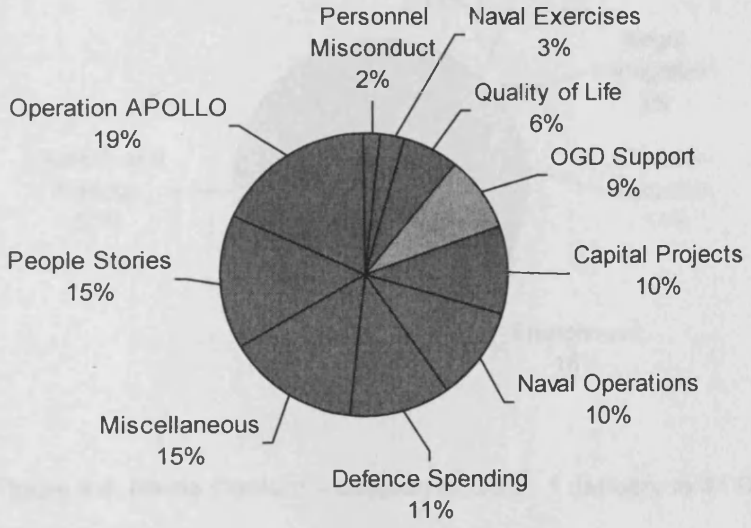


Figure 9-3. Media Content By Theme - 1 January to 31 December 2002

Of the 73 OGD-related articles, search and rescue accounted for 38 articles (52.1 percent), and there were 13 environmental or pollution new stories that pertained to naval operations (17.8 percent). The next most common of the sub-themes were articles about military counter-narcotics operations of which there were 10 (13.7 percent). Support to fisheries

enforcement registered only two new stories (2.7 percent). Table 9-12 lists the number of OGD-related articles by type and bias, and Figure 9-4 shows the percentages in graphic form.

TABLE 9 - 12

MEDIA CONTENT - SUPPORT TO OGD - 1 JANUARY TO 31 DECEMBER 2002

Story Theme	Percent	Total	Neutral	Positive	Negative
Search and rescue	52.1	38	10	28	-
Environment / pollution	17.8	13	3	4	6
Fisheries	2.7	2	1	1	-
Counter-narcotics / terrorism	13.7	10	9	1	-
Illegal immigration	2.7	2	2	-	-
Arctic sovereignty issues	11.0	8	7	1	-
TOTAL	100.0	73	32	35	6

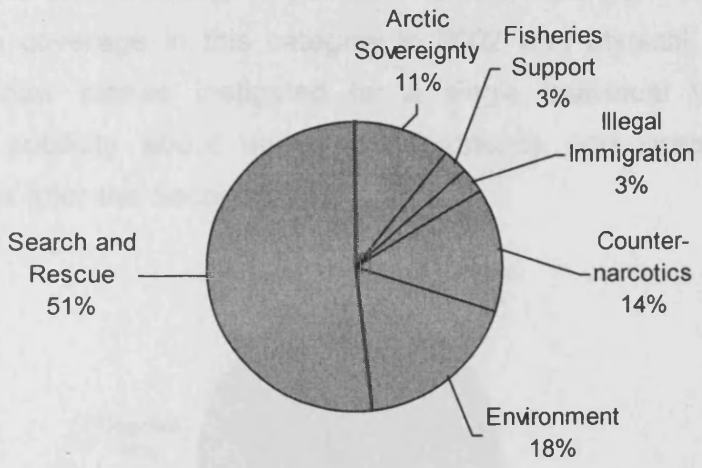


Figure 9-4. Media Content – Support to OGD - 1 January to 31 December 2002

Figure 9-5 shows that three-quarters of the new stories about search and rescue activities had a positive bias to them. This was expected, since search and rescue normally involves saving people in distress, and the rescuers are generally viewed positively. Occasionally, when there is loss of life, new stories can question decisions made during the search and rescue operation, portraying SAR personnel or processes negatively. The research assistant logged no negative stories about SAR in 2002.

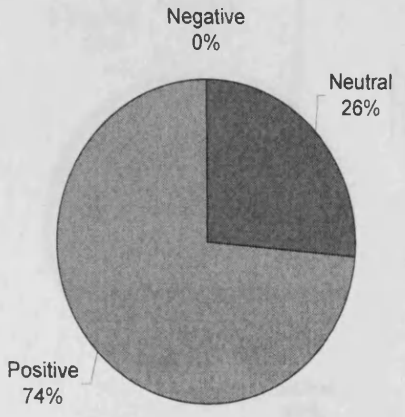


Figure 9-5. Naval Search and Rescue New stories

Figure 9-6 depicts a large percentage of negative stories pertaining to the Navy and environmental or pollution matters (46.1 percent). The amount of negative coverage in this category in 2002 was atypical, and reflects a series of new stories instigated by a single individual who generated significant publicity about unexploded ordnance and ocean dumping of mustard gas after the Second World War.

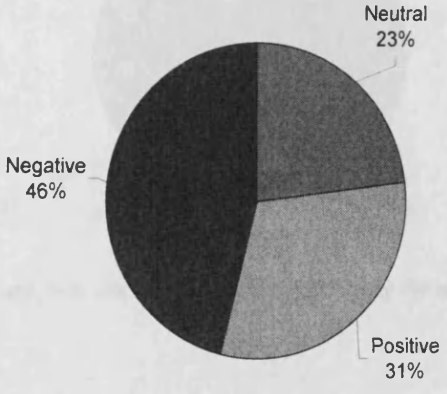


Figure 9-6. Naval Environmental/Pollution Newstories

Figure 9-7 shows that the overwhelming majority of new stories about naval support to counter-narcotics efforts were neither positive nor negative.

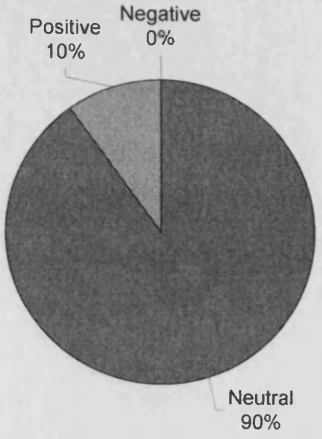


Figure 9-7. Naval Counter-Narcotics New stories

As in the case for counter-narcotics operations, Figure 9-8 shows that the overwhelming majority of new stories about naval linkages to Arctic sovereignty were neither positive nor negative.

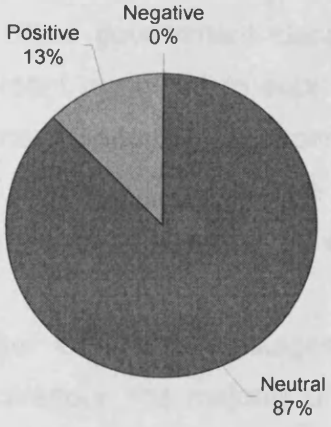


Figure 9-8. Naval Arctic Sovereignty New stories

Figure 9-9 shows that there were no negative new stories relating to naval support to the fisheries, and that the stories were evenly split between positive and neutral articles. However, there were only two new stories in this category for an entire year; no inference can be made regarding positive or negative bias on such a small sample.

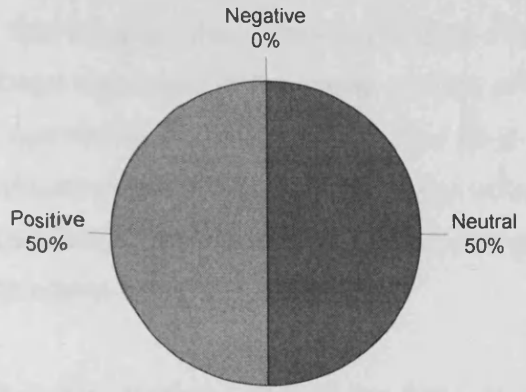


Figure 9-9. Naval Fisheries Support New stories

The results of this year-long media content analysis counters the supposition that support to fisheries enforcement is of significance to the Navy for public relations value. Only 8.6 percent of the total number of stories concerned support to other government departments, and of this small percentage only 2.7 percent pertained to support to fisheries. Put another way, fisheries patrols accounted for 0.002 percent of all new stories carried by the print media in 2002. Thus, it is reasonable to assume that the impact of naval fisheries patrols on public opinion in 2002 was insignificant.

In relation to other OGD-naval linkages, with the exception of the environment /pollution category, the majority of new stories were neutral in their portrayal of the Navy and thus likely did not diminish public opinion about the Navy, but neither is it likely that opinions were improved. However, it is clear that search and rescue articles undoubtedly created a positive impression of the military in the public mind.

The overall assessment is that support to other government departments by the Navy does not enhance to any great extent public opinion of the Navy.

9.4 Benefit of Fisheries Patrols on Warship Crew Readiness

So far in this chapter, the potential benefits of support to enforcement operations has been discussed in the broad context of deterrent value and the effect on public opinion to the entire Navy. The next section will narrow the focus to the individual ship level, and examine the value of fisheries support in terms of the opportunity for training and maintaining an assigned state of readiness for operations.

There are many metrics used by the Navy to track training progress. Some rest with the individual sailor and pertain to the level of training required to perform specific functions at a particular level in a specific trade within the organization. They may be training requirements that are prerequisites for individuals to attend advanced career courses. However, for the purposes of this research, it is not the readiness of individual sailors that will be examined, but rather the readiness of the ship as a single entity that will discussed, and what is the value of employment on a fisheries patrol on this readiness.

The basic supposition is that employment of a warship on a fisheries patrol will improve the level of combat readiness of the ship. The rationale for this is that the pace of activity during fisheries patrols is slower than that of military exercises, and should allow the ship to focus more effort on completing the individual and small team CRRs that are frequently difficult to achieve in a normally schedule of exercises and operations.

9.4.1 Combat Readiness Requirement Analysis

The Canadian Navy maintains a system of measurable training objectives called Combat Readiness Requirements (CRRs) for all classes of warships. These CRRs are reported every month to the Operational Readiness staff at Maritime Forces Atlantic Headquarters. The CRRs are reported as percentage completed during a particular month. For example, if there are 15 seamanship CRRs, and the ship has satisfied the criteria for only 11, the ship would report that it is 73 percent up-to-date in seamanship readiness.

The nature of these CRRs is tailored to the roles and capabilities of each class of ship. Moreover, there are three levels of CRR. The lowest level are periodic lectures and training activities to keep specific skill-sets of individual sailors and small teams refreshed at a periodic interval, skills that are needed for fighting of shipboard fires, small arms training, first aid training, etc. Depending upon the class of vessel, there might be over 250 CRRs that are tracked on a monthly basis.

Combat Readiness Requirements also vary depending upon the ships readiness status as assigned by the Commanding Admiral. Understanding that it could no longer afford to train, maintain, and sustain every ship in the Fleet to a high readiness standard due to diminished budgets, several years ago the Navy adopted a tiered-readiness program. Accordingly, the majority of ships are assigned "standard" readiness status, meaning that they need only achieve roughly 75 percent of CRRs. The ships that form the national and contingency task groups are assigned high readiness status, and are expected to achieve the highest level of CRRs possible. Thus, the overall CRR status of a warship will vary depending upon where the ship is in its tiered-readiness cycle.

Table 9-13 lists some of the lower level CRRs for surface vessels. The intermediate level CRRs are aimed at maintaining a whole ship capability for a particular task on a generic mission. Examples of these are displayed at Table 9-14. The advanced level CRRs are aimed at integrating the ship into a task group, demonstrating the vessels capability for multi-ship combat operations. Examples of advanced CRRs are listed at Table 9-15.

TABLE 9 - 13

EXAMPLE INDIVIDUAL AND SMALL TEAM CRRS

Combat Readiness Requirement	Validity Period (days)
Standard First Aid Training	1095
NBC Team Training	730
Contamination Control Organisation	365
Naval Fire Fighting	730
Flood Control Refresher	730
Rules of the Road for Officers-of-the-Watch	90
Bridgemanship Exam	180
Non-Ionising Radiation Hazards Lecture	365
Fuel/Oil Spill Response Lecture	365
Anchoring Procedures	180
Hazardous Materials Lecture	365

Source: CFCD 102(H).

TABLE 9 - 14

EXAMPLE INTERMEDIATE LEVEL CRRS

Combat Readiness Requirement	Validity Period (days)
Lost Diver Search	90
Cleansing Station Procedures (Nuclear)	365
Search and Rescue Simulation	120
Bomb Threat	180
Nuclear Defence	365
Refugee Assistance	730
Intelligence Collection	365
Blind Pilotage (Navigation by Radar)	60
Evidence Gathering Team	180
Maritime Interdiction Operations - Hailing	120

Source: CFCD 102(H).

TABLE 9 - 15

EXAMPLE ADVANCED LEVEL CRRS

Combat Readiness Requirement	Validity Period (days)
Sea Sparrow MissileFiring	365
Sea-Skimming Target Acquisition & Tracking	180
Intermediate Multi-Ship Air Defence Exercise	120
Target Acquisition Missile Scenario	180
Intermediate Surface Firing Exercise	120
Advanced Surface Firing Exercise	180
Encounterex	120
Mk 46 Torpedo Firing	365
Combined Anti-Submarine Warfare Exercise	180
ASW Detection & Tracking	90

Source: CFCD 102(H).

In order to determine what effect the employment of warships on fisheries patrols had on combat readiness, the Operational Readiness staff was contacted to provide combat readiness statistics on warships that had participated in naval fisheries patrols. Specifically, the staff was asked for CRRs percentages achieved during the patrols, and for one month prior to the patrols, as well as one and two months after the patrols. In addition, the staff was requested to provide the same information on ships that had taken part in the two major national maritime exercises in 2001. These were Canadian Fleet Operations Exercise 2/01 (CFO 2/01) and Canadian Fleet Operations Exercise 3/01 (CFO 3/01). Both CFOs were multi-ship exercises involving Canadian and Allied ships, submarines, and fixed and rotary wing aircraft. The CRR status of the ships that participated in the multi-ship exercises provided a useful comparison set against single ship naval fisheries patrols.

The Operational Readiness staff at Maritime Forces Atlantic Headquarters compiled CRR data on 29 warships that had conducted fisheries patrols during the years 1999 to 2001. These data were arranged in 9 categories based upon the definition of the CRR in the Navy's ordering directive, CFCD 102(H). The categories were Combat (CBT), Communications (COMMS), Anti-Air Warfare (AAW), Surface Warfare (SURF), Anti-Submarine Warfare (ASW), Command/Control/Communications/

Computers (C4), Combat Systems Engineering (CSE), Marine Systems Engineering (MSE), Seamanship (SEA), and Air Department (AIR). Minor warships also have an additional category, Coastal (COAST).

Table 9-16 contains the summary of CRR data provided by headquarters staff, minus the AIR and COAST categories. There are three activities represented in this table. The first section lists the CRR averages for all 29 ships that had conducted fisheries patrols. The second section provides the CRR averages for the three ships that participated in CFO 2/01, and the third section contains the data (CRR averages) for the three ships that took part in CFO 3/01. The numbers in the table are the percentages of CRRs that were reported by ships as having been completed either the month before the patrol or CFO, the month of the patrol or CFO, one month and two months after the patrol or CFO.[306]

From Table 9-16 it can be seen that, for the average ship in 1999 to 2001, one month before a fisheries patrol 55.8 percent of all CRRs were reported as complete. During the month of the fisheries patrol the figure increased to 59.5 percent, then dropped to 56.7 percent complete one month after the patrol. Two months after the fisheries patrol, the number of CRRs complete had risen to over 60 percent. This was a reflection of the ships' programmes providing opportunities to complete CRRs that were not possible during the fisheries patrols.

[306] Ships that participated in CFO 2/01 were *Iroquois*, *Ville de Québec*, and *Preserver*. The CFO 3/01 ships were *Halifax*, *Toronto*, and *Preserver*.

TABLE 9 - 16

COMBAT READINESS REQUIREMENT COMPLETION PERCENTAGES – 1999 TO 2001

	AVG	ALL SHIP	CBT	COMM	AAW	SURF	ASW	C4	CSE	MSE	SEA
Fisheries Patrol Ships											
1 month before	55.8	55.9	65.4	74.2	40.5	31.5	46.1	0.0	65.2	70.3	58.2
Month of patrol	59.5	59.0	68.2	74.1	44.2	37.4	49.0	0.0	69.0	80.8	58.1
1 month after	56.7	58.0	65.4	71.0	40.6	39.4	44.4	0.0	68.0	78.0	56.9
2 months after	61.2	63.6	81.4	87.0	47.4	49.0	49.8	75.0	82.1	81.9	65.4
3 months after	62.2	60.5	76.4	83.7	42.3	42.8	44.9	62.3	73.1	80.1	63.5
CFO 2/01 Ships											
1 month before	62.0	60.3	77.7	80.0	44.0	57.7	48.7	22.3	75.7	79.3	70.7
Month of CFO	65.7	64.3	84.7	87.0	66.7	50.0	46.3	55.0	73.7	79.3	73.0
1 month after	72.0	65.7	93.3	87.3	83.3	69.3	46.3	36.7	83.0	74.3	78.0
2 months after	72.7	65.0	87.7	85.3	81.0	69.3	39.0	68.3	88.7	75.3	71.0
3 months after	71.7	66.7	84.3	76.7	73.7	77.0	32.0	68.3	86.3	87.0	69.0
CFO 3/01 Ships											
1 month before	67.0	69.5	80.0	80.1	59.3	64.3	55.5	51.0	90.8	87.5	78.5
Month of CFO	70.0	67.5	84.5	90.8	64.3	55.3	64.8	46.3	87.3	77.5	73.3
1 month after	71.0	71.0	89.8	89.8	62.3	47.3	65.3	52.0	88.5	91.3	69.3
2 months after	65.0	64.5	85.8	67.5	56.8	46.3	44.8	45.8	89.0	86.5	63.8

Source: Maritime Forces Atlantic Operational Readiness staff, 2001.

Figure 9-10 depicts the same information in graph form for the average of all CRR categories. The axis along the bottom of the graph indicates the months before and during the patrol, as well as one, two and three months after the patrol. The graph shows that on average a ship goes from 55 percent CRRs complete to 60 percent complete during a fisheries patrol, an increase of only five percent. Figure 9-10 also shows the average of all CRR categories for the high readiness ships that participated in the two major CFO exercises. Note that in the months prior to the exercises, the six ships already had higher rates of CRR completion (62 and 67 percent) due to their assigned high readiness posture. Note also that the CFO ships did not suffer an immediate drop in CRR status immediately following the two exercises, although the CFO 3/01 ships experienced a 6.5 percent decline two months after CFO 3/01.

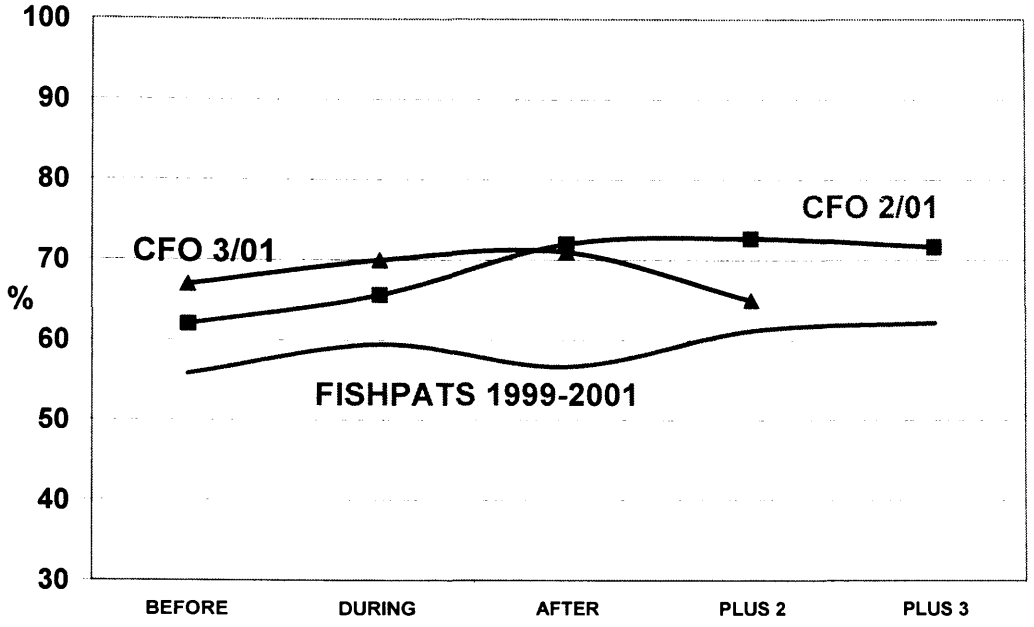


Figure 9-10. Combat Readiness Requirements – Average of All Categories

If one examines the CRR completion status by individual category, the curves are even more dramatic. Figure 9-11 depicts the Combat CRRs. One can see a drop of roughly three percent post-fisheries patrol, then two months after the patrol an increase by 16 percent in CRR completion. This same effect is not registered with the CFO ships that experienced no decline in Combat CRRs the month after the exercise. Their decline commenced two months after the exercise. This again was a reflection of ships' programmes providing opportunities to complete CRRs that were not possible during the fisheries patrols.

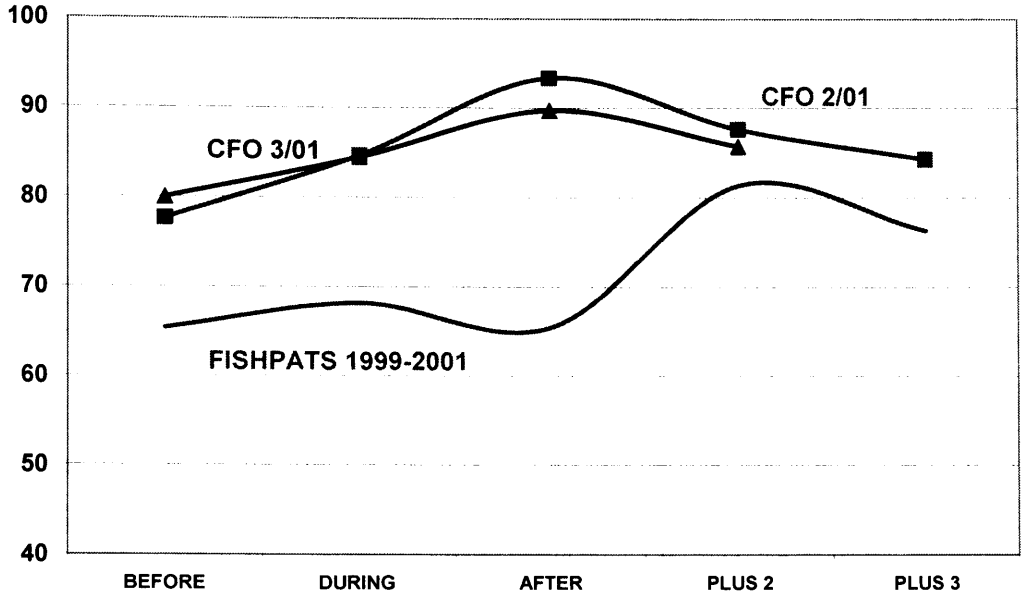


Figure 9-11. Combat Readiness Requirements – Combat

The curves representing Anti-Air Warfare CRRs in Figure 9-12 show how little this warfare discipline can be practised during a fisheries patrol. This is in marked contrast to the ships that participated in CFO 2/01. These ships were, on average, only 3.5 percent ahead of the average fisheries patrol ship the month before the exercise, yet achieved 66.7 percent during the exercise and peaked at 83.3 percent one month afterwards. Of interest, although one month before the two CFO exercises the Anti-Air Warfare readiness status of the six ships varied by 15 percent, both groups of ships in the major exercises achieved roughly 65 percent CRR completion during the months of each exercise. The CFO 2/01 ships went on to conduct live missile firings after the major exercise, and the CFO 3/01 ships did not.

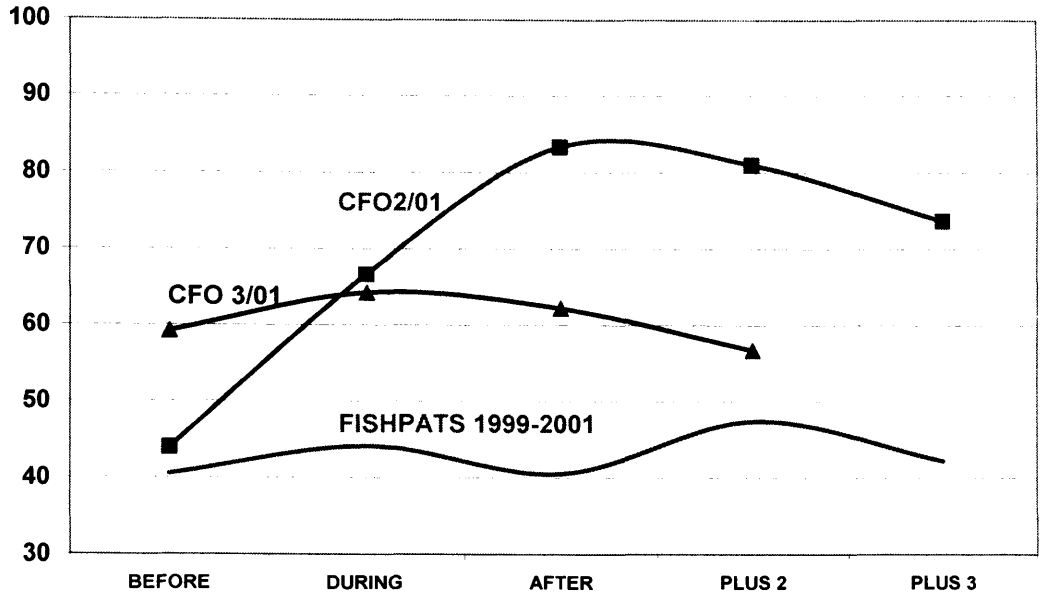


Figure 9-12. Combat Readiness Requirements – Anti-Air Warfare

Figure 9-13 depicts a category in which fisheries patrol employment is not disadvantageous to CRR completion, whereas multi-ship exercises and operations might be a hindrance. The curves for Marine Systems Engineering are shown in Figure 9-13. MSE CRRs involve practising emergency propulsion and power generation scenarios that have a ship-wide impact, and are not suited for scheduling at the same time as warfare scenarios. In Figure 9-13, it can be seen that fisheries patrols allow ships to increase their MSE CRRs by 10 percent, and remain relatively constant in the months after. On the other hand, the intense nature of the multi-ship exercises may impede the ability of ships to improve in this category of CRR, as seen in the curve for CFO 3/01.

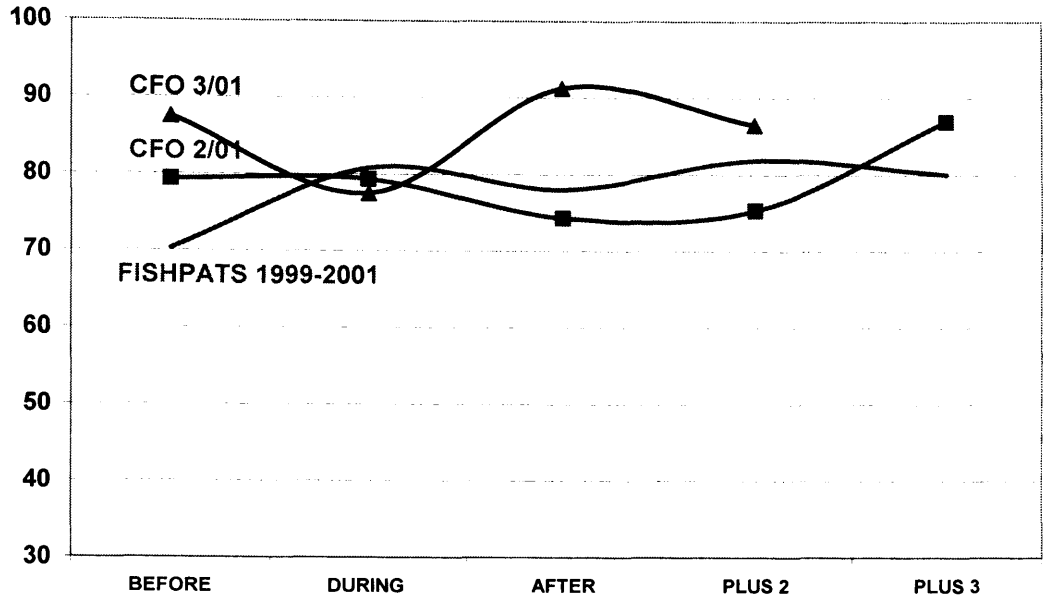


Figure 9-13. Combat Readiness Requirements – Marine Systems Engineering

9.4.2 Additional Training Value

In addition to Combat Readiness Requirements completed, the fisheries patrol allows ships to complete a number of miscellaneous training requirements. These include on-job training packages that required sea time, Officer-of-the-Watch bridge watch keeping by day and night for junior officers pursuing bridge watch keeping certificates, Engineering Officer-of-the-Watch certification endorsements, several marine systems engineering Head-of-Department and naval officer Certificate of Competency pre-boards, junior officer shiphandling practice, Captain's Rounds, unit disciplinary training and radiation safety lectures. These are in addition to the normal non-CRR recurring training such as casualty clearing training, boarding stations, gun functioning, and so on.[307]

The training value of a fisheries patrol is highly dependent on its timing. Often it is the focussed training during a fisheries patrol that allows the ship to complete a great deal of individual training and some team training, preparing the crew to take full advantage an upcoming multi-ship exercise. Fisheries

[307] Captain(N) Drew Roberston, Commanding Officer *HMCS Athabaskan*, interview by author, 1 December 2000.

patrols are a useful opportunity that is integral to the ship's combat readiness. Almost any ship can benefit from one quiet period in a year to enhance training.[308]

9.4.3 Assessment of Enforcement Support on Combat Readiness

Table 9-16 and Figures 9-10 through 9-13 show consistently that, on average during fisheries patrols, Combat Readiness Requirements can be increased by about 5 to 10 percent depending upon category, but there is a corresponding decline in the month immediately following the patrol. In addition, on average, Combat Readiness Requirements can be increased if the ship trains with other warships and aircraft present. This is because most of the advanced Combat Readiness Requirements require multiple ship interaction to satisfy the criteria for sign off. Few advanced CRRs can be achieved on single ship operations, and at least 30 percent of CRRs are in the advanced category. So unless a ship is able to orchestrate the participation of other maritime forces in the vicinity of a fisheries patrol, the best that a fisheries patrol ship can hope to achieve is an average of 70 percent completion of CRRs.

While gains might be made in individual categories of CRRs during fisheries patrols, an across-the-board improvement of only five percent for all departments is insignificant, and the consistent decline in readiness immediately following the patrols suggest that there is no inherent benefit to combat readiness derived from support to fisheries enforcement by warships.

9.5 Summary

There have been a limited number of previous studies pertaining to fisheries enforcement and the possible deterrent effect of government patrol assets. The prior research has tended to emphasize the economic model of criminal behaviour; the concept of patrol presence was not an element of these studies. In terms of contribution to knowledge, the deterrence survey presented in this thesis should be interpreted as an exploratory study only.

---

[308] Ibid.

This is due to its small sample size that renders the data statistically insignificant. Since there was limited presence of military patrol assets in the geographic areas fished by the majority of the respondents, the reliability of observations pertaining to patrol frequency is called into question. With those cautions in place, the deterrence survey conducted for this thesis suggests that, at least to some inshore fishermen, Canadian military patrol assets have little deterrent effect on law breaking.

A media content analysis undertaken for the year 2002 found that less than 10 percent of new stories pertained to naval support to other government departments. Naval support to fisheries enforcement accounted for only 0.002 percent of all new stories carried by the print media in that year. The majority of new stories that had naval linkages were neutral in their portrayal of the Navy. In view of these three elements, it is likely that new stories about naval support to other government departments had little impact on public opinion of the Navy.

One of the key measures of the status of training of a naval vessel as a whole is the Combat Readiness Requirement. Warships that are assigned fisheries patrol duties have the opportunity for focused training without the distraction of other ships in company. Data reported on CRRs from 1999 to 2001 indicate that readiness for combat can be increased by only about 5 to 10 percent during fisheries patrols, but immediately after the patrol ends there is a loss of readiness. Thus, employment by warships on fisheries patrols offers no substantial value to naval commanders in terms of an increased readiness posture for their naval vessels.

The ephemeral increase in combat readiness during the fisheries patrols, the apparent lack of a deterrent effect, and the insignificant effect on public opinion suggest that there is no inherent benefit derived to the Navy from the employment of warships on fisheries patrols.

Chapter Ten
ANALYSIS OF THE NAVAL ROLE IN MARITIME ENFORCEMENT

10.1 Introduction

This chapter presents an analysis that suggests that the Canadian Navy could take on a greater role in domestic enforcement, but that there are many impediments and a lack of will that prevent it from doing so. The chapter describes how the Navy's role in maritime security and enforcement continues to evolve, and how the Navy is charting the course for a whole-of-government approach in this domain. This discussion includes the potential for enhanced legal powers, the Navy's key function in the Marine Security Response System, and improvement in surveillance planning. The chapter closes with a short recap of naval contributions to oceans management that are related to, but separate from its maritime enforcement support efforts.

10.2 Threats and Security

When any government has insufficient resources with which to fulfill its multiple mandates, prioritization must occur, and choices must be made as to what receives attention and what does not. These choices are made by either by commission or omission; failure to take a decision is a decision in and of itself. Over the past half century, the area that the Canadian government has chosen to place little emphasis has been precisely where oceans, security, and defence policies trisect.

The question is will this trisection continue to be a gap in government attention and, by extension, the necessary resources to maintain sovereignty and national security?

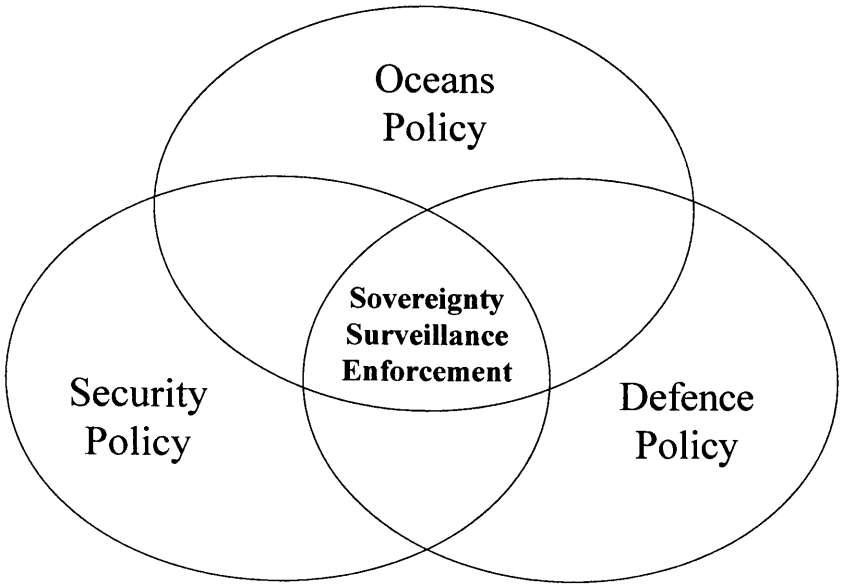


Figure 10-1. Trisection of Federal Policies

The threats and activities of interest in Canada's maritime zones will continue to be search and rescue, illegal fishing, drug smuggling, pollution incidents, illegal immigration, unauthorized at-sea research, petroleum and natural gas industry monitoring, whale and seabird protection, eco-tourism, foreign intelligence collection, and extremist activity. An emerging challenge for Canada though, is the implication from global warming and its effect on Arctic sovereignty. Warmer temperatures will likely result in the Northwest Passage becoming more navigable, with an inherent increase in marine traffic, and the increased likelihood of enforcement issues in the north.[289]

Jeff Tasseron and George Lindsey observe ironically that the greatest threat to Canadian sovereignty could well be the superpower to the south, and caution that Canada alone is responsible for defending its sovereignty.[290] Indeed, the November 2005 transit to the North Pole by *USS Charlotte*, an American nuclear submarine, became an election issue for the sitting government in 2006 because it was suggested that the vessel had entered

[289] Rob Huebert, "Climate Change and Canadian Sovereignty in the Northwest Passage," *Isuma* 2 No. 4 (Winter 2001): 86-94.
[290] Tasseron, "Facts and Invariants," 20; Lindsey, et al., "Canada's Security Policies," 9.

Canadian territorial waters during its submerged passage without informing Canadian authorities.[291]

The security climate changed with the fall of the Berlin Wall. It is unlikely that North America will face a conventional military threat as had been the case during the Cold War. However, globally non-state actors have threatened larger powers with asymmetric capabilities.[292] It is reasonable to assume that terrorist groups are prepared to use merchant vessels to transport their personnel and weapons. Any number of scenarios can be imagined here, including attacks upon cruise liners. Intelligence sources indicate a large number of merchant vessels controlled by Al-Qaeda; unclassified sources place the number at just over a dozen.[293] To combat these vulnerabilities, many security analysts agree on the need for greater surveillance of Canadian territory, maritime and aerial approaches.[294]

Dr. James Boutilier, testifying before the Standing Senate Committee on National Security and Defence, identified the lack of sufficient resources to execute the maritime security piece, in particular the weaknesses inherent in the existing federal government structure:

> At the national level, virtually all of the organizations involved directly or indirectly in maritime security appear to have significant capacity problems. The escalator phenomenon prevailed during the 1990s fewer and fewer dollars chasing greater and greater responsibilities."[295]

This concern should be serious to Canadians, in view of the dire condition of the Coast Guard and Fisheries and Oceans fleets given the age of the vessels and their state of "rust out." It also supports the case for increased

---

[291] Canadian Press,"Martin offers "necessary measures" in Arctic," 19 December 2005. http://www.ctv.ca/servlet/ArticleNews/story/CTVNews/20051216/ELXN_arctic_051219?s_name=election2006&no_ads=> (26 December 2005).
[292] Ralph Peters, "Constant Conflict," *Parameters* (Summer 1997): 4-14.
[293] David Pugliese, "Al-Qaeda's Naval Fleet," *Ottawa Citizen*, (17 March 2004): A1-A2.
[294] Lindsey, et al., "Canada's Security Policies," 5.; Bland and Maloney, *Canada's Defence Policy at the Turn of the Century,* 205.
[295] Testimony of Dr. James A. Boutilier, before the Standing Senate Committee on National Security and Defence, Issue 19 – Evidence 9 June 2003 <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/com-e/defe-e/19evb-e.htm> (7 February 2005).

use of naval vessels for maritime sovereignty and security tasks.

10.3 Wariness for Increased Naval Role?

Peter Haydon points out that the place of navies in maritime security is clear, but increasingly naval forces are taking on a greater role in oceans management despite nations fielding coast guards for this express purpose. Haydon explains that the trend for many states to use their navies in this manner is that the capabilities needed for maintaining maritime security, specifically surveillance, presence and response, are precisely the same capabilities required for oceans management and sovereignty protection.[296]

Indeed, it is easy to understand what the sovereignty protection role of the Navy is when the triggering incident is some form of armed aggression towards Canada. This is clearly a defence scenario, and the Navy's role in it is obvious. However, what is more difficult to divine what the Navy's contribution should be in routine sovereignty tasks, in which the threat to Canada is contravention of Canadian law, and in which the lead agency is invariable another federal department. In routine sovereignty protection, the Navy is just one of several players.

The reality is that no single government department or agency on its own can assure the safety, security, or sovereignty of Canada, even in the post-911 environment with the greater visibility that these issues have received. Senator Colin Kennedy, in his 2004 Senate committee report *The Longest Under-Defended Borders in the World*, observes that the Canadian Coast Guard, the Canadian Navy, and by extension the RCMP, are not defending Canada's coasts in "any meaningful way.[297]" Kenny opined that during the 37th Parliamentary hearings for the Standing Senate Committee on National Security and Defence, the Committee was surprised to discover that:

---

[296] Peter T. Haydon, "What Naval Capabilities Does Canada Need?" in *Maritime Security in the Twenty-First Century: Maritime Security Occasional Paper No. 11*, ed. E.L. Tummers (Halifax: Dalhousie University, December, 2000), 136.

[297] SCONSAD, *Longest Under-defended Borders in the World*, 108-109. See also Kelly E. Williams, "The Canadian Navy: In the Vanguard of Canadian Foreign and Defence Policy," in *The Canadian Navy and the New Security Agenda: Proceedings of the Maritime Security and Defence Seminar, Toronto, 26-27 April 2004*, ed. Ann L. Griffiths (Halifax: Dalhousie University,

> the Canadian navy is not defending Canada's coasts – other than assisting with surveillance – and that the navy has no jurisdiction over interior waters, such as the Great Lakes. The Navy prefers to do its defending on waters far away. We learned that, despite its name, the Canada Coast Guard does not guard Canada's coasts. Nor does it guard our interior waters.[298]

The committee concluded that no one department or agency in Canada was taking the lead in maritime security or in the protection of maritime sovereignty.

Senator Colin Kenny observes that the key federal departments with responsibilities for maritime security, Canadian Coast Guard, Royal Canadian Mounted Police, and Canadian Navy are not funded adequately to fulfill their mandates in the offshore, inshore, and internal Canadian waters, including the Great Lakes and St Lawrence Seaway.[299]

In the post-9/11environment, there has been considerable debate pertaining to the need for greater numbers of ships to patrol in Canada's offshore estate. The Senate Committee on National Security and Defence criticized the Navy for "abandoning" coastal patrols by its ships.[300] The misplaced emphasis on patrolling in ships also manifested itself as an element of the National Security Policy's six-point plan for maritime security. A short think-piece at Simon Fraser University's web-site *Canadian American Strategic Review* places emphasis on the need for many patrol vessels in the maritime approaches; in fact, there is even a proposal to employ the Navy's slow-moving maritime coastal defence vessels under the aegis of an invigorated Coast Guard with constabulary powers.[301]

It would appear that the authors of these proposals don't understand the sheer enormity of the area inside the 200 nautical mile Canadian EEZ. A lone

---

2004), 9.

[298] Colin Kenny, "Defending Canada's Coastal Waters: The King Canute Approach," *Toronto Star*, 29 October 2003 <http://sen.parl.gc.ca/ckenny/OPED%20Tor%20Star%20Oct%2029-03.htm> (20 March 2004).

[299] SCONSAD, *Longest Under-defended Borders in the World*, 14-27.

[300] Ibid., 17.

[301] "A Modest Proposal – Maritime Security and Canada's Economic Exclusion Zones: MCDV for an Interim Maritime Security Force?" *Canadian American Strategic Review,* 1 October 2004 <http://www.sfu.ca/casr/mp-ccgmcdv.htm> (28 February 2005).

ship, even with the speed of a frigate, in such a vast featureless territory is a poor use of a resource if the aim is solely surveillance and detection of violations of Canadian law. The analogy of a police car making patrols of city streets and keeping the peace simply doesn't fit in the maritime context. An ocean area is best covered by a combination of fixed arrays, aerial surveillance, and space-based assets. Patrol vessels are most efficient when vectored in to an area. The greatest benefit of a patrolling vessel is simply the demonstration of "presence," particularly in remote areas, rather than an expectation that the vessel would actually detect wrongdoing. Presence is also useful for supporting claims of sovereignty; the Danes send ice-capable ships that conduct Davis Strait patrols every year to reinforce their contested claim to Hans Island.

The Canadian Navy maintains a significant presence in Canada's maritime zones; moreover, naval vessels and supporting maritime patrol aircraft maintain presence in certain sections of the EEZ that other government departments do not. Presence also supports the argument for enhanced law enforcement powers, so that naval vessels could act when violations are encountered on routine operations.

While Canada's Navy has always been active in the nation's maritime affairs, there is a case to be made for expanding the naval role in domestic maritime enforcement in support of safeguarding national security and the exercise of Canadian sovereignty. A more comprehensive role for the Navy is both practical and necessary. The Navy should have all the legal tools required to enforce Canadian law in those areas. This is not to suggest that the Navy would shift its primary emphasis from preparing for combat at sea to coast guard duties. Rather, it is an appeal for powers that would enable the Navy to act upon violations detected while carrying out its fundamental military role. As was shown earlier, other government departments have become increasingly reliant on the Navy during a decade of government-wide retrenchment.

The Canadian Navy is fully engaged in safeguarding national security

and the exercise of Canadian sovereignty. In a period when patrol activities by other government departments has been waning, the Navy continues to maintain a not insignificant "on-the-water" presence in Canada's maritime zones. The Navy's tendency to revisit areas of high activity and traffic density coupled with its sophisticated modern sensor capability predisposes its vessels to detect breaches of domestic and international law. However, at present, unless a peace officer from another government department is embarked, there is little recourse open to a naval vessel other than to report it to the appropriate law enforcement authority and to wait for action to be taken by another department. Why then, has Canada been so reticent to take the next step, as have many other nations, to employ the Navy in enforcement of federal statutes in all Canadian maritime zones in a more primary manner than relegating it to a support role, as is the current situation?

10.4 Reticence to Use Armed Forces for Domestic Maritime Enforcement

The answer to the question posed above is found in a number of separate but related issues. The more significant of these can be summarized as follows:

a. public perceptions of the Army and a general unease with the use of the Army for law enforcement on land;

b. the question of the legitimacy of the use of the Canadian Forces for law enforcement;

c. the public's inability to distinguish between the Army and the Navy, and

d. the concepts that constabulary duties are non-traditional, detract from the status of a navy, and erode its war fighting capability.

These will be examined in further detail and, in so doing, it will become evident that these issues do not present such an insurmountable obstacle as may first

be thought.

10.4.1 The Army and Law Enforcement

As instruments of national power, most Western armed forces have been conceived and maintained to execute state policy abroad, although they can be employed domestically in certain situations where their unique military attributes can be employed with great effectiveness. The skills and aptitudes derived from training for combat make armed forces highly suitable to assist local authorities in dealing with dangerous or violent confrontations. Equally, armed forces are a natural pool of disciplined, highly trained talent to assist in times of disaster.[302]

While armed forces may seem suited for the execution of domestic policy, in practice democratic governments constrain the internal use of their militaries, usually to avoid potential political fallout and to maintain the legitimacy of their democratic governance. Canada is no exception, and this tradition has its roots in British legal heritage, imported to British North America before Confederation.[303]

It is argued that the perceived unwillingness to employ the Canadian Army in law enforcement roles during modern times comes from long-standing prejudices resulting from misuse of the Army in foregone times. To better understand how attitudes have been shaped regarding this issue, it is useful to review the historic record, starting in Great Britain. Steven Haines observes that the British *Bill of Rights* of 1688 is the point of departure for an analysis of civil-military relations in the British Isles and, by extension, the Dominion of Canada. This Act rendered the Army subordinate to Parliament and restricted its use by the Crown.[304] Haines notes also that the *Bill of Rights* of 1688 makes no reference to the Royal Navy, a powerful arm of the state during that particular period of empire building. Clearly, it was not viewed as a threat to the

---

[302] Steven W. Haines, "The Provision of Military Aid to Civil Authorities in Britain's Maritime Domain" (Ph.D. thesis, University of Aberdeen, 1992), 210.
[303] Ibid., 213.
[304] E.C.S. Wade and A.W. Bradley, *Constitutional and Administrative Law* (London: Longman, 1985), 406.

domestic political structure of the era. After the *Bill of Rights* a series of Acts followed to provide statutory authority and funding for armed forces to operate on land.[305]

For well over two centuries, the army remained an important tool in the execution of domestic policy largely because it was the only organized body of men that the Crown could call upon for its coercive ends. Consequently, well into the nineteenth century, soldiers were employed to maintain public order, notwithstanding the potential risk to liberty. However, the activities of working class movements during the Industrial Revolution often instigated riots and demonstrations, and frequently necessitated the use of the Army to maintain public order. Over time, public figures in Great Britain began to question the means employed to maintain law and order and the appropriateness of the use of the Army for this purpose. This evaluation coincided roughly with the creation of Great Britain's fledgling police forces, first in Scotland, then Ireland, and then in England. The *Metropolitan Police Act* of 1829 created an unarmed force of civilians that was based on the long established and generally accepted appointment of constable. These specific prerequisites were aimed at reducing public concern that a centrally controlled police force might pose the same threat to public liberty that had previously been the case with the Army.[306]

These attitudes towards the use of the army in the domestic context ultimately migrated to Canada, where the nation's inaugural police force came into being in 1841 at Kingston, Ontario. Thereafter, across the country the concept of law enforcement by civilian authorities became institutionalized. That said, the Army was used on many occasions since the birth of the nation in 1867 to prior to World War Two, in order to quell disturbances, to suppress election disorder, and to put down uprisings such as the Riel Rebellion of 1885. Many of these were not, as we would say today, public affairs successes. For

---

[305] P. Rowe, "The British Soldier and the Law," in *The Defence Equation: British Military Systems – Policy, Planning, and Performance since 1945,* ed. M. Edmonds (London: Brassey's, 1986), 175-190; quoted in Steven W Haines, "The Provision of Military Aid to Civil Authorities in Britain's Maritime Domain" (Ph.D. thesis, University of Aberdeen, 1992), 214.
[306] F. Gregory, "The British Police System – With Special Reference to Public Order Problems," in *Police and Public Order in Europe,* J. Roach and J Thomaneck (London: Croone Helm, 1985), 37.

example, the federal government enacted the *Military Service Act* of 1917 to permit conscription of men for service in Europe during the First World War. Opposed in Quebec, its passage divided the country along linguistic lines. When protests against conscription turned ugly in Quebec City 1 April 1918, troops were called in to quell the riots. Four persons were killed and 70 were wounded when the military forces opened fire. Some argue that the memory of this action remains with the population today, resulting in resentment towards using the Canadian Army to quell civil disorder.[307]

To gauge more recent public attitudes, if one looks at the most intrusive use of military force in the domestic context, Aid of the Civil Power, there have only been four instances of this type of employment by Canadian military forces since 1945.[308] In 1969, the Army was called out during the Montreal general police strike. A year later in 1970, the FLQ crisis resulted in the invoking of the *War Measures Act* and the callout of the Army again to maintain order in the province of Quebec. The third instance was the 1976 case of a sniper in Alberta, and the most recent experience with Aid to the Civil Power was gained in 1990, again in Quebec, with the Oka crisis.

It is difficult to determine the real public sentiment towards the use of the Army for law enforcement purposes. In the case of both the FLQ and Oka crises, the armed forces were praised for the calm and disciplined manner in which they contained the crisis and prevented escalation.[309] If there is truly lingering resentment towards use of Canadian Forces for law enforcement tasks, it is difficult to explain why visible military assistance is requested for major politically charged events such as the G8 ministers' conferences in

---

[307] Serge Durflinger, *Les Purs Canayens: French Canadian Recruitment during the First World War*, 27 September 2001<http://www.civilisations.ca/cwm/disp/dis001_e.html> (7 February 2005). See also Canadian Military History Gateway, *Military Service Act* , 21 June 2004 <http://www.cmhg.gc.ca/flash/ glossary/default-en.asp?organization=&t=1&osubject= &ss=&Ntx =mode%20matchall&resourcetype=&Ntt=military%20service%20act&Ntk= siResource&subjec t=&x=36&y=9&letter=M&page=3> (7 February 2005).

[308] Aid to the Civil Power is a type of domestic operation in which military forces are called out to suppress a riot or disturbance of the peace because it is beyond the civil authorities to control.

[309] Superintendent A. Antoniuk, Speech to RCMP officers at RCMP Training Academy, Regina Saskatchewan, 27 September 1990; Desmond Morton, *Understanding Canadian Defence* (Toronto: Penguin, 2003), p. 158.

Halifax (1995) and Kananaskis (2002), or the Summit of the Americas in Quebec City (2001).

This section has discussed possible origins of reticence for employing the Army in law enforcement roles, but has not addressed to the issue of naval enforcement. However, before that topic can be taken up, the issue of the legitimacy of the use of armed forces in such a role must first be explored.

10.4.2 Legitimacy of the Canadian Forces for Law Enforcement

Contrary to what many might wish to think, law enforcement is indeed a legitimate function of the Canadian Forces. Parliament has clearly indicated both its acceptance and expectation that its armed forces have a role in law enforcement in certain circumstances. This statutory basis can be found in the *National Defence Act*. This Act codifies the principles for control of the armed forces, as well as providing the legal framework for the provision of military support to provinces or other government departments for maintaining public order.[310]

Parliament has two major expectations vis-à-vis the armed forces and law enforcement. The first is that the Canadian Forces be capable of a broad spectrum of provision of services in both crisis and non-crisis scenarios as discussed in Chapter Five. Through the *National Defence Act*, Parliament empowers the Minister of National Defence or the Governor-in-Council to authorize the armed forces to "perform any duty involving public service," including the "provision of assistance in respect of any law enforcement matter."[311] At the low end of the spectrum, this takes the form of routine support to community activities. This is, by far, the most frequent type of domestic operation undertaken by the Canadian Forces and pertains to non-crisis provision of services. Humanitarian assistance is also covered by this section of the *National Defence Act*.

The "provision of assistance in respect of any law enforcement matter"

[310] *National Defence Act*, R.S.C. 1985 c. N-4. Part XI.
[311] *National Defence Act*, R.S.C. 1985 c. N-4. s. 273.6.

clause in Section 273.6 of the *National Defence Act* also encompasses assistance to law enforcement agencies. Assistance rendered by the armed forces covers a broad spectrum of activities from provision of ranges or training areas for police use, to the suppression of prison disturbances.

Parliament's second expectation vis-à-vis the armed forces and law enforcement is that the Canadian Forces be capable of taking responsibility for restoring public order when necessary, that is, be capable of coming to the aid of the civil power. Pursuant to the *National Defence Act*, military "service" can be furnished "in any case in which a riot or disturbance of the peace, beyond the powers of civil authorities to suppress, prevent or deal with and requiring that service."[312] The Chief of the Defence Staff is accorded the discretion to determine the scope and nature of military "service" in these situations. Under aid of the civil power, armed forces members possess the powers and duties of "constables" but remain under military command and control.

Aid of the civil power is a "service" that some might argue is the most controversial since it conjures up in the public's eye images of soldiers with rifles patrolling Canadian streets and, as far as some are concerned, the idea of a police state with the threat of concomitant suspension of civil liberties. Sean Maloney asserts that employing military forces domestically is a "politically provocative act, one that carries much weight regardless of the situation."[313] Further, argues Mathew Hammond, the use of military forces for law enforcement purposes obfuscates military and civilian roles, undermines civilian control of the armed forces, and is not an appropriate use of resources.[314] Notwithstanding this criticism, the reality is that the concept of the police state has never been acceptable in Canada, and the requisitions for aid to the civil power are always undertaken as means of last resort. Moreover, as stated earlier, recent examples of armed forces employment in aid to the

---

[312] *National Defence Act*, R.S.C. 1985 c. N-4. Part XI.
[313] Sean M. Maloney, "Domestic Operations: The Canadian Approach," *Parameters* (Autumn, 1997): 135-152.
[314] Matthew Carlton Hammond, "The Posse Comitatus Act: A Principle in Need of Renewal," *Washington University Law Quarterly* 75 (No. 2, Summer, 1997) <http://law.wustl.edu/WULQ/75-2/752-10.html#fn160> (6 February 2005).

civil power met with overall approval.[315] More importantly, though, Parliament has demonstrated through various legal instruments that it both accepts and expects Canada's military to play a role in law enforcement.

Are there constitutional issues that prevent the Navy, as opposed to the Army, from enforcing Canadian law? Understanding that this enforcement would take place offshore in Canada's maritime zones, a review of the *Constitution Act* indicates otherwise. Section 91 of the Act states that "the exclusive Legislative Authority of the Parliament of Canada extends to . . . Militia, Military and Naval Service, and Defence . . . Beacons, Buoys, Lighthouses . . . Navigation and Shipping . . . Sea Coast and Inland Ferries." [316] All of these subjects are clearly related to maritime activities on or beyond the coasts, and the Act codifies federal responsibility for each. Section 92 of the Act lists the exclusive powers of the provinces. These are focused on activities and issues that affect provincial territory, i.e., land. For example, "in each Province the Legislature may exclusively make Laws in relation to . . . Direct Taxation within the Province . . . Management and Sale of Public Lands . . .Establishment, Maintenance and Management of Hospitals . . . Tavern Licences . . . Property and Civil Rights.[317] Thus, the *Constitution Act* clearly implies that Canada's ocean zones are federal jurisdictions. As such, appropriate organs of the federal government may enforce Canadian law within these jurisdictions, provided they have the legal mandate. What would be required for the Navy to enforce, rather than just assist in enforcement, would be relatively minor amendments to various maritime-related enabling statutes.

Having established the legitimacy of the Canadian Forces and, by extension, the Canadian Navy for law enforcement tasks, it is time to examine potential biases.

10.4.3 Lack of Distinction between Army and Navy in "DomOps"

Notwithstanding the success of Kananaskis, Halifax and other fora in

[315] Antoniuk, Speech at RCMP Training Academy, 27 September 1990; Morton, *Understanding Canadian Defence*, 158.
[316] *Constitution Act,* 1867, s. 91.

which the Canadian military has been employed at domestic operations in high profile support of law enforcement agencies, in the public realm the perception is that "traditional" military law enforcement operations are those in which the Army is agency "of last resort." For many there is no distinction between the Navy dealing with narcotics smuggling, pollution, and fisheries violations at sea, and the Army conducting aid to civil power operations on land. The latter are very visible, affect large numbers of citizens, and can be intrusive on normal life whereas naval enforcement operations are largely invisible to the majority of Canadians. Due to this lack of distinction, negative biases derived from perceptions of the Army's operations are unconsciously applied to those of the Navy.

10.4.4 Enforcement as Non-Traditional Employment

When the question of naval law enforcement is raised, policy-makers, lawyers, and senior bureaucrats are reticent to concede that there might be a case for enhancing the Navy's constabulary role because such activities are "non-traditional." It can be argued that MOU-based counter-narcotics, fisheries, customs, and immigration law enforcement operations carried out by the Navy are not considered in the same category as the "force of last resort" missions. Rather, these types of operations are deemed more to fall into the realm of support to law enforcement agencies. That these operations are seen to be a "non-traditional" role for the Navy is both unfortunate and misinformed. Indeed, the need for fisheries protection from American interests in the waters of the Dominion of Canada around the turn of the century was a major factor in the creation of our homegrown Canadian naval service.[318]

Among naval analysts, the employment of navies for constabulary tasks is not a universally popular concept. A former head of the Navy, Vice-Admiral Gary Garnett stresses the importance of maintaining a distinction between the enforcement roles of the Canadian military and civilian authorities. He notes, as have many other analysts, that in Canada law enforcement traditionally has

---

[317] *Constitution Act,* 1867, s. 92.
[318] Marc Milner, *Canada's Navy: The First Century* (Toronto: University of Toronto Press, 1999), 8.

been a civilian function, although it is accepted that the armed forces may provide support to assist civilian agencies when circumstances warrant. With respect to naval law enforcement, there are disadvantages to employing naval vessels in these roles. The most apparent is that navies are designed for war-fighting, not constabulary tasks. In fact, during the Cod Wars with Iceland, Great Britain's frigates proved to be too "over-sophisticated" for the task.[319] Garnett's principal concern is to avoid the watering down of combat skills of naval personnel and his point is well taken. However, the intent would not be to convert the Canadian Navy into a fleet of coast guard cutters. Rather, naval ships would continue to train for their primary combat roles, and small teams would receive additional specialized training for them to become proficient at their secondary constabulary duties.

Peter Haydon argues that the Navy should be the key contributor to sovereignty and security patrols of Canada's maritime zones, in all parts of the water column and super-adjacent airspace,[320] because it is the sole department that has the capability to do them properly and efficiently, and the only organization that understands and can implement the concept of sea control.[321] Haydon also notes that the notion that the Navy should take on greater constabulary roles will always be contentious. He argues that, given the diminished state of the Canadian Coast Guard, consideration should be given to turning over northern sovereignty patrols to the Navy over time. Likewise, he posits that increased naval fisheries patrols make sense, with the actual inspections to be carried out by dedicated Conservation and Inspection Officers assigned to the warships.[322]

But Haydon also cautions against too much "constabularization" to the point that the nation has only a coast guard. In that scenario, he argues that Canada would find itself excluded from multinational naval operations. Both he and Garnett suggest that sending forces perceived to be of a constabulary

---

[319] Elizabeth Young, "Policing Offshore: Civil Power or Armed Forces," *RUSI Journal* 122 (No. 2, June 1977): 18-22.
[320] Super-adjacent airspace is a legal term used to define the airspace immediately above the surface of the water in the water column in question.
[321] Haydon, *Canadian Naval Future*, 13-14.

law is invoked against a single vessel and not against a state, there should be no provocation." Likewise, he adds, so many other countries use their navies for fisheries protection, it can be argued that there is a strong *prima facie* case for Canada to follow suit.[325]

Garnett is not the sole naval commander to express reservations about enhancing the Navy's constabulary role. Why are so many Canadian flag officers opposed to the Navy taking on a more active domestic maritime enforcement posture? The idea should not be discounted that there could be simple deep-seated biases at play. In his book *Sea Power and the Law of the Sea,* Mark Janis described five classes of navies, with the US and Soviet superpowers ranked at the top of the pecking order. The navies of Great Britain and France formed the second tier, but remained categorized as first-class "blue-water navies." The remaining classes are described as "coastal" by Janis due to their lack of naval power in comparison with the navies of the first two tiers.[326] Closer to home, Canadian naval planners, drawing heavily from Eric Grove's *Future of Seapower*, expanded the number of classes to nine in their 2001 naval policy document *Leadmark: The Navy's Strategy for 2020.* In this typology, the number one category, i.e., "major global force projection navy (complete)" is reserved for the United States. At the lowest rungs of the ladder are the "constabulary and token" navies. Canada ranks its navy in the third category far away from those navies described as being "constabulary."[327] Measured against yet another generally accepted scale, Canada meets the criteria to earn the label "medium-power navy" as defined by Rear-Admiral Richard Hill.[328]

Why is this relevant? Simply put, there is generally a correlation between

---

[325] Colin S. Gray, *Canada's Maritime Forces* Wellesley Paper 1 (Toronto: Canadian Institute of International Affairs, January, 1973), 46.
[326] Mark W. Janis, *Sea Power and the Law of the Sea* (Lexington, Mass: Heath, 1976), 63-64.
[327] Canada, Department of National Defence, *Leadmark: The Navy's Strategy for 2020* (Ottawa: Directorate of Maritime Strategy, 2001), 43-45. The nine categories in this classification system are: 1) major global force projection navy (complete), 2) major global force projection navy (partial), 3) medium global force projection navy, 4) medium regional force projection navy, 5) adjacent force projection navy, 6) offshore territorial defence navy,7) inshore territorial defence navy, 8) constabulary navy,7) token navy.
[328] Hill, *Maritime Strategy for Medium Powers*, 20.

ranking of a nation's navy and the nation's status in the international system. The majority of navies of developed countries occupy the upper tiers of the ranking system, whereas the developing countries' navies, those of a more constabulary nature, are found in the lower end of the ranking spectrum.[329] While some might argue that the reluctance to take on enforcement tasks reflects a desire to devote the Navy's limited resources to combat functions, it may well be that the senior naval leadership perceives a certain stigma if its fleets are associated with constabulary tasks rather than power projection or more war-like functions that rank them higher on the international stage. The Canadian Navy, given its early roots as a fisheries protection force, wished to shed that image and become a "real" navy. The attitudes of modern naval officers might well be a legacy of concern over image.

As discussed earlier, both Garnett and Haydon have cautioned against "non-traditional," that is, law enforcement employment of Canada's naval forces. However, they have not stated their case as categorically as did one witness who appeared before the Senate Committee on National Security and Defence. A former Commissioner of the Canadian Coast Guard, Mr. John Thomas, argued passionately against any increase in law enforcement powers for the Navy, citing cost and the need to maintain the option of a graduated response:

> I do not think that DND should have the role of coastal security. DND's ships, aircraft and trained personnel are very expensive, perhaps as much as 10 times the cost of Coast Guard equipment and personnel. Navy personnel are trained for war and navy systems are developed for war, not to fulfill a policing role on the coast . . . the navy should be called upon only when the police force cannot do the job. . . when a situation arises that police officers cannot deal with, you escalate the action up to the next level, but you do not start at the highest level. I must emphasize that point. There is a need for a flexible response. The military should be seen, from a policy perspective, as a force of last resort, in the same way as they are for land-based police operations. We do not call in the military to work with, say, the Toronto police unless the police are facing a significant situation that is beyond their capacity. The military is not called

[329] Michael A. Morris, "Military Aspects of the Exclusive Economic Zone," in *Ocean Yearbook 3* (Chicago: University of Chicago, 1982), 336.

in as a first step.[330]

Thomas and, to a lesser extent, Haydon and Garnett speak to a bipolar world of a bygone era during which Canada's Navy was structured to counter symmetric threats. It is unlikely that North America will face a conventional military threat as had been the case during that era of the Cold War. The maritime security environment changed with the fall of the Berlin Wall, and its continuing evolution was punctuated with the terrorist attacks against the World Trade Center in 2001. Globally, societies are witnessing an increased emphasis on asymmetric capabilities by organized crime and a variety of trans-state actors. It is reasonable to assume that terrorist groups are prepared to use merchant vessels to transport their personnel and weapons; any number of scenarios can be imagined here. Intelligence sources indicate that there are a large number of merchant vessels that are controlled by Al-Qaeda; unclassified sources place the number at just over a dozen.[331]

In addition to counter-terrorism, the protection of fishing rights, the prevention of illegal activity at sea, such as piracy or the smuggling of contraband or human cargo, and the protection of the environment will continue to require vigilance on the part of the federal government.[332] The National Security Policy, calls for effective integrated multiple agency threat assessment, protection and prevention capabilities.[333] However, it is no longer easy to understand what the sovereignty protection role of the Navy is when, as observed in Canada's International Policy Statement, "the boundary between the domestic and international continues to blur."[334] The International Policy Statement Canada's continues with the assertion that "defence and security policy must change."[335] Thus, while the thinking of Thomas *et al* may have been adroit at one time, the point has been reached to discard old paradigms

---

[330] Testimony of John F. Thomas before the Senate Committee on National Security and Defence, Issue 19 – Evidence 9 June 2003 <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/Com-e/defe-e/19eva-e.htm?Language=E&Parl= 37&Ses=2&comm_id=76> (7 February 2005).

[331] Pugliese, "Al-Qaeda's Naval Fleet," A1-A2.
[332] Lostracco, "What Force for Canada," 21-23.
[333] Privy Council Office, *Canada's National Security Policy*, 5.
[334] Canada, Privy Council Office, *Canada's International Policy Statement* (Ottawa: 2005), 12.
[335] Ibid.

about traditional employment for the Navy and to consider what is practical and relevant for the future maritime security environment. Other nations have already done so.

10.5 European Example of Naval Enforcement

If one looks to European nations for comparison, one notes that many employ their navies in limited law enforcement capacities. Fisheries protection has long been a traditional role for European naval and coast guard forces. The experience of Great Britain's Royal Navy in this role dates back to the 16th century.[336] At present, in the United Kingdom, law enforcement is defined as military aid to the civil authority, and the Royal Navy undertakes the following missions: quarantine enforcement; fishery protection; contraband operations; drug interdiction; oil and gas field patrols; anti-piracy operations; support to counter-insurgency operations; and maritime counter-terrorism.[337] Moreover, the Royal Navy maintains a Fisheries Protections Squadron with eight offshore patrol vessels.[338]

In other parts of Europe the French Navy, for example, acquired patrol vessels several years ago for policing tasks.[339] Farther north, the Norwegian Coast Guard forms part of the Royal Norwegian Navy, and has been given enforcement powers for over 25 laws through the Norwegian Coast Guard Act. These include fisheries, customs, immigration and safety-at-sea laws. Denmark has no coast guard; the Danes do not distinguish a maritime task as being coast guard or naval in nature. The Danish Navy exercises police authority for enforcement of sovereignty issues.[340]

European navies generally furnish law enforcement services directly to national authorities through MOUs. Usually what these navies provide are naval platforms and facilities. In some cases, such as the Danish model, the Navy carries out constabulary and traffic-police duties, whereas the appropriate

---

[336] Pugh, "Policing the Seas," 111.
[337] Ibid., 109.
[338] Ibid., 108.
[339] Michel d'Oléon, "Policing the Seas: The Way Ahead," in *The Role of European Naval Forces after the Cold War*, edited by G. de Nooy (Netherlands: Kluwer Law International, 1996), 144.

civil authority conducts the criminal investigations.[341] From a European perspective, naval participation in law enforcement is a significant contribution to good governance at sea."[342]

10.6 United States Experience with *Posse Comitatus*

It is useful to compare the Canadian position towards naval enforcement vis-à-vis those of our neighbour to the south where the use of the armed forces for domestic enforcement has, until recently, been prohibited by law. By way of background, the *Posse Comitatus Act* was passed in 1878 to prevent the US Army from carrying out law enforcement tasks in the United States. The enactment of this legislation was a reaction to the use of military forces in the confederate states for the maintenance of peace and good order, enforcement of policies for post-Civil War reconstruction, and to ensure that rebellious sentiments did not re-ignite. The US Congress became concerned when the Army stationed troops at political events and polling stations under the premise of ensuring civil order. As Craig Trebilcock points out, the intent of this federal statute was to prevent the Army from becoming "the national police force" of the United States. Accordingly, the *Posse Comitatus Act* was enacted to return the Army to its proper role in defence of US territory, and to make it illegal for US troops to be used for civilian law enforcement, except in very specific circumstances.[343]

In the era that the *Posse Comitatus Act* was passed, it was much easier to distinguish between defence tasks and civil law enforcement tasks since the military threat of the day was posed by standing military forces of foreign powers. As noted earlier, with the advent of modern technology facilitating the increased prominence of asymmetric threats, the distinction between these two subsets of national security becomes somewhat blurred.

Interesting is the fact that the *Posse Comitatus Act* of 1878 did not apply

---

[340] Pugh, "Policing the Seas," 105.
[341] Ibid., 130.
[342] Ibid., 108.
[343] Craig T. Trebilcock, *The Myth of Posse Comitatus*, October 2000, <http://www.homelandsecurity.org/ journal/articles/Trebilcock.htm > (6 February 2005).

to the US Navy, only the US Army. It is possible that, as with Great Britain's *Bill of Rights* of 1688 that likewise made no reference to naval forces, the US Navy was not viewed as a threat to the domestic political structure of the era. In 1956, an amendment to the *Posse Comitatus Act* caused the same restrictions to be applied to the US Air Force, but curiously made no mention of the US Navy. It was interpreted though that the implied purpose of the act was to prohibit military forces in general from conducting civilian law enforcement. Thus, in 1974 the US Secretary of the Navy issued a formal instruction that stated that although the act did not specifically apply to the Navy, its principles were to be upheld. That said, the instruction also gave the US Navy a loophole; the directive stated that the Navy could be employed for civilian law enforcement purposes with the express permission of the US Secretary of the Navy, a civilian official. Thus, the principle of civilian control over military forces could be maintained.[344]

The "get tough" anti-drug campaign of the Reagan administration in the early 1980s resulted in a law being passed and a Defense directive issued that eased the way for US Navy involvement in at-sea counter-narcotics enforcement by enabling the US Secretary of Defense to provide equipment and facilities to civilian law enforcement personnel and provided approval for US Navy and Marine Corps personnel to participate in maritime interdiction operations against ships and aircraft in violation of US law.[345] In 1982, at the request of the US Department of Transport, the US Secretary of Defense approved US Navy support to the US Coast Guard for law enforcement purposes. Specifically, the US Navy could conduct surveillance, tow or escort seized vessels, transport prisoners, provide logistic support to Coast Guard units and embark Coast Guard personnel to conduct boardings of American and stateless vessels.[346] In addition, according to Trebilcock, the United States has also developed an interesting legal procedure whereby a Navy vessel

---

[344] Michael R. Adams, "Navy Narcs," *United States Naval Institute Proceedings* (September, 1984): 35.
[345] See the US Department of Defense Authorization Act of 1982 (Public Law 97-86) and Department of Defense Directive 5525.5 (22 March 1982).
[346] Memorandum from US Secretary of Defense, Caspar Weinberger, to US Secretary of Transport, John Lehman, as quoted in Michael R. Adams, "Navy Narcs," *United States Naval Institute Proceedings* (September, 1984): 37.

becomes a Coast Guard vessel when required:

> . . . the USS *Kidd* intercepted a drug-smuggling boat in 1983. When the smugglers refused to yield without force, the problem of passive versus active law enforcement was handled by lowering the Navy ensign on the ship and raising the Coast Guard ensign. The Coast Guard asset USS *Kidd* then fired on the smugglers' ship, rendering it immobile and leading to its seizure, along with 900 bales of marijuana.[347]

These powers and procedures mark a considerable departure from the outright prohibition on US naval involvement in law enforcement and indicate American acceptance of this role for their Navy.

Having established the legitimacy of the use of the Navy for law enforcement purposes, and challenged some perceptions about constabulary and non-traditional naval employment, what remains to be discussed is what an enhanced mandate for naval law enforcement would really entail.

10.7 Proposal for Naval Enforcement in Canadian Maritime Zones

At present, Canadian naval forces are relegated to a support function only, essentially providing a glorified taxi service for enforcement officers from other federal departments, except under special circumstances when coercive force is required, and is requested by the appropriate Minister. I believe that the Canadian Navy should be empowered with the legal authority to enforce directly selected federal statutes on a routine basis throughout the maritime zones of Canadian jurisdiction.

Were these legal powers granted, what would this new role entail? The basic premise is that the Navy's fundamental mission would remain the "generation and maintenance of combat-capable, multipurpose maritime forces to meet Canada's defence objectives."[348] That said, were naval vessels to detect violations to Canadian law while conducting their defence or sovereignty missions, they would have the requisite legal tools to act upon those discoveries. However, this is not to suggest that the Navy would be obliged to

---

[347] Trebilcock, "*The Myth of Posse Comitatus.*"
[348] Department of National Defence, *Leadmark: The Navy's Strategy for 2020*, 92.

cease its operations to deal with violations detected. Rather, the naval commanding officer's decision whether to enforce would be shaped by the priority of his naval operations and the circumstances of the violation detected. In practice, this precedent already exists; throughout Canada police officers have similar discretion to choose when and where to enforce laws, with due consideration to the severity of the offences, the risk to the public, and so on. As well, the Navy would not be expected to enforce all federal statutes, only those that apply to specific activities on the seas. These would be limited only to those offences that are directly linked to the protection of Canadian sovereignty and this should allay concerns referred to earlier about police power in the hands of the military.

The proposed new role would not see the Navy conducting investigations of violations detected at sea. Rather, naval personnel would carry out the preliminary work designed to contain the scene. Again, an analogy of normal police work is useful. Throughout Canada general duty police officers are normally first at the scene, then turn over difficult or serious cases to the general investigative services, or detectives as they are commonly known. The general duty officer is trained on basic policing functions i.e., understanding how an investigation is carried out, how not to contaminate a crime scene, how to maintain care and custody of evidence, and how to deal with suspects, etc so that the detectives can investigate the case in detail. This basic knowledge is necessary so that the Crown's case is not derailed by procedural errors at the outset. In the model proposed in this paper, naval personnel would act as the general duty officers, and would turn over the case for investigation by Fisheries and Oceans Canada, Environment Canada, or the Royal Canadian Mounted Police as appropriate. Moreover, the support to enforcement already established by interdepartmental MOU would not change. Thus routine patrols with fisheries or RCMP officers embark would continue, and reactive operations, such as counter-drug interdictions would be carried out with the appropriate enforcement officers embarked.

Some argue that the Navy would not be competent to undertake a more direct enforcement role, primarily because naval personnel are not in tune with

the requirements for the prosecution of a court case. Essentially, this is a question of training and shipboard organization. One solution would be to confer peace officer status to all watch-keeping officers and a small cadre of sailors.[349] These people would train specifically for law enforcement duties, and become the ship's experts at the use of force, care and custody of evidence etc. The logical choice for these teams would be the personnel who form the Navy's existing naval boarding parties. At present, naval boarding party team training is very similar but shorter to that received by Canadian police officers, and would require minimal adjustment to cater to at-sea enforcement requirements, mainly to become familiar with the minimal number of federal statutes that would be enforced by the Navy, and to augment the team's understanding of requirements for court.[350]

In my view, there is little doubt that the Navy could execute an enhanced enforcement role, given its considerable experience in maritime interdiction operations abroad. Whether it will be given that chance remains an open question.

10.8 Champion and Enabler for Marine Security Processes

Captain(N) Peter Avis, naval representative to the Interdepartmental Maritime Security Working Group from 2001 to 2003, compared the practices of three western nations in terms of domain awareness, safeguarding, responsiveness, and collaboration. His examination of the cases of Australia, Norway, and the Netherlands allowed him to reach conclusions about "best practices" for maritime security.

In his 2004 study, Avis identified a "whole-of-government approach" that emphasizes collaboration as the foremost best practice for maritime security. He found that by cultivating an expectation to collaborate across all levels of government, especially with regard to crafting of legislation and intelligence

[349] This idea was proposed as a means of preparing the Canadian Coast Guard for constabulary duties. See Thomas, Testimony before SCONSAD, 9 June 2003; See also Canada. Report of the Standing Senate Committee on Fisheries and Oceans. *Safe, Secure, Sovereign: Reinventing the Canadian Coast Guard.* March, 2004. p. 48.

coordination with law enforcement, Australia achieved an integrated national security effort that has proven successful in dealing with a number of terrorist and anti-migration incidents in the recent past. Avis posits that adoption by Canada of a whole-of-government approach would resolve many of the shortcomings identified by the Senate Committee on National Security and Defence.[351]

A whole-of-government approach is prescribed in the National Security Policy; moreover, there is a presumption by the Canadian taxpayer that a whole-of-government approach is being employed already for maritime security and enforcement. However, the taxpayer does not recognize the self-imposed constraints that shape government department operations, or the "stove-piped" method of conducting business that continues to be the *modus operandi* in the federal apparatus. While a laudable objective, at this juncture, the "whole-of-government approach" remains in its infancy, and requires continual reinforcement by politicians and senior bureaucrats at all levels during operations and exercises to ensure that the concept takes root.

Avis' study remarked on another collaborative best practice, a "common risk assessment methodology." This approach calls for applying a common language among departments such that they can compete for resources in an equitable fashion acceptable to all maritime security stakeholders. The use of this methodology facilitates the allocation of resources based on current intelligence assessments, allowing the right resources to be focused in the right area at the right time. In Australia, the use of this approach has resulted in a dramatic decline in illegal maritime activities.[352]

Both best practices identified by Avis are at the heart of the fledgling federal Marine Security Response System, an initiative being developed among key departments and being championed by the Navy to integrate better the Federal Emergency Response System, National Emergency Response

[350] Based on author's experience and training as a former member of the Royal Canadian Mounted Police.
[351] Avis, "Comparing National Approaches to Maritime Security," 65-66.

System, and Marine Security Operations Centres.

10.8.1 Marine Security Response System

Since the requirement for the Marine Security Operations Centres was identified in the National Security Policy, their development has been pursued in parallel with the establishment and evolution of Public Safety Canada, and the development and approval of the Federal Emergency Response Plan. As discussed in Chapter Six, the FERP identifies the role of Public Safety Canada and the Government Operations Centre, and further defines structures for the Federal and National Emergency Response Systems.

Lessons learned from interdepartmental exercises as well as operational experience within the Atlantic region over the past two years indicated that there was a requirement to align MSOC operations, the roles and functions of Public Safety Canada, and relevant elements of the Federal Emergency Response Plan. The creation of a single Marine Security Response System (MSRS) was the manifestation of this alignment effort. The Commander of Maritime Forces Atlantic, on behalf of the Navy, has been the chief advocate of the MSRS, and has facilitated a number of strategy meetings with Regional Directors General and their planning staffs to develop the template for this response system.[353]

Commander MARLANT, Rear-Admiral Dean McFadden, observed that when the National Security Policy was signed, the Navy had two tangible contributions to offer the federal partners. The first was a near real-time "picture" of the maritime environment, the Recognized Maritime Picture. The second was an operations centre run on a 24/7 basis, where the RMP could be enhanced with intelligence data then shared, and from where an on-water response could be coordinated.[354]

---

[352] Ibid., 66.

[353] Randy Wyatt and Commander Russ Stuart were the two staff officers who developed the MSRS template for Commander MARLANT. Figures 10-2 to 10-3 are adaptations of figures created by Wyatt for the members of the Federal Co-ordinating Steering Committee.

When the MSOCs were first stood up, the view held by many in the federal marine security sector was that the MSOC functions were intelligence collation and data fusion only. In addition to being a living laboratory in examining technologies, intelligence, methodologies, information exchange and operational capabilities, McFadden believed that the MSOC's role extended well beyond the development of situational awareness. He argued that the MSOC organizational structures and processes be optimized for integration:

> It is not sufficient that we collaborate better, that we improve cooperation as an adjunct to individual mandates, whatever they may be; it is essential that collaboration be a prime driver of how we are structured, how we train and how we conduct our operations.[355]

In the Marine Security Response System construct proposed by the Navy, the MSOCs remain distinct entities within the system for providing maritime domain awareness, conducting threat assessment and alerting and, when deemed necessary, conducting collaborative operations planning for a whole-of-government response. Collaborative operations planning is conducted by a multi-departmental team appropriately selected to ensure that required authorities, subject matter expertise, and resource authorities can work together on the response, while maintaining the required level of operational security. This is referred to in Figures 10-2 and 10-3 as "variable geometry."[356]

When an on-water response is necessary, a separate and distinct Military Operations Centre (MOC) is engaged as the means to co-ordinate the conduct of the operation. The appropriate military commander co-ordinates the on-water response. This does not imply lead agency status or overall control of all sea and air assets. Rather, the military commander is the enabler that provides the lead agency with the infrastructure and command and control architecture necessary for the conduct of complex maritime operations. However, the military commander does exercise command and control of all

---

[354] Rear-Admiral P.D. McFadden, Speech to Dalhousie University Master of Public Administration Program, 19 November 2007.
[355] Ibid.

military forces, thereby requiring a secure operations centre separate from the MSOC.

In introducing the Marine Security Response System, the Navy has persuaded other government departments that the planning effort must be collaborative in principle and execution, rather than each department approaching the security or enforcement problem in isolation. In addition to concept development, the Navy has facilitated the conditions for collaborative planning through the allocation of physical space and information technology resources for a Marine Security Operations Centre where real collaborative planning can take place under one roof.

The federal emergency response systems are set up to cope with natural disasters, and pandemics. They were not created with human-induced national security issues in mind. Public Safety Canada co-ordinates with provincial, territorial, municipal, and private agencies to effect the broad whole-of-government response to the consequences of an incident in an unsecured environment.[357] Movement from the secure to non-secure domain is very much risk-dependent. Understanding this, Commander MARLANT pressed hard for the creation of the regional Federal Coordinating Steering Committee to provide oversight and direction in those incidents when the security threat is deemed to be complex by its nature or magnitude, and could result in severe consequences ashore or at sea. In those scenarios, the risks of maintaining operational security (normally inhibiting information sharing) must be balanced with the risks to public safety. The Federal Coordinating Steering Committee assesses the overall risk, determines the variable geometry, selects members and provide direction to collaborative operations planning team based on the variable geometry; and through Public Safety Canada and the Government Operations Centre, maintains federal government situational awareness.

Figure 10-2 is the proposed marine security functional template

[356] Term coined by Wyatt and Stuart.

championed by the Navy to the other government departments, but in particular to Public Safety Canada. In the figure the two security domains are distinguished; the non-secure domain in which consequence management of natural disasters is carried out, and the secure domain in which threats of human origin are managed. The two operations centres are pictured, the military operations centre for command and control of military forces and co-ordination of other government department assets, and the marine security operations centre with its intelligence and data fusion function. The dotted pink ellipse joining the two operations centres represents their linkage by co-location as well as by function, in terms of collaborative planning.

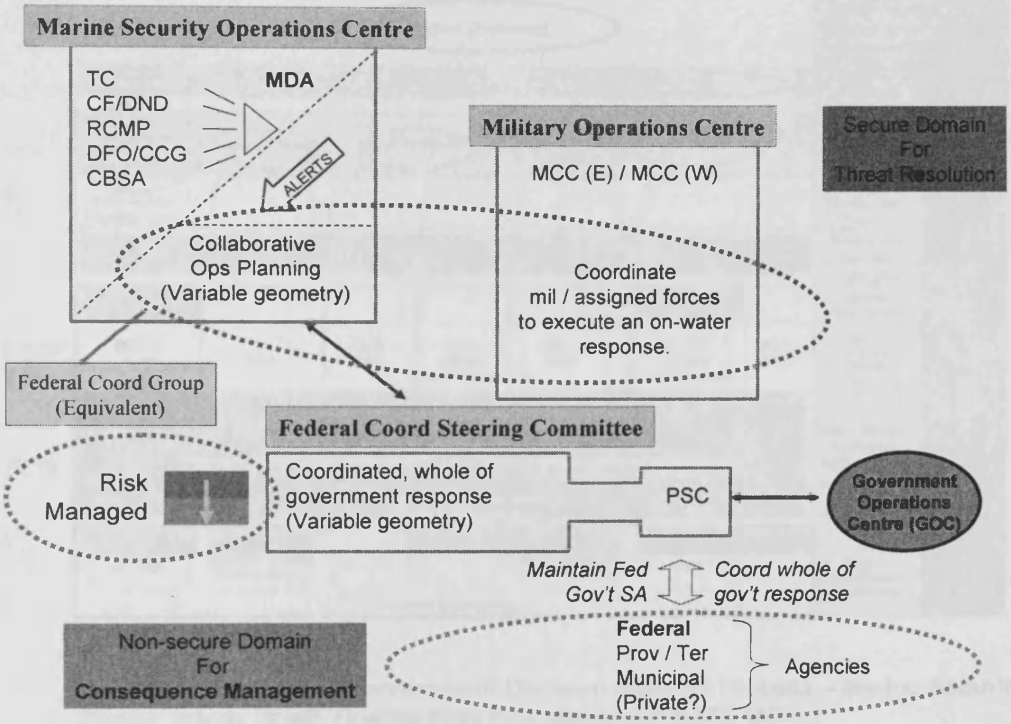


Figure 10-2. Proposed Marine Security Functional Template
Source: Randy Wyatt, Briefing Note for Commander MARLANT

By virtue of its military character, and well-established inter-Service and inter-Allied operational planning process, the Navy brings discipline to the domestic marine security response system. The participation and leadership of

[357] What is meant by "unsecured" is that the matter is not of such a grave risk to national or Allied security that increased security precautions must be taken to prevent disclosure. In other words, this is the "unclassified" realm.

naval officers in multi-departmental consequence management influences other federal partners to follow agreed-upon protocols rather than adopting different and usually *ad hoc* process each time a marine security incident develops.

Figure 10-3 is a graphical representation of the proposed whole-of-government decisions support process that spans both the regional and national levels. Each federal department with a security or enforcement mandate is shown as a column. On the right of the figure are the various governance bodies and committees.

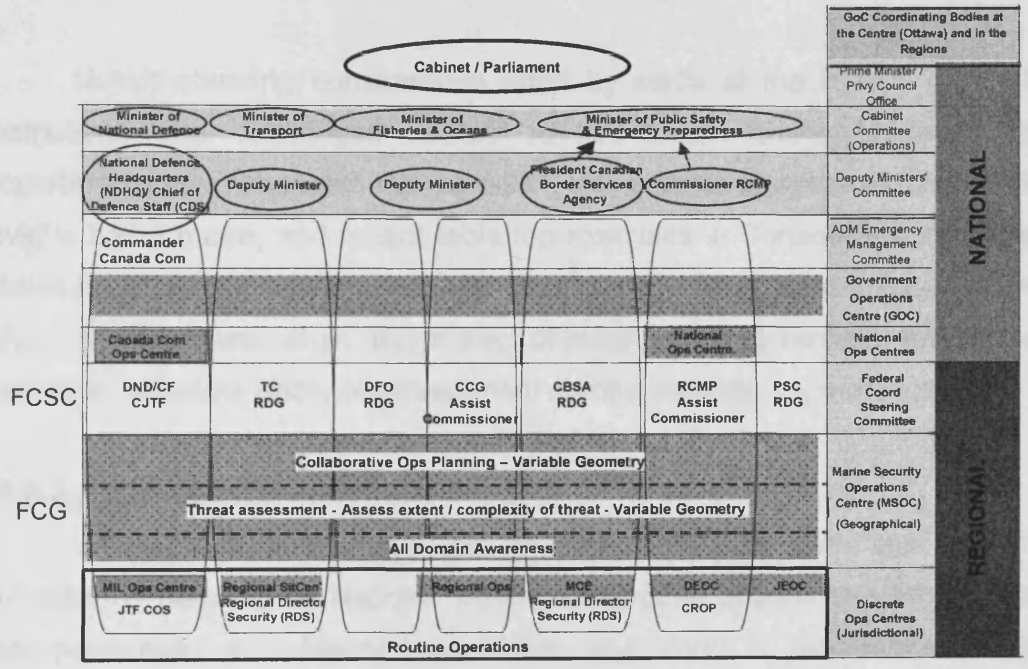


Figure 10-3. Whole-of-Government Decision Support Process – Marine Security
Source: Randy Wyatt, Briefing Note for Commander MARLANT

Another key role in the evolution of marine security that has been taken on by the Navy is to act as the engine that drives other government departments through a series of realistic exercises forcing thorny legal problems to be addressed. Commander MARLANT has used a number of these command-post exercises, such as Frontier Sentinel 2007, to identify jurisdictional conflicts. In the case of Frontier Sentinel, an international exercise that involved the simulated arrest of a vessel carrying suspected

terrorists, lawyers representing various departments advised the senior leadership during the game play that certain actions could not be carried out. Normally when this happens, the advice is taken, and game play is adjusted so that the existing legal framework is respected. However, during Frontier Sentinel 2007, the lawyers were instructed simply to "red flag" the issue, but to carry on as though the proposed action had been sanctioned. This led to additional "red flags" being identified, but importantly, it finally achieved staff discussion on how to resolve the legal technicality for operational necessity rather than simply dismissing the action as being unachievable under the existing framework.

Notwithstanding considerable effort by staffs at the federal level, the restrictions and challenges related to information sharing between the departments have changed little post-911. While some progress at the regional level is being made, and recent table top exercises in Canada and the United States have been fruitful in determining exactly what is allowed to be shared by whom, to whom and when, this aspect of marine security remains the Achilles heel to an effective whole-of-government marine security response system.

10.8.2 Improved Surveillance Planning

When the work on this thesis commenced several years ago, maritime surveillance planning by National Defence and other government departments that possessed surveillance capabilities was done in isolation from one another. Fisheries and Oceans Canada planned and executed their fisheries surveillance flights without consultation with DND, Transport Canada, or Environment Canada. Within MARLANT, the Maritime Component Commander(Atlantic) scheduled CP-140 Aurora flights in consultation with a junior naval intelligence officer, but this consultation did not extend to DFO. This stove-piped method of surveillance planning is no longer the norm, and is the result of two specific initiatives: this thesis, and the National Security Policy's direction to create marine security operations centres.

The collection of data for this thesis, and the acquisition of ArcView software for the Maritime Operations Centre demonstrated to the operations

and surveillance planning staffs the power and analysis capability of a modern GIS. This allowed the senior naval leadership to be briefed in greater detail, and allowed for a greater number of questions pertaining to surveillance to be answered. With this analysis capability came the realization that surveillance assets were not being employed as effectively as they could be in concert with other government departments.

The creation of MSOCs that required co-location of analysts from a number of departments also led to an understanding that each department was conducting its surveillance planning using its own geographic demarcation or grid system, and often without knowledge of another department's patrol assets' movements. This resulted in both gaps in coverage, and duplication of surveillance effort in some sectors of the maritime zones and approaches. This was not as evident on the west coast where the Exclusive Economic Zone is only a fraction of the size of the Atlantic EEZ. As well, there are fewer surveillance assets to harness. However, on the east coast, the surveillance effort was not orchestrated for the most effective use of available assets.

In Maritime Forces Atlantic, defence scientists from operations research developed a new interdepartmental surveillance grid in consultation with naval operations, air operations, DFO and Transport Canada staff. This new grid divided the MARLANT area of responsibility divided into 12 areas. Five comprise the outer zone that is the area beyond the EEZ to the CANLANT boundary. Four areas are found between the coast and the EEZ. Two areas are defined for the eastern arctic, and the Gulf of St Lawrence is a designated surveillance area on its own. The interdepartmental surveillance grid is shown at Figure 10-4.

In implementing the new surveillance grid in 2007 and commencing collaborative surveillance planning among military, DFO and TC staffs, performance measurement was based on how often government patrol assets were able to revisit sectors of the grid. This was premised on the fact that although many sensor systems are available to detect vessels in the maritime zones, only surveillance aircraft can both detect and identify non-emitting

vessels in a large area.[358]

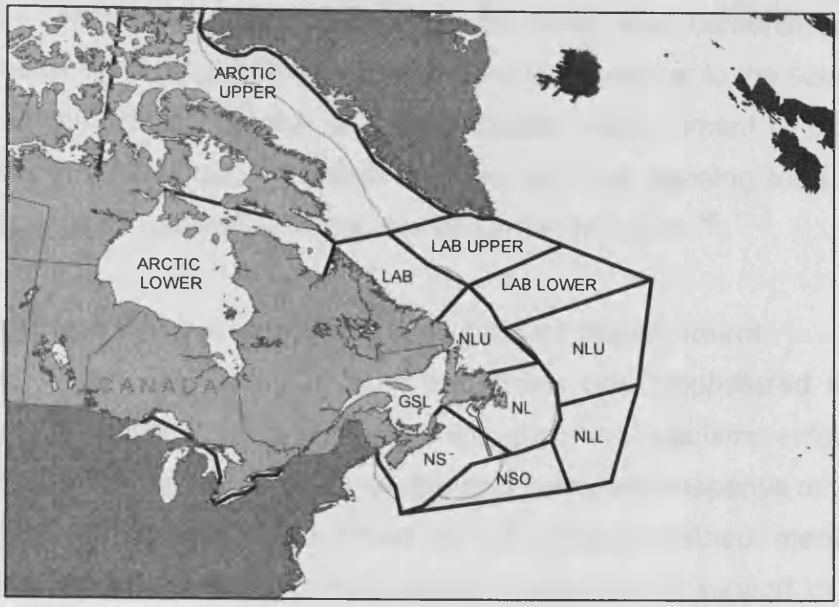


Figure 10-4. New Interdepartmental Surveillance Planning Grid
Source: Joint Task Force Atlantic operations staff, 2008.

After several months of using this method of performance measurement, it was determined that to have a high probability of identification of a non-emitting vessel, the surveillance effort in the inner and middle zones was sufficient with the resources of all of the departments, but it could not be achieved without co-ordination among departments. It was also determined that surveillance presence in the outer zones was insufficient. The CP-140s flew too flew sorties to provide a high probability of identification – this was a function of using CP-140s for missions close to the coasts when their best employment was in the outer zones where the OGD aircraft didn't have the endurance. The outcome of this new system and performance measures was that emphasis was shifted on CP-140 flights to the outer zones only, and extra surveillance hours were purchased from PAL for the inner zones to make up for the CP-140 retasking.[359]

[358] Revisit rate is the time between successive surveillance flights in a given sector, and is based on the probability of identification of transiting vessel.
[359] Neil Carson, Briefing to Maritime Domain Awareness Working Group, Esquimalt, British Columbia, 27 February 2008.

The Navy will continue to champion collaborative surveillance planning as an essential element of the whole-of-government approach to marine security. Naval operational research scientists have demonstrated to the senior naval leadership that dynamic contour plots, similar to the surface model figures in this thesis, provide a more accurate measurement of performance than fixed grid planning boundaries alone, and are devising tools to enable these plots to be generated for routine use in the MSOCs.[360]

10.9 Additional Naval Contribution to Oceans Management

All of the earlier material in this thesis has emphasized the Navy's support to sovereignty protection, marine security and maritime enforcement in terms of in maritime domain awareness, and patrol and response activities. An examination of the naval role would not be complete without mention of the naval contribution to oceans management initiatives in support of Canada's Ocean Strategy.

The Navy supports the COS goal for developing an improved scientific knowledge base for estuarine, coastal, and marine ecosystems through the conduct of ongoing research into noise and marine mammals in an ongoing effort to minimize the impact of naval activities on the maritime environment. This includes research to better understand the risks posed to the environment and human health from ocean dumpsites of military materials, and the necessary mitigation to reduce these risks. The Navy also assists in the promotion of the development of a State of the Oceans Reporting system through its support of the Victoria Experimental Network Under the Sea (VENUS) project. VENUS is a network of instruments placed on the seabed to observe the seafloor waters off the West Coast. The Navy also supports NEPTUNE, a joint Canada/US interactive, real-time ocean observatory. In 2004, the Navy provided a remotely operated vehicle to Dalhousie University for deep-sea coral research off southern Nova Scotia.

With respect to the COS goal to conserve and protect the marine

[360] Neil Carson, Briefing to Commander MARLANT, Halifax, 31 March 2008.

environment, the Navy co-ordinates with DFO to conduct surveillance and provide visible naval presence to help deter improper activities in the vicinity of Marine Protected Areas. Over the past five years, naval frigates have conducted at least three vessel traffic assessments of the Sable Gully MPA. As a concurrent activity, warships have embarked biologists from the Canadian Wildlife Service during fisheries patrols to support the ongoing study of sea-bird populations. These sea-bird counts are used as a means of identifying the effects of pollution on the marine environment. Naval vessels also routinely report whale sightings to Fisheries and Oceans Canada for sea mammal counting and tracking purposes.

Naval ships and aircraft have standing orders to report observations of oil slicks or other forms of pollution. During the past five years, the Navy supported an Environment Canada-sponsored trial of using RADARSAT to detect pollution by corroborating RADARSAT observations of potential oil slicks.

The North Atlantic Right Whale is a critically endangered species, most of which reside in the Bay of Fundy during the months of July through October, and share their habitat with a shipping lane and fishing activity. Over the past 10 years, collisions with ships were found to be responsible for nearly 40 percent of documented right whale deaths, and the occasional entanglement in fishing nets is an increased risk to the species.

In July 1999, the Defence Research and Development Canada (Atlantic) collaborated with Dalhousie University and the Canadian Forces to investigate the feasibility of acoustically locating whales based on their specific vocalizations. A trial occurred in the Bay of Fundy during which a field of sonobuoys were air-deployed and monitored from a CP-140 aircraft, while a hydrophone was deployed by a ship-based team. This preliminary study justified further vocalization investigations and the collection of oceanographic data using naval research vessel, sonobuoys and bottom-mounted sensors. The data gathered in these studies might lead to the design of a permanent system of hydrophones for the Bay of Fundy for use as an early warning device

for mariners and fishermen.

While its emphasis remains maritime security and defence, the examples above show that the Canadian Navy contributes where possible to the broader spectrum of oceans management initiatives.

10.10 Summary

Policing Canada's maritime zones and approaches presents no shortage of difficulties to overcome, particularly as the federal government struggles to allocate finite resources to a plethora of ministries charged with maintaining national security. While the Navy has always had a major part to play in protecting Canadian sovereignty, the burden of law enforcement has fallen largely upon other government departments. This reality reflects a Canadian tradition of law enforcement by civilian agencies. However, in light of the evolving post-911 asymmetric security environment, there is a case to be made for expanding the naval role in domestic maritime enforcement. Influenced to a degree by land-oriented aid to civil power operations, detractors question the legitimacy of this use of armed forces or denounce the idea as non-traditional. However, none of these issues present an insurmountable obstacle to developing an enhanced role for Canada's naval forces.

With federal enforcement departments becoming increasingly reliant on naval assets for support of their operations, the Navy's significant presence in Canada's maritime zones should be leveraged and the Navy, empowered with appropriate legal authority, should be granted the option to enforce Canadian law in those vast areas. Doing so would be yet another important step in realizing the goals articulated in Canada's national security policy, specifically to provide maritime security for Canadians in an effective integrated manner.

Chapter Eleven
CONCLUSION

11.1 Introduction

The overall objective of this thesis was to evaluate the employment of the Canadian Navy in a maritime enforcement role within the Canadian maritime zones. The basic assumption of the thesis was that the Canadian Navy plays a key role in this specific aspect of the maintenance of Canadian sovereignty. As well, the research was intended to determine whether the employment of naval forces in support of enforcement operations is of value to the Canadian Navy itself.

11.2 Policy Framework

A credible sovereign state controls the management of renewable and non-renewable marine resources, the protection and preservation of the marine environment, the maintenance of maritime sovereignty and prevention of illegal activity, and the maintenance of marine safety. In Canada, the absence of clear political guidance by a series of successive governments has resulted in an *ad hoc* approach to development of oceans, security, and defence policies. As a result, sovereignty, surveillance, and enforcement responsibilities have not been well articulated and, at times, been ambiguous.

Notwithstanding the seemingly convoluted policy development process, there are now several strategic policy documents that enable maritime enforcement operations to be conducted in the Canadian maritime zones. These documents are the *Oceans Act*, *Canada's Ocean Strategy*, the *National Security Policy,* and the 2005 *Defence Policy Statement.* The first of these, the *Oceans Act*, provides federal departments with legal authority for security operations in the Canadian maritime zones. In addition, the *National Security Policy* provides the Navy with legitimacy to aggressively pursue marine security co-ordination initiatives with other government departments.

Maritime security is the compilation of practices that a state observes to protect its maritime interests abroad, along its coasts, and in its maritime

approaches. In a post-911 world, a state's requirements for maritime security, sovereignty, and oceans management are increasingly interconnected, and there is a blurring of defence and security tasks. Maritime security continues to be viewed by all levels of Canadian government as a law enforcement responsibility rather than a defence issue. This posture shapes government security response systems, with the result that the Canadian Navy functions in a support role to those departments and agencies with enforcement mandates.

Maritime enforcement is a sub-set of maritime security that involves three basic tasks: detection, interception, and intervention of violators. In this construct, the Navy's contribution to maritime enforcement is equally a contribution to maritime security and vice versa.

Canadian naval policy identifies six functions that its Navy should expect to execute in fulfillment of the constabulary role. These functions are sovereignty patrols, Aid of the Civil Power, assistance to other government departments, search and rescue, disaster relief, and oceans management.

11.3 Complexity of Enforcement Problem

The challenge to achieve effective maritime security and enforcement in the Atlantic region is multi-faceted. Its main feature is the sheer size of the Atlantic maritime zones. As well, the four provinces, amidst three levels of government, create a complex jurisdictional and administrative morass. A lack of uniformity of water and air space delimitation, multiple grid systems and inconsistent boundaries results in duplication of responsibility for much of the same area. Regulatory regimes created by international, national, and provincial bodies make it difficult to apply a common framework in the execution of maritime security and enforcement tasks.

There are a large number of departments and agencies involved in oceans management in the Atlantic region. Federal departments play the greatest role in governance, and with these organs the Navy has the greatest influence and interaction. Only DND, DFO, CCG and the RCMP maintain

fleets of vessels, and only DND and DFO have any significant capability for deep-water intervention. In the context of maritime enforcement, the key Memoranda of Understanding that have an impact on the Navy are those with DFO for fisheries enforcement, the RCMP for counter-narcotic enforcement, and Environment Canada for environmental emergency incidents.

There has been considerable churn in the organizational make-up of federal departments with security mandates during the past seven years. The frequency of departmental restructuring is cause for concern, and is indicative of the difficulty that government faces in dealing with the complex post 9/11 security environment. Also adding to the complexity are federal laws that have not adapted to the changing asymmetric threat environment, and impede the timely sharing of information between departments and agencies charged with enforcement mandates.

11.4 Naval Contribution through Patrol and Response

Although the government framework presents challenges to be overcome in the interest of greater effectiveness, the Navy contributes significantly to the sovereignty task. DND and CCG personnel operate as a team to co-ordinate roughly 2,200 marine and aeronautical SAR responses per year in the region. The Navy contributes to SAR through its ability for effective command and control, infrastructure, provision of SAR aircraft, and provision of naval vessels.

Fisheries and Oceans Canada is the lead federal department for fisheries management in Canada, but is assisted by DND for support to fisheries enforcement. In addition to aerial surveillance, the Navy provides major and minor warships for fisheries patrols, from which DFO Conservation and Protection officers board and conduct inspections of fishing vessels in Canada's maritime zones and the waters enforced by the North Atlantic Fisheries Organization. The Navy concentrates its support to fisheries in the offshore fishery on the Grand Banks and Flemish Cap, and maintains limited naval enforcement presence away from these geographic features.

The physical area over which a frigate can maintain surveillance coverage is huge. Indeed, Fisheries and Oceans Canada is becoming increasingly reliant on the Navy to assist with enforcement tasks. Over a 12-year period, the Navy conducted eight percent of at-sea inspections throughout the Atlantic provinces, and as much as 29 percent of the inspections for the Newfoundland region of DFO. While employment in fisheries support may be advantageous to Fisheries and Oceans Canada, this research suggests that the benefits of naval fisheries patrols are far less tangible for the Navy than they are for DFO.

11.5 Naval Contribution through Maritime Domain Awareness

Long before the *National Security Policy* was released, Canadian defence policy required that the Navy be capable of monitoring activity in Canada's maritime zones for the purposes of national defence. In order to meet this obligation, the Navy established coastal surveillance centres, and became the *de facto* lead for development of maritime domain awareness. While other departments had maritime surveillance mandates, only the Navy attempted to integrate the data, information, and intelligence from all sources. The operational and technical contribution by the Navy to whole-of-government maritime domain awareness is significant, and it can be argued that it is the most important contribution to maritime security and enforcement made by the Navy.

The two key departments with surveillance mandates, DND and DFO, expend considerable resources to achieve aerial presence in the Canadian maritime zones and approaches. This research has demonstrated that that the government surveillance effort is directed to the areas of greatest interest for maritime enforcement and sovereignty protection.

11.6 Naval Contribution as Champion for Co-operation

Inter-agency co-operation is a functioning reality that spans three levels of interaction: strategic, regional, and tactical. At all levels, there are multiple federal working groups and committees that form a framework for inter-agency co-operation in oceans management and marine security and

enforcement. The policy vacuum described earlier set in motion the evolution of the *ad hoc* structure that works adequately due in large part to the professionalism and influence of a small number of individuals in key departments. The Navy is a key "driver" in this framework through its support of mechanisms and bodies for oceans co-operation and collaboration, as well as promotion and participation in information sharing and lessons learned on maritime security. The Navy champions multi-agency exercises that contribute to the long-term education process of staffs at all levels. The relationships cultivated through informal and formal initiatives have enabled departments to deal with maritime security issues with greater confidence and ability.

The *National Security Policy* assigns the Navy the task of co-ordinating the on-water response to a marine threat in the Canadian maritime zones. Moreover, the Navy is required to establish Marine Security Operations Centres to facilitate co-ordination among government departments. This allows the Navy to influence the marine security response system as it evolves so that the significant collaborative planning, co-ordination, command and control capabilities that are resident within the Navy can be used to full effect.

11.7 Contribution to Knowledge

This research was undertaken to address a gap in the literature pertaining to the constabulary employment of the Navy in the maintenance of Canadian sovereignty. It adds to writings by a small number of Canadian scholars, but is differentiated from earlier works in that it goes beyond the discussion of just maritime strategy and policy to assess, in a geographic context, exactly what the Canadian Navy does to support domestic maritime enforcement efforts.

This thesis makes three main contributions to knowledge. The first is the documentation of the Canadian Navy's involvement in maritime domain awareness, and the importance to marine security of this key function of government. The research shows that how the Navy, as the *de facto* co-

ordinator of maritime surveillance and intelligence, has been carrying out this undertaking on its own for decades. The second major contribution is the documentation of the overall level of effort as well as the spatial aspect of naval fisheries patrols over two decades. The third element is the articulation of the key role that the Navy plays in furthering interdepartmental co-ordination and co-operation in the marine security framework in Canada.

11.8 Future Research

Regrettably, this thesis was unable to explore the full range of domestic maritime enforcement activities in which the Navy plays a role. It would have been revealing to measure the improvement in surveillance capability that an embarked helicopter brings to a major warship, and what effect the reduction in Sea King helicopter flight hours has had on enforcement effectiveness.

This research presented one measure of presence for military and PAL aerial surveillance presence. Unfortunately, it was not possible to measure the contribution to maritime domain awareness of single warships not employed in fisheries support. The presence of naval vessels and aircraft on enforcement tasks was determined in the conduct of this research, but to evaluate the complete picture, the presence of CCG, DFO, and RCMP patrol vessels need also to be analyzed.

While the naval contribution to fisheries enforcement has been well documented in this thesis, the spatial element of smuggling, illegal migration, and environmental law-breaking remain to be analyzed, as well as the relative contribution of naval assets in the enforcement of these maritime threats.

The question of deterrence is worthy of further study. Lessons learned from the exploratory study in Chapter Nine could be incorporated into the research design of a future study to ensure that a larger sample of respondents is obtained. This would allow statistically-supportable inferences to be drawn about the actual deterrent value of naval patrol assets in enforcement employment.

The focus of this project has been on domestic maritime enforcement. Over the past thirty years, the Canadian Navy has been involved in maritime enforcement missions abroad, such as United Nations embargoes on weapons and oil to questionable regimes. A geographic study similar to this one, with its focus on expeditionary Canadian naval enforcement operations would be a worthy contribution to knowledge.

11.9 Closing Thoughts

Research is a journey that takes one down many paths, some of which are quite unexpected. This project has shown that the Navy's shore-based efforts in support of domain awareness outweigh the patrol activities that are regarded as "traditional" maintenance of sovereignty employment for the Navy. Few naval officers, the researcher included, would have suspected that at the outset.

Bibliography

PRIMARY SOURCES

HMC Ships Logs

National Library and Archives of Canada, R.G. 24, Vol. 13092, HMCS *Nipigon* Ship's Log, 22 - 30 April 1980.

National Library and Archives of Canada, R.G. 24, Vol. 13092, HMCS *Nipigon* Ship's Log, 1 - 9 May 1980.

National Library and Archives of Canada, R.G. 24, Vol. 13083, HMCS *Assiniboine* Ship's Log, 12 - 28 November 1980.

National Library and Archives of Canada, R.G. 24, Vol. 13082, HMCS *Algonquin* Ship's Log, 25 - 30 November 1980.

National Library and Archives of Canada, R.G. 24, Vol. 13082, HMCS *Algonquin* Ship's Log, 1 - 12 December 1980.

National Library and Archives of Canada, R.G. 24, Vol. 13114, HMCS *Skeena* Ship's Log, 8 - 23 January 1981.

National Library and Archives of Canada, R.G. 24, Vol. 13104, HMCS *Fraser* Ship's Log, 19 - 31 May 1981.

National Library and Archives of Canada, R.G. 24, Vol. 13104, HMCS *Fraser* Ship's Log, 1 - 4 June 1981.

National Library and Archives of Canada, R.G. 24, Vol. 13103, HMCS *Cormorant* Ship's Log, 14 - 28 October 1981.

National Library and Archives of Canada, R.G. 24, Vol. 13108, HMCS *Margaree* Ship's Log, 22 - 31 October 1981.

National Library and Archives of Canada, R.G. 24, Vol. 13108, HMCS *Margaree* Ship's Log, 1 - 5 November 1981.

National Library and Archives of Canada, R.G. 24, Vol. 22172, HMCS *Huron* Ship's Log, 21 - 31 January 1982.

National Library and Archives of Canada, R.G. 24, Vol. 22172, HMCS *Huron* Ship's Log, 1 - 5 February 1982.

National Library and Archives of Canada, R.G. 24, Vol. 22207, HMCS *Nipigon* Ship's Log, 15 - 28 February 1982.

National Library and Archives of Canada, R.G. 24, Vol. 22207, HMCS *Nipigon* Ship's Log, 1 - 5 March 1982.

National Library and Archives of Canada, R.G. 24, Vol. 22196, HMCS *Assiniboine* Ship's Log, 18 - 31 January 1983.

National Library and Archives of Canada, R.G. 24, Vol. 22196, HMCS *Assiniboine* Ship's Log, 1 - 3 February 1983.

National Library and Archives of Canada, R.G. 24, Vol. 22208, HMCS *Nipigon* Ship's Log, 15 - 28 March 1983.

National Library and Archives of Canada, R.G. 24, Vol. 22205, HMCS *Iroquois* Ship's Log, 24 - 30 November 1983.

National Library and Archives of Canada, R.G. 24, Vol. 22205, HMCS *Iroquois* Ship's Log, 1 - 10 December 1983.

National Library and Archives of Canada, R.G. 24, Vol. 22200, HMCS *Cormorant* Ship's Log, 9 - 31 January 1984.

National Library and Archives of Canada, R.G. 24, Vol. 22200, HMCS *Cormorant* Ship's Log, 1 February 1984.

National Library and Archives of Canada, R.G. 24, Vol. 22261, HMCS *Skeena* Ship's Log, 13 - 29 February 1984.

National Library and Archives of Canada, R.G. 24, Vol. 22214, HMCS *Saguenay* Ship's Log, 12 - 29 March 1984.

National Library and Archives of Canada, R.G. 24, Vol. 22197, HMCS *Assiniboine* Ship's Log, 2 - 9 May 1984.

National Library and Archives of Canada, R.G. 24, Vol. 22200, HMCS *Cormorant* Ship's Log, 28 - 31 May 1984.

National Library and Archives of Canada, R.G. 24, Vol. 22200, HMCS *Cormorant* Ship's Log, 1 - 23 June 1984.

National Library and Archives of Canada, R.G. 24, Vol. 22261, HMCS *Skeena* Ship's Log, 15 - 31 January 1985.

National Library and Archives of Canada, R.G. 24, Vol. 22261, HMCS *Skeena* Ship's Log, 1 - 7 February 1985.

National Library and Archives of Canada, R.G. 24, Vol. 22259, HMCS *Saguenay* Ship's Log, 26 - 28 February 1985.

National Library and Archives of Canada, R.G. 24, Vol. 22259, HMCS *Saguenay* Ship's Log, 1 - 15 March 1985.

National Library and Archives of Canada, R.G. 24, Vol. 22221, HMCS *Algonquin* Ship's Log, 7 - 24 May 1985.

National Library and Archives of Canada, R.G. 24, Vol. 22224, HMCS *Athabaskan* Ship's Log, 26 - 30 June 1985.

National Library and Archives of Canada, R.G. 24, Vol. 22224, HMCS *Athabaskan* Ship's Log, 1 - 2 July 1985.

National Library and Archives of Canada, R.G. 24, Vol. 22224, HMCS *Athabaskan* Ship's Log, 15 - 26 July 1985.

National Library and Archives of Canada, R.G. 24, Vol. 22239, HMCS *Iroquois* Ship's Log, 28 - 30 June 1985.

National Library and Archives of Canada, R.G. 24, Vol. 22239, HMCS *Iroquois* Ship's Log, 1 - 11 July 1985.

National Library and Archives of Canada, R.G. 24, Vol. 22261, HMCS *Skeena* Ship's Log, 29 - 31 October 1985.

National Library and Archives of Canada, R.G. 24, Vol. 22261, HMCS *Skeena* Ship's Log, 1 - 15 November 1985.

National Library and Archives of Canada, R.G. 24, Vol. 22228, HMCS *Cormorant* Ship's Log, 14 - 31 January 1986.

National Library and Archives of Canada, R.G. 24, Vol. 22228, HMCS *Cormorant* Ship's Log, 1 - 21 February 1986.

National Library and Archives of Canada, R.G. 24, Vol. 22221, HMCS *Algonquin* Ship's Log, 1 - 5 March 1986.

National Library and Archives of Canada, R.G. 24, Vol. 22247, HMCS *Nipigon* Ship's Log, 30 September 1986.

National Library and Archives of Canada, R.G. 24, Vol. 22247, HMCS *Nipigon* Ship's Log, 1 - 17 October 1986.

National Library and Archives of Canada, R.G. 24, Vol. 22223, HMCS *Assiniboine* Ship's Log, 28 - 31 October 1986.

National Library and Archives of Canada, R.G. 24, Vol. 22223, HMCS *Assiniboine* Ship's Log, 1 - 14 November 1986.

National Library and Archives of Canada, R.G. 24, Vol. 22245, HMCS *Margaree* Ship's Log, 28 - 31 January 1987.

National Library and Archives of Canada, R.G. 24, Vol. 22245, HMCS *Margaree* Ship's Log, 1 - 8 February 1987.

National Library and Archives of Canada, R.G. 24, Vol. 22260, HMCS *Saguenay* Ship's Log, 24 - 28 February 1987.

National Library and Archives of Canada, R.G. 24, Vol. 22260, HMCS *Saguenay* Ship's Log, 1 - 4 March 1987.

National Library and Archives of Canada, R.G. 24, Vol. 22228, HMCS *Cormorant* Ship's Log, 23 - 31 March 1987.

National Library and Archives of Canada, R.G. 24, Vol. 22228, HMCS *Cormorant* Ship's Log, 1 - 10 April 1987.

National Library and Archives of Canada, R.G. 24, Vol. 22245, HMCS *Margaree* Ship's Log, 1 - 3 July 1987.

National Library and Archives of Canada, R.G. 24, Vol. 22268, HMCS *Annapolis* Ship's Log, 19 - 31 January 1988.

National Library and Archives of Canada, R.G. 24, Vol. 22268, HMCS *Annapolis* Ship's Log, 1 - 3 February 1988.

National Library and Archives of Canada, R.G. 24, Vol. 22275, HMCS *Gatineau* Ship's Log, 3 - 20 May 1988.

National Library and Archives of Canada, R.G. 24, Vol. 22224, HMCS *Assiniboine* Ship's Log, 24 - 31 October 1988.

National Library and Archives of Canada, R.G. 24, Vol. 22224, HMCS *Assiniboine* Ship's Log, 1 - 12 November 1988.

National Library and Archives of Canada, R.G. 24, Vol. 22289, HMCS *Skeena* Ship's Log, 18 - 31 January 1989.

National Library and Archives of Canada, R.G. 24, Vol. 22289, HMCS *Skeena* Ship's Log, 1 - 10 February 1989.

National Library and Archives of Canada, R.G. 24, Vol. 22273, HMCS *Cormorant* Ship's Log, 17 - 30 November 1989.

National Library and Archives of Canada, R.G. 24, Vol. 22273, HMCS *Cormorant* Ship's Log, 1 - 16 December 1989.

National Library and Archives of Canada, R.G. 24, Vol. 22275, HMCS *Gatineau* Ship's Log, 15 - 20 November 1989.

National Library and Archives of Canada, R.G. 24, Vol. 22288, HMCS *Saguenay* Ship's Log, 4 - 18 December 1989.

National Library and Archives of Canada, R.G. 24, Vol. 22301, HMCS *Margaree* Ship's Log, 22 - 31 October 1990.

National Library and Archives of Canada, R.G. 24, Vol. 22301, HMCS *Margaree* Ship's Log, 1 - 9 November 1990.

National Library and Archives of Canada, R.G. 24, Vol. 22295, HMCS *Cormorant* Ship's Log, 3 - 14 December 1990.

National Library and Archives of Canada, R.G. 24, Vol. 22301, HMCS *Margaree* Ship's Log, 10 - 21 June 1991.

National Library and Archives of Canada, R.G. 24, Vol. 22301, HMCS *Margaree* Ship's Log, 23 - 31 July 1991.

National Library and Archives of Canada, R.G. 24, Vol. 22301, HMCS *Margaree* Ship's Log, 1 - 16 August 1991.

National Library and Archives of Canada, R.G. 24, Vol. 22303, HMCS *Ottawa* Ship's Log, 23 - 30 September 1991.

National Library and Archives of Canada, R.G. 24, Vol. 22303, HMCS *Ottawa* Ship's Log, 1 - 4 October 1991.

National Library and Archives of Canada, R.G. 24, Vol. 22301, HMCS *Margaree* Ship's Log, 30 September 1991.

National Library and Archives of Canada, R.G. 24, Vol. 22301, HMCS *Margaree* Ship's Log, 1 - 17 October 1991.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/070, Box 4, HMCS *Nipigon* Ship's Log, 10 - 28 February 1992.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/070, Box 4, HMCS *Nipigon* Ship's Log, 17 - 31 March 1992.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/070, Box 7, HMCS *Skeena* Ship's Log, 5 - 30 October 1992.

National Library and Archives of Canada, R.G. 24, Accn. 1996-97/1060, Box 1, HMCS *Anticosti* Ship's Log, 19 - 30 April 1993.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/070, Box 4, HMCS *Gatineau* Ship's Log, 3 - 27 May 1993.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/070, Box 7, HMCS *Skeena* Ship's Log, 25 - 31 May 1993.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/070, Box 7, HMCS *Skeena* Ship's Log, 1 - 4 June 1993.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/316, Box 8, HMCS *Nipigon* Ship's Log, 9 – 18 June 1993.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/070, Box 7, HMCS *Skeena* Ship's Log, 23 - 31 August 1993.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/070, Box 7, HMCS *Skeena* Ship's Log, 1 - 17 September 1993.

National Library and Archives of Canada, R.G. 24, Accn. 1996-97/1060, Box 1, HMCS *Anticosti* Ship's Log, 20 - 30 September 1993.

National Library and Archives of Canada, R.G. 24, Accn. 1996-97/1060, Box 1, HMCS *Anticosti* Ship's Log, 1 - 8 October 1993.

National Library and Archives of Canada, R.G. 24, Accn. 1996-97/1060, Box 5, HMCS *Moresby* Ship's Log, 21 - 28 February 1994.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/316, Box 1, HMCS *Anticosti* Ship's Log, 6 - 22 April 1994.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/316, Box 3, HMCS *Fraser* Ship's Log, 10 - 21 May 1994.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/316, Box 1, HMCS *Anticosti* Ship's Log, 25 - 31 July 1994.

National Library and Archives of Canada, R.G. 24, Accn. 1995-96/316, Box 1, HMCS *Anticosti* Ship's Log, 1 - 14 August 1994.

National Library and Archives of Canada, R.G. 24, Accn. 1996-97/113, HMCS *Gatineau* Ship's Log, 8 - 26 August 1994.

National Library and Archives of Canada, R.G. 24, Accn. 1996-97/113, HMCS *Gatineau* Ship's Log, 11 - 30 September 1995.

National Library and Archives of Canada, R.G. 24, Accn. 1996-97/113, HMCS *Gatineau* Ship's Log, 1 - 6 October 1995.

National Library and Archives of Canada, R.G. 24, Accn. 1998-00756-1, Box 11, HMCS *Moresby* Ship's Log, 2 - 19 July 1996.

National Library and Archives of Canada, R.G. 24, Oct 2000, Box 5, HMCS *Glace Bay* Ship's Log, 2 – 18 September 1997.

Interviews

Belliveau, Captain(N) Bruce. Assistant Chief of Staff Plans and Operations, Maritime Forces Atlantic. Interview by author, 2 March 2007.

Brownstein, Jeff. Maritime Fishermen's Union – Local 6. Interview by author, 19 February 2003.

Giffin-Boudreau,Diane. Regional Director General Atlantic, Canada Border Services Agency. Interview by author, 22 June 2007.

Grant, Shauna. Directorate of Maritime Strategy, Department of National Defence. Interview by author, 23 June 2003.

Harrison, Captain(N) Richard. Assistant Chief of Staff Plans and Operations, Maritime Forces Pacific. Interview by author, 13 March 2001.

Rhynold, Pat. Guysborough County Inshore Fishermen's Association. Interview by author, 19 February 2003.

Robertson, Captain(N) Drew. Commanding Officer *HMCS Athabaskan*. Interview by author, 1 December 2000.

Warman, Lieutenant(N) Colin. Fifth Maritime Operations Group. Interview by author, 12 March 2001.

Other Correspondence

Godin, Lieutentant-Commander Scott. "IPCRC - Record of Decision 17 Sep 01." office email, 18 September 2001.

SECONDARY SOURCES

Books and Monographs

1991 Corpus Almanac & Canadian Sourcebook. Don Mills: Southam Business Information and Communications Group, 1991.

Abogado, Edgar L. and Yoma, Reynaldo L. "Development of a Philippine Maritime Surveillance Capability." In *Issues in Regional Maritime Strategy: Papers in Australian Maritime Affairs No. 5*, edited by David Wilson. Canberra: Department of Defence, 1998.

Bailet, François N., Fred W. Crickard and Glen J. Herbert. *Integrated Maritime Enforcement: A Handbook*. Halifax: Centre for Foreign Policy Studies, Dalhousie University, 1999.

Barnaby, Frank. "The Role of the Navies in the 1990s and Beyond." In *Ocean Yearbook 10*, edited by Elisabeth Mann Borgese and Norton Ginsburg. Chicago: University of Chicago Press, 1993.

Bateman, Sam. "Maritime Information and Data Exchange." In *The Seas Unite: Maritime Cooperation in the Asia Pacific Region: Canberra Papers 118*, edited by Sam Bateman and Stephen Bates. Canberra: Strategic and Defence Studies Centre, The Australian National University, 1996.

Bateman, Sam. "Maritime Surveillance and Information Exchange." In *Calming the Waters: Initiatives for Asia Pacific Maritime Cooperation: Canberra Papers 114*, edited by Sam Bateman and Dick Sherwood. Canberra: Strategic and Defence Studies Centre, The Australian National University, 1996.

Bateman, Sam. "Oceans Management Policy: Catalyst for Cooperation?" In *Oceans Management Policy: The Strategic Dimension: Wollongong Paper on Maritime Policy No. 1*, edited by Sam Bateman and Dick Sherwood. Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1995.

Bateman, Sam. "Strategic Change and Naval Roles." In *Strategic Change and Naval Roles: Issues for a Medium Naval Power: Canberra Papers 102*, edited by Sam Bateman and Dick Sherwood. Canberra: Strategic and Defence Studies Centre, The Australian National University, 1993.

Bateman, Sam and Grove, Eric. "Maritime Enforcement in the Southern Ocean: Some Operational and Policy Considerations." In *Southern Ocean Fishing: Policy Challenges for Australia: Wollongong Paper on Maritime Policy No. 7*, edited by Sam Bateman and Donald R. Rothwell. Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1998.

Beesley, J. Alan. "The Future of International Oceans Management." In *Canadian Oceans Policy: National Strategies and the New Law of the Sea*, edited by Donald McRae and Gordon Munro. Vancouver: University of British Columbia Press, 1989.

Bellefontaine, Neil. "Canada's Oceans Act and National Oceans Strategy." In *Canada's Three Oceans: Strategies for Maritime Enforcement,* edited by Glen J. Herbert and Fred W. Crickard. Halifax, N.S.: Centre for Foreign Policy Studies, Dalhousie University, 1998.

Bergin, Anthony. "Australia." In *Regional Maritime Management and Security: Canberra Papers 124*, edited by Sam Bateman and Dick Sherwood. Canberra: Strategic and Defence Studies Centre, The Australian National University, 1998.

Bergin, Anthony. "Inter-Departmental Coordination: The Australian Experience." In *Managing and Protecting the Offshore Estate*, edited by Jack McCaffrie. Canberra: Australian Defence Studies Centre, 1995.

Birnie, Patricia. "Delimitation of maritime boundaries: emergent legal principles and problems." In *Maritime Boundaries and Ocean Resources*, edited by Gerald Blake. Totowa, New Jersey: Barnes and Noble, 1987.

Bland, Douglas L., ed. *Canada's National Defence: Vol 1 Defence Policy*. Kingston, Ont.: Queen's University, 1997.

Bland, Douglas L. and Maloney, Sean M. *Campaigns for International Security: Canada's Defence Policy at the Turn of the Century*. Kingston, ON: McGill-Queen's University Press, 2004.

Bland, Douglas L. and Maloney, Sean M. *Defence Policy for the World Order Era: The First Steps – Reconstitution and Transformation*. Kingston, ON: McGill-Queen's University Press, 2004.

Blewett, E. "Canada's Experience in Measuring the Deterrent Effect of Fisheries Law Enforcement." In *Fisheries Law Enforcement: Programs, Problems and Evaluations, Proceedings of a Workshop on Fisheries Law Enforcement*, edited by J.G. Sutinen and T.M Hennessey. Kingston, RI: University of Rhode Island, 1985.

Bliss, Douglas. "Birds Oiled at Sea: A Case of Environmental Enforcement." In *Canada's Three Oceans: Strategies for Maritime Enforcement,* edited by Glen J. Herbert and Fred W. Crickard. Halifax, N.S.: Centre for Foreign Policy Studies, Dalhousie University, 1998.

Booth, Ken. *Navies and Foreign Policy*. New York: Holmes & Meier, 1979.

Briggs, Peter. "The ADF's Role in Policing the Offshore Zones." In *Policing Australia's Offshore Zones: Problems and Prospects: Wollongong Paper on Maritime Policy No. 9*, edited by Doug MacKinnon and Dick Sherwood. Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1997.

Burke, William T., Legatski, Richard, and Woodhead, William W. *National and International Law Enforcement in the Ocean.* Seattle: University of Washington Press, 1975.

Busha, Thomas S. "Monitoring and Surveillance: Navigation." In *Ocean Yearbook 3*, edited by Elisabeth Mann Borgese and Norton Ginsburg. Chicago: University of Chicago Press, 1982.

Cairns, Peter. "On Course for the Future: Canada's Maritime Forces in the Post-Cold War Era." In *Canada's Navy Sailing Into the 21st Century: The Niobe Papers; Volume 5*, edited by F. W. Crickard and J.P. Nash. St. Johns, Nfld: The Naval Officers Association of Canada, 1993.

Chartrand, Michelle. "The Department of Fisheries and Oceans since its Integration with the Canadian Coast Guard: Effects in the Laurentian Region." In *The St. Lawrence Seaway and Quebec: The Niobe Papers; Volume 8*, edited by Gregory L. Witol. Nepean, Ontario: The Naval Officers Association of Canada, 1997.

Chircop, Aldo. "Canada and the Law of the Sea: Perspectives and Issues for Canadian Accession." In *Oceans Law and Policy in the post-UNCED era: Australian and Canadian perspective,* edited by Lorne K. Kriwoken, Marcus Haward, David VanderZwaag, and Bruce Davis. London: Kluwer Law International, 1996.

Churchill, R.R; and Lowe, A.V. *The Law of the Sea.* Manchester: Manchester University Press, 1985.

Clingan, Thomas A. *The Law of the Sea: Ocean Law and Policy.* San Francisco: Austin and Winfield, 1994.

Copes, Parzival. "Canadian Fisheries Management Policy." In *Canadian Oceans Policy: National Strategies and the New Law of the Sea*, edited by Donald McRae and Gordon Munro. Vancouver: University of British Columbia Press, 1989.

Crickard, Fred W., and Herbert, Glen. "An Oceans Strategy for the Northwest Atlantic: Applications to Maritime Enforcement." In *Maritime Security Working Papers Number 7/8,* edited by E.L. Tummers. Halifax, N.S.: Dalhousie University, December, 1997.

Crickard, Fred W. and Herbert, Glen J. "An Oceans Strategy for the Northwest Atlantic: Applications to Maritime Enforcement." In *An Oceans Management Strategy for the Northwest Atlantic in the 21st Century: The Niobe Papers; Volume 9*, edited by Peter T. Haydon and Gregory L. Witol. Halifax, N.S.: The Naval Officers Association of Canada, 1998.

Crickard, Fred W. "Inter-Departmental Coordination: The Canadian Experience." In *Managing and Protecting the Offshore Estate*, edited by Jack McCaffrie. Canberra: Australian Defence Studies Centre, 1995.

Crickard, Fred W. "Maritime Issues in Canadian Security." In *Canada's Navy Sailing Into the 21st Century: The Niobe Papers; Volume 5*, edited by F. W. Crickard and J.P. Nash. St. Johns, Nfld: The Naval Officers Association of Canada, 1993.

Crickard, Fred W. "Oceans Policy and Maritime Strategy: The Canadian Experience." In *Oceans Management Policy: The Strategic Dimension: Wollongong Paper on Maritime Policy No. 1*, edited by Sam Bateman and Dick Sherwood. Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1995.

Crickard, Fred W. "Oceans Policy and Naval Policy 1970 to 1997: Divergent Courses or Making the Rendezvous? The Canadian Experience." In *Maritime Security Working Papers Number 7/8,* edited by E.L. Tummers. Halifax, N.S.: Dalhousie University, December, 1997.

Crickard, Fred W. "Peace and Security in the Arctic, Decision for Canada: Nuclear Powered Submarine and Other Canadian Military Options." *Peace and Security in the Arctic, Decision for Canada.* Ottawa: Canadian Centre for Arms Control and Disarmament, November 1987.

Crowley, Ronald W. and Bourgeois, Raymond C. "The Rationale and Future Directions of Canada's Oceans Policy: Domestic Aspects." In *Canadian Oceans Policy: National Strategies and the New Law of the Sea*, edited by Donald McRae and Gordon Munro. Vancouver: University of British Columbia Press, 1989.

D'Oléon, Michel. "Policing the Seas: The Way Ahead." In *The Role of European Naval Forces after the Cold War*, edited by G. de Nooy. Netherlands: Kluwer Law International, 1996.

Ebdon, David. *Statistics in Geography*. Oxford: Blackwells, 1996.

Evans, Gareth and Sahnoun, Mohamed. *Report of the International Commission on Intervention and State Sovereignty: The Responsibility to Protect.* Ottawa: International Development Research Centre, 2001.

Garnett, Gary L. "The Navy's Role in the Protection of National Sovereignty." In *An Oceans Management Strategy for the Northwest Atlantic in the 21st Century: The Niobe Papers; Volume 9*, edited by Peter T. Haydon and Gregory L. Witol. Halifax, N.S.: The Naval Officers Association of Canada, 1998.

Garnett, Gary L. "Whither Canada?" In *Continental Security and Canada-U.S. Relations: Maritime Perspectives, Challenges and Opportunities*, edited by Robert H. Edwards and Graham Walker, Halifax: Dalhousie University, 2003,

Gold, Edgar. "The Surveillance and Control of Navigation in the New Law of the Sea: A Comment." In *Ocean Yearbook 3*, edited by Elisabeth Mann Borgese and Norton Ginsburg. Chicago: University of Chicago Press, 1982.

Granatstein, J.L. *Canadian Foreign Policy*. Toronto: Copp Clark, 1986.

Granatstein, J.L. and Bothwell, Robert. *Pirouette: Pierre Trudeau and Canadian Foreign Policy*. Toronto: University of Toronto Press, 1990.

Gray, Colin S. *Canada's Maritime Forces.* Wellesley Paper 1. Toronto: Canadian Institute of International Affairs, January, 1973.

Gray, George and Guppy, Neil. *Successful Surveys: Research Methods and Practice*. Toronto: Harcourt, 1999.

Gregory, F. "The British Police System – With Special Reference to Public Order Problems." In *Police and Public Order in Europe,* edited by J. Roach and J. Thomaneck. London: Croone Helm, 1985.

Grove, Eric. *The Future of Sea Power*. Annapolis: Naval Institute Press, 1990.

Harris, Michael. *Lament for an Ocean: The Collapse of the Atlantic Cod Fishery – A True Crime Story.* Toronto: McClelland and Stewart, 1998.

Haydon, Peter. "Maritime Strategy and Canada." In *Issue Brief 11: Canadian Perspectives on Maritime Strategy,* edited by Fred W. Crickard, Peter T. Haydon, and Douglas A. Ross. Ottawa.: Canadian Centre for Arms Control and Disarmament, 1990.

Haydon, Peter T. "What Naval Capabilities Does Canada Need?" In *Maritime Security in the Twenty-First Century: Maritime Security Occasional Paper No. 11*, edited by E.L. Tummers. Halifax, N.S.: Dalhousie University, December, 2000.

Haydon, Peter T. *Canadian Naval Future: A Necessary Long-Term Planning Framework,* IRPP Working Paper number 2004-12, November, 2004.

Hennessey, Timothy M.; and Kaiser, David. "Fisheries Law Enforcement: Indicators of System Performance." In *East Coast Fisheries Law and Policy*, edited by J.L. Bubier and A. Rieser. : University of Southern Maine, Marine Law Institute, 1987.

Herbert, Glen J. "An Integrated Approach to Maritime Enforcement: The Northwest Atlantic Region." In *Canada's Three Oceans: Strategies for Maritime Enforcement,* edited by Glen J. Herbert and Fred W. Crickard. Halifax, N.S.: Centre for Foreign Policy Studies, Dalhousie University, 1998.

Hickey, Laurence M. "Regional and Interdepartmental Cooperation." In *Continental Security and Canada-U.S. Relations: Maritime Perspectives, Challenges and Opportunities*, edited by Robert H. Edwards and Graham Walker. Halifax: Dalhousie University, 2003.

Hill, Rear-Admiral R.J. *Maritime Strategy for Medium Powers*. Annapolis: Naval Institute Press, 1986.

Huebert, Rob. "Integrated Maritime Enforcement: The Arctic." In *Canada's Three Oceans: Strategies for Maritime Enforcement,* edited by Glen J. Herbert and Fred W. Crickard. Halifax, N.S.: Centre for Foreign Policy Studies, Dalhousie University, 1998.

Janis, Mark W. *Sea Power and the Law of the Sea*. Lexington, Mass: heath, 1976.

Jasani, Bhupendra. "Ocean Surveillance by Earth Satellites." In *Ocean Yearbook 2*, edited by Elisabeth Mann Borgese and Norton Ginsburg. Chicago: University of Chicago Press, 1980.

Johnson, Phillip A. "Shooting Down Drug Traffickers." In *The Law of Armed Conflict: Into the Next Millenium: International Law Studies; Volume 72*, edited by Michael N. Schmitt. Newport, Rhode Island: U.S. Naval War College, 1998.

Johnston, Douglas M. "Canada and the Law of the Sea Convention." In *Oceans Policy in the 1990s: A Pacific Perspective: The Niobe Papers; Volume 6*, edited by Fred W. Crickard. Nepean, Ontario: The Naval Officers Association of Canada, 1995.

Julian, Michael. "Maritime Safety." In *Policing Australia's Offshore Zones: Problems and Prospects: Wollongong Paper on Maritime Policy No. 9*, edited by Doug MacKinnon and Dick Sherwood. Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1997.

Knight, Darren. "A Strategy for Maritime Surveillance and Information Management." In *Canada's Three Oceans: Strategies for Maritime Enforcement,* edited by Glen J. Herbert and Fred W. Crickard. Halifax, N.S.: Centre for Foreign Policy Studies, Dalhousie University, 1998.

Laing, Bob. "Aerial Platforms in Maritime Surveillance." In *Managing and Protecting the Offshore Estate*, edited by Jack McCaffrie. Canberra: Australian Defence Studies Centre, 1995.

Lamson, Cynthia. "Oceans Policy for a Complex World." In *The Sea Has Many Voices: Oceans Policy for a Complex World*, ed. Cynthia Lamson. Montreal: McGill-Queen's University Press, 1994.

Lamson, Cynthia. "Prospects: Towards a Three-Ocean, One-Nation Policy." In *The Sea Has Many Voices: Oceans Policy for a Complex World*, edited by Cynthia Lamson. Montreal: McGill-Quens University, 1994.

Lavers, John, W., and Stewart, Iain S. "Fisheries Surveillance and Enforcement." In *Canadian Ocean Law and Policy*, edited by David L. VanderZwaag. Markham, Ont.: Butterworths Canada, 1992.

Lee, Edward G., and Fraser, Douglas G. "The Rationale and Future Directions of Canada's Oceans Policy: International Dimensions." In *Canadian Oceans Policy: National Strategies and the New Law of the Sea*, edited by Donald McRae and Gordon Munro. Vancouver: University of British Columbia Press, 1989.

Lightfoot, Chris. "Policing the United Kingdom's Offshore Zones." In *Policing Australia's Offshore Zones: Problems and Prospects: Wollongong Paper on Maritime Policy No. 9*, edited by Doug MacKinnon and Dick Sherwood. Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1997.

Lynch, Stacy and Peer, Limor. *Analyzing Newspaper Content: A How-To Guide.* Chicago: Northwestern University, Readership Institute, 2002.

MacKinnon, Doug, and Schwerdt, Paul. "Maritime Crime." In *Policing Australia's Offshore Zones: Problems and Prospects: Wollongong Paper on Maritime Policy No. 9*, edited by Doug MacKinnon and Dick Sherwood. Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1997.

Malone, Arnold. "Maritime Sovereignty." In *The Canadian Navy in Peace and War in the 1990's: The Niobe Papers; Volume 3*, edited by Fred W. Crickard. Halifax: The Naval Officers Association of Canada, 1991.

McArdle, A.D. *International Ship Arrest: A Practical Guide.* London: Lloyd's of London Press, 1985.

McCaffrie, Jack. "Potential Threats to Australian Maritime Security." In *Oceans Management Policy: The Strategic Dimension: Wollongong Paper on Maritime Policy No. 1*, edited by Sam Bateman and Dick Sherwood. Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1995.

McCulloch, Jeffrey. "Concepts of Military and Civil Surveillance." In *Policing Australia's Offshore Zones: Problems and Prospects: Wollongong Paper on Maritime Policy No. 9*, edited by Doug MacKinnon and Dick Sherwood. Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1997.

McNab., R. *Canada and Article 76 of the Law of the Sea: Defining the Limits of Canadian Resource Jurisdiction beyond 200 Nautical Miles in the Atlantic and Arctic Oceans.* Dartmouth: Geological Survey of Canada, 1994.

McDorman, Ted L. "Canada's Ocean Limits and Boundaries: An Overview." In *Oceans Law and Policy in the post-UNCED era: Australian and Canadian perspective,* edited by Lorne K. Kriwoken, Marcus Haward, David VanderZwaag, and Bruce Davis. London: Kluwer Law International, 1996.

McDorman, Ted. "The Pacific Component in a Canadian Integrated Maritime Enforcement Strategy." In *Canada's Three Oceans: Strategies for Maritime Enforcement,* edited by Glen J. Herbert and Fred W. Crickard. Halifax, N.S.: Centre for Foreign Policy Studies, Dalhousie University, 1998.

McPhail, Ian, and Gillies, John. "Oceans Policy: Regulation and Enforcement Consideration." In *Policing Australia's Offshore Zones: Problems and Prospects: Wollongong Paper on Maritime Policy No. 9*, edited by Doug MacKinnon and Dick Sherwood. Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1997.

McFarlane, John. "The Potential for Illegal Activity." In *Managing and Protecting the Offshore Estate*, edited by Jack McCaffrie. Canberra: Australian Defence Studies Centre, 1995.

McLean, Doug. "Marine Fleet Management: Interdepartmental Coordination." In *Canada's Three Oceans: Strategies for Maritime Enforcement,* edited by Glen J. Herbert and Fred W. Crickard. Halifax, N.S.: Centre for Foreign Policy Studies, Dalhousie University, 1998.

Middlemiss, Danford W. "Canadian Maritime Enforcement Policies." In *Canadian Foreign Policy and the Law of the Sea*, edited by Barbara Johnson and Mark W. Zacher. Vancouver: University of British Columbia Press, 1977.

Milner, Marc. *Canada's Navy: The First Century.* Toronto: University of Toronto Press, 1999).

Morris, Michael A. "Military Aspects of the Exclusive Economic Zone." In *Ocean Yearbook 3*, edited by Elisabeth Mann Borgese and Norton Ginsburg. Chicago: University of Chicago Press, 1982.

Moher, Mark. "Canadian Foreign Policy in the 1990s." In *Canada's Navy Sailing Into the 21st Century: The Niobe Papers; Volume 5*, edited by F. W. Crickard and J.P. Nash. St. Johns, Nfld: The Naval Officers Association of Canada, 1993.

Morgan, Joseph R. "Constabulary Navies in the Pacific and Indian Oceans." In *Ocean Yearbook 11*, edited by Elisabeth Mann Borgese and Norton Ginsburg. Chicago: University of Chicago Press, 1994.

Morton, Desmond. *Understanding Canadian Defence.* Toronto: Penguin, 2003).

Morris, Michael A. "Military Aspects of the Exclusive Economic Zone." In *Ocean Yearbook 3*, edited by Elisabeth Mann Borgese and Norton Ginsburg. Chicago: University of Chicago Press, 1982.

Murray, L. E., and Robinson, D.A "Maritime Enforcement: The Federal Government's Marine Fleets and the Navy's Mission." In *Oceans Policy in the 1990's: An Atlantic Perspective: The Niobe Papers; Volume 4*, edited by Fred W. Crickard. St. Johns, Nfld: The Naval Officers Association of Canada, 1992.

Naval Officers Association of Canada, *A Maritime Policy for Canada.* Ottawa: Naval Officers Association of Canada, 1990.

Pharand, Donat. *Canada's Arctic waters in international law.* Cambridge: Cambridge University Press, 1988.

Pratt, Martin, editor. *Janes Exclusive Economic Zones.* Surrey: Selwood Printing, 1999.

Prescott, J.R.V. *The Political Geography of the Oceans.* London: David & Charles, 1975.

Pugh, Michael, and Gregory, Frank. "Maritime constabulary roles for non-military security." In *Maritime Security and Peacekeeping: A Framework for United Nations Operations*, edited by Michael Pugh. New York: St. Martins Press, 1994.

Pugh, Michael. "Policing the Seas: The Challenge of Good Governance." In *The Role of European Naval Forces after the Cold War*, edited by G. de Nooy. Netherlands: Kluwer Law International, 1996.

Purver, Ronald G. "Aspects of Sovereignty and Security in the Arctic." In *Canadian Oceans Policy: National Strategies and the New Law of the Sea*, edited by Donald McRae and Gordon Munro. Vancouver: University of British Columbia Press, 1989.

Sarty, Roger. "The Naval Side of Canadian Sovereignty, 1909-1923." In *Oceans Policy in the 1990's: An Atlantic Perspective: The Niobe Papers; Volume 4*, edited by Fred W. Crickard. St. Johns, Nfld: The Naval Officers Association of Canada, 1992.

Shearer, Ivan. "The Development of International Law with Respect to the Law Enforcement Roles of Navies and Coast Guards in Peacetime." In *The Law of Armed Conflict: Into the Next Millenium: International Law Studies; Volume 71*, edited by Michael N. Schmitt and Leslie C Green. Newport, Rhode Island: U.S. Naval War College, 1998.

Sherwood, Dick. "Implications for Naval Roles." In *Policing Australia's Offshore Zones: Problems and Prospects: Wollongong Paper on Maritime Policy No. 9*, edited by Doug MacKinnon and Dick Sherwood. Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1997.

Sherwood, Dick. *The Navy and National Security: The Peacetime Dimension: Caberra Paper No. 109.* Canberra: Strategic and Defence Studies Centre, The Australian National University, 1994.

Sjolander, Claire Turenne. Cashing in on the 'Peace Dividend': National Defence in the Post-Cold War World." Gene Swimmer, ed. *How Ottawa spends 1996-97: Life under the Knife.* Ottawa: Carleton University Press, 1995.

Smith, Hugh. "The Use of Armed Forces in Law Enforcement." In *Policing Australia's Offshore Zones: Problems and Prospects: Wollongong Paper on Maritime Policy No. 9*, edited by Doug MacKinnon and Dick

Sherwood. Wollongong, Australia: Centre for Maritime Policy, University of Wollongong, 1997.

Sokolsky, Joel J. "Striking a New Balance: Seapower, Security, Sovereignty, and Canada." In *Canadian Oceans Policy: National Strategies and the New Law of the Sea*, edited by Donald McRae and Gordon Munro. Vancouver: University of British Columbia Press, 1989.

Thordarson, Bruce. *Trudeau and Foreign Policy.* Don Mills: Oxford University Press, 1972.

Till, Geoffrey. *Maritime Strategy in the Nuclear Age.* London: MacMillan, 1982.

Tummers, E.L. "The Navy's Role in Maritime Enforcement." In *Maritime Security Working Papers Number 7/8*, edited by E.L. Tummers. Halifax, NS: Dalhousie University, December, 1997.

Wade, E.C.S. and Bradley, A.W. *Constitutional and Administrative Law.* London: Longman, 1985.

Walsh, Mary. "Canadian Fisheries Enforcement." In *East Coast Fisheries Law and Policy*, edited by J.L. Bubier and A. Rieser. : University of Southern Maine, Marine Law Institute, 1987.

Williams, Kelly E. "The Canadian Navy: In the Vanguard of Canadian Foreign and Defence Policy." In *The Canadian Navy and the New Security Agenda: Proceedings of the Maritime Security and Defence Seminar, Toronto, 26-27 April 2004*, edited by Ann L. Griffiths. Halifax. N.S.: Dalhousie University, 2004.

Journal Articles

Adams, Michael R. "Navy Narcs." *United States Naval Institute Proceedings* (September, 1984): 35-37.

Amphion, "Do We Really Need a Navy?" *Maritime Affairs* (January, 1997):12.

Avis, Peter. "Surveillance and Canadian Maritime Domestic Security." *Canadian Military Journal* 4 (Spring, No. 1, 2003): 9-14.

Barrick, Donald E. "EEZ Surveillance - The Compact HF Radar Alternative." *EEZ Technology 3* (Summer 1998): 125-129.

Bergin, Anthony. "Fisheries surveillance in the South Atlantic." *Ocean and Shoreline Management* 11 (1988): 467-491.

Bergin, Anthony. "The Royal Australian Navy and the marine environment." *Ocean and Coastal Management* 33 (Nos. 1-3, 1996): 213-227.

Bland, Raymond D. "Controlling the EEZ: Implications for Naval Force Planning." *Naval War College Review* 32 (July/August, 1984): 23-30.

Booth, K. "The Utilities of Navies: Concepts and Propositions." *The Naval Review* 64 (July 1976): 202-208.

Brecht, A.H.R. "Naval Implications of Coastal Surveillance: Part II." *Journal of the Australian Naval Institute* 10 (February, 1984): 27-32.

Brookes, Ian. "The Physical Geography of the Atlantic Provinces." *in Studies in Canadian Geography: The Atlantic Provinces,* ed. Alan G. MacPherson (Toronto: University of Toronto Press, 1972), 14-28.

Crickard, Fred. "Canada's ocean and maritime security: A strategic forecast." *Marine Policy* 19 (No. 4, 1995): 335-342.

Crickard, Fred W., Herbert, Glen J., and Hobson, Brent A. "Canada's Oceans Strategy: Surveillance and Enforcement." *EEZ Technology 4* (Winter 1999): 153-158.

Crickard, Fred W. "The Role of Maritime Strategy in Ocean Development and Management," in *Canadian Ocean Law and Policy*, ed. David Vanderzwaag (Toronto: Butterworths, 1992), 515.

Day, Douglas. "Public Policy and Ocean Management in Canada." *Marine Policy* 19, (No. 4, 1995): 251-256.

Gilmore, William C. "Hot pursuit and constructive presence in Canadian law enforcement: A case note." *Marine Policy* 12 (April 1988): 104-111.

Haydon, Peter T. "Canadian Naval Policy: Still Stalled, Still Contentious, and Still Political." *Canadian Defence Quarterly* 26 (Summer 1997): 6-13.

Hickey, Laurence M. "Enhancing the Naval Mandate for Law Enforcement: Hot Pursuit or Hot Potato." *Canadian Military Journal* 7, No. 1 (Spring 2006): 41-48.

Hickey, Laurence M. "The Submarine as a Tool of Maritime Enforcement." *Integrated Coastal Zone Management* 1 (Spring 2000): 117-122.

Hill, J.R. "Control of the Exclusive Economic Zone." *Naval Forces* Vol VI, (No. VI, 1985): 84-92.

Hill, J.R. "Maritime Strategy for Medium Powers." *Journal of the Australian Naval Institute* 14 (May, 1988): 37-45.

Hill, Richard. "Canadian Maritime Thinking and Developments." *The Naval Review* 83 (July 1995): 268-270.

Huebert, Robert. "Climate Change and Canadian Sovereignty in the Northwest Passage." *Isuma* 2 No. 4 (Winter 2001): 86-94.

Koroleva, N.D. "The right of pursuit from the exclusive economic zone." *Marine Policy* 14 (March 1990): 137-141.

Lindsey, George, et al. "Canada's Security Policies." *Behind the Headlines*, Vol 60, No. 2 (Winter 2002/2003), 1-16.

MacNamara, W. D. and Fitz-Gerald, Ann. "A National Security Framework for Canada." *Policy Matters* 3 (No. 10, October 2002): 1-27

Maloney, Sean M. "Domestic Operations: The Canadian Approach." *Parameters* (Autumn, 1997): 135-152.

Marshall, C.J. "Canada's Forces take stock in Defence Structure Review." *International Perspectives* (January/February, 1976): 26.

Mendel, William W. "America's Drug War: An Approach to Interagency Coordination." *Low Intensity Conflict and Law Enforcement* 2 (No. 1, 1993): 88-99.

Millar, Harvey H. "Planning annual allocation of fisheries surveillance effort." *Fisheries Research* 23 (1995): 345-360.

Murray, L.E. "Maritime enforcement: The Canadian federal government's marine fleets and the navy's mission." *Marine Policy* 18 (November 1994): 521-529.

Peters, Ralph. "Constant Conflict." *Parameters* (Summer 1997): 4-14.

Pugh, Michael, and Gregory, Frank. "Maritime constabulary roles for non-military security." In *Maritime Security and Peacekeeping: A Framework for United Nations Operations*, edited by Michael Pugh. New York: St. Martins Press, 1994.

Pugliese, David. "Al-Qaeda's Naval Fleet." *Ottawa Citizen*, (17 March 2004): A1-A2.

Ranken, Michael. "Maritime Sovereignty, the Offshore Estate, and National Defence." *The Naval Review* 81 (April 1993): 135-140.

Ranken, Michael. "Royal Navy Roles in Support of the Civil Power in Peacetime." *The Naval Review* 80 (October 1992): 326-332.

Rawson, Kenneth. "Offshore Policeman." *Marine Policy* 2 (January 1978): 37-45.

Robertson, Scott. "Finding a Way: National Security and Defence Policy for a New Liberal Leadership." *Policy Options* 25, No. 1 (December 2003/January 2004): 56-61.

Stairs, Denis. "Pierre Trudeau and the Politics of the Canadian Foreign Policy Review." *Australian Outlook* 26 (No. 3, 1972): 193-196.

Sutinen, J.G.; Rieser A.; and Gauvin, J.R. "Measuring and explaining non-compliance in federally managed fisheries." *Ocean Development and International Law* 21 (1990): 335-372.

Tasseron, Jeff. "Facts and Invariants: The Changing Context of Canadian Defence Policy." *Canadian Military Journal* 4, No. 2 (Summer 2003): 19-30.

Williams, Kelly E. "The Canadian Navy: In the Vanguard of Canadian Foreign and Defence Policy." In *The Canadian Navy and the New Security Agenda: Proceedings of the Maritime Security and Defence Seminar, Toronto, 26-27 April 2004*, ed. Ann L. Griffiths. Halifax: Dalhousie University, 2004, 9.

Young, Elizabeth. "Policing Offshore: Civil Power or Armed Forces." *RUSI Journal* 122 (No. 2, June, 1977): 18-22.

Reports, Papers and Proceedings

"Canada 21: Canada and common security in the twenty-first century." Toronto: Centre for International Studies, University of Toronto, 1994.

"Integrated Maritime Enforcement for Effective Oceans Management: Final Report of the First Workshop." Halifax, N.S.: Centre for Foreign Policy Studies, Dalhousie University, July, 1994.

Allan, Jock. *The Potential of a Submarine in Fishery Surveillance and Enforcement.* Report by CFN Consultants for Department of Fisheries and Oceans. 14 May 1993.

Bruce, Jim. *Exercise Atlantic Guard Final Report.* Halifax: Science Applications International Corporation Canada, Emergency and Safety Services Division, 2002.

Canada. Department of Fisheries and Oceans. *Annual Report 1985/86.* Supply and Services Canada, Ottawa, 1986, 21.

Canada. Department of Fisheries and Oceans. Program Evaluation Branch. *Canada's Experience in Measuring the Deterrent Effect of Fisheries Law Enforcement,* by Edwin Blewett, William Furlong, and Peter Toesw.. Ottawa, 1985.

Canada. Department of Fisheries and Oceans. *Canada's Oceans: An Economic Overview and a Guide to Federal Government Activities.* Communications Directorate DO, Ottawa, 1987.

Canada. Fisheries and Oceans Canada. *Canada's Oceans Strategy*, Ottawa, 2002.

Canada. Department of Fisheries and Oceans. *Performance and effectiveness of offshore fisheries surveillance, 1977-1978, and options to 1985,* by D. J. Clough. 1979.

Canada. Department of Fisheries and Oceans. *Optimization and implementation plan for offshore fisheries surveillance,* by D. J. Clough. 1980.

Canada. Department of Fisheries and Oceans. *Effectiveness of enforcement and surveillance.* Report Number 41. 1981.

Canada. Department of Fisheries and Oceans. *Effectiveness of enforcement and surveillance.* Report Number 41. 1984.

Canada. Department of Fisheries and Oceans. *The Role of the Provincial and Territorial Governments in the Oceans Sectors.* DFO/5265. Ottawa, 1997.

Canada. Department of Fisheries and Oceans. *The Role of the Federal Government in the Oceans Sectors.* DFO/5512. Ottawa, 1997.

Canada. Department of Foreign Affairs and International Trade. *Canada in the World: Canadian Foreign Policy Review.* Ottawa: 1995).

Canada. Department of National Defence. *Interdepartmental Concept of Maritime Operations (ICMO).* Ottawa, 9 November 1995.

Canada. Department of National Defence. *1985-86 Estimates, Part III: Expenditure Plan.* Ottawa, 1985.

Canada. Department of National Defence. *1986-87 Estimates, Part III: Expenditure Plan.* Ottawa, 1986.

Canada. Department of National Defence. *1987-88 Estimates, Part III: Expenditure Plan.* Ottawa, 1987.

Canada. Department of National Defence. *1988-89 Estimates, Part III: Expenditure Plan.* Ottawa, 1988.

Canada. Department of National Defence. *1989-90 Estimates, Part III: Expenditure Plan.* Ottawa, 1989.

Canada. Department of National Defence. *1990-91 Estimates, Part III: Expenditure Plan.* Ottawa, 1990.

Canada. Department of National Defence. *1991-92 Estimates, Part III: Expenditure Plan.* Ottawa, 1991.

Canada. Department of National Defence. *1992-93 Estimates, Part III: Expenditure Plan.* Ottawa, 1992.

Canada. Department of National Defence. *1993-94 Estimates, Part III: Expenditure Plan.* Ottawa, 1994.

Canada. Department of National Defence. *1994-95 Estimates, Part III: Expenditure Plan.* Ottawa, 1994.

Canada. Department of National Defence. *1995-96 Estimates, Part III: Expenditure Plan.* Ottawa, 1995.

Canada. Department of National Defence. *1996-97 Estimates, Part III: Expenditure Plan.* Ottawa, 1996.

Canada. Department of National Defence. *1997-98 Estimates, Part III: Expenditure Plan.* Ottawa, 1997.

Canada. Department of National Defence. *1998-99 Estimates, Part III: Expenditure Plan.* Ottawa, 1998.

Canada. Department of National Defence. *Challenge and Commitment – A Defence Policy for Canada.* Ottawa, 1987.

Canada. Department of National Defence. *Defence in the 70s.* Ottawa,1971.

Canada. Department of National Defence. *Leadmark: The Navy's Strategy for 2020.* Ottawa, 2001.

Canada. Department of National Defence. National Defence Headquarters, 3301-0 (DCDS) *NDHQ Instruction DCDS 2/98: Guidance for the Conduct of Domestic Operations.* 10 July 1998.

Canada. Department of National Defence. *Adjusting Course: A Naval Strategy for Canada.* Ottawa, April, 1997.

Canada. Department of National Defence. HMCS OJIBWA *Patrol Report: OPERATION AMBUSCADE.* Halifax, N.S., March, 1993.

Canada. Department of National Defence. HMCS OKANAGAN *Patrol Report: OPERATION GROUSE.* Halifax, N.S., October, 1994.

Canada. Department of National Defence. *Interdepartmental Concept of Maritime Operations (ICMO).* Ottawa, 9 November 1995.

Canada. Department of National Defence. Operational Research and Analysis Establishment. *Command and Control Within Canadian Maritime Areas of Interest,* by D. A. Grant. ORAE Staff Note 79/6. Ottawa, June, 1979.

Canada. Department of National Defence. *Securing Canada's Ocean Frontiers: Charting the Course from Leadmark.* Ottawa. 2005.

Canada. Department of National Defence. *Shaping the Future of Canadian Defence: A Strategy for 2020.* Ottawa: June 1999.

Canada. Department of National Defence. *Ship activity related data and information in the age of business planning and performance measurement.* by LCdr P. L. Massel and Jay Adamson, Operational Research Division Ottawa DOR(CAM) Research Note RN 9815, December 1998.

Canada. Department of National Defence. Operational Research and Analysis Establishment. *The Enforcement of Canada's Maritime Jurisdiction,* by Dr. N. Tracy. ORAE Report No. R44. Ottawa, February, 1975.

Canada. Department of National Defence. Operational Research Division. *The Canadian Maritime Forces 2015 Study Phase I: Maritime Expert Survey Final Report,* by D.W. Mason; D.M. McLean; A. Jesion; R.M.H. Burton; P.L. Massel; and C.R. Savage. ORD Project Report PR9805. Ottawa, April, 1998.

Canada. Foreign Affairs and International Trade Canad., *A Role of Pride and Influence in the World: Defence.* Ottawa. April, 2005.

Canada. House of Commons. *Report of the Standing Committee on National Defence and Veterans Affairs: Maritime Sovereignty.* November, 1990.

Canada. House of Commons. *Security in a Changing World: The Report of the Special Joint Committee on Canada's Defence Policy.* Ottawa. 1994).

Canada. Interdepartmental Program Co-ordination and Review Committee. *All the Ships That Sail: Two Year Assessment.* Ottawa, 18 January 1994.

Canada. Privy Council Office. *Canada's International Policy Statement.* Ottawa. 2005.

Canada. Privy Council Office. *Securing an Open Society: Canada's National Security Policy.* Ottawa, 2004.

Canada. Royal Commission on the Ocean Ranger Marine Disaster (Canada). *Hearings - Royal Commission on the Ocean Ranger Marine Disaster (Canada).* Ottawa.1985.

Canada. Secretary of State for Foreign Affairs. *Competitiveness and Security.* Ottawa. 1985.

Canada. Senate. *Report of the Standing Senate Committee on National Security and Defence. Canada's Coastlines: The Longest Under-defended Borders in the World.* October, 2003.

Canada. Solicitor General. *1997/98 Estimates, Part III: Expenditure Plan.* Ottawa.1998.

Canada. Transport Canada. Interdepartmental Marine Security Working Group. *Enhancing the Security of Canada's Marine Transportation System.* Ottawa, 2004.

Canada. Treasury Board. *All the Ships That Sail: A Study of Canada's Fleets,* by G.F. Osbaldeston. Report of the Study on the Utilization of the Federal Government's Marine Fleets. Ottawa, 15 October 1990.

Crickard, Fred W. and Herbert, Glen J. *Canada's Oceans Strategies Project - The Atlantic: Final Report.* Halifax, NS: Dalhousie University, Centre for Foreign Policy Studies, 1997.

English, Allan D., Brown, Angus, and Johnston, Paul. "Are we losing our memory?: Decision-making in DND." In *Canadian Military History Since the 17th Century: Proceedings of the Canadian Military History Conference, Ottawa, 5-9 May 2000*, ed. Yves Tremblay. Ottawa: Department of National Defence, 2001.

Gray, Colin S. *Canada's Maritime Forces.* Wellesley Paper 1. Toronto: Canadian Institute of International Affairs, January, 1973.

Haydon, Peter T. *Canadian Naval Future: A Necessary Long-Term Planning Framework.* IRPP Working Paper 2004-12. Montreal: Institute for Research on Public Policy, November, 2004.

Hennessy, T.M.; and Kaiser, D.W. . "Fisheries Law Enforcement: An Incentive Systems Perspective." In *Rethinking Fisheries Management. Proceedings from the Tenth Annual Conference, June 1-4, 1986.* Center for Ocean Management Studies, University of Rhode Island, 1986. (pp 133-144)

Pettis, Colonel Norris. "Minutes of Arctic Security Interdepartmental Working Group Meeting 18-19 November 2002." Yellowknife, N.W.T., December, 2002.

Government Documents

Canada. *Canada: A Portrait.* Ottawa: Supply and Services Canada.

Canada. Department of the Environment/Department of National Defence. *Memorandum of Understanding between the Department of the Environment and the Department of National Defence and the Canadian Forces relative to a Partnership for Environmental Emergency Response Assistance to the Department of the Environment.* Ottawa, March, 1994.

Canada. Department of Fisheries and Oceans. Joint Press Release. 29 July 1992.

Canada. Fisheries and Oceans Canada/Department of National Defence..*Memorandum of Understanding between the Department of Fisheries and Oceans and the Canadian Forces respecting Surface Ship Patrols and Aerial Fisheries Surveillance.* Ottawa, May, 1999.

Canada. Department of National Defence. National Defence Headquarters, 1735-5 (CMDO) *Delegation of Duties and Responsibilities Associated with the Interdepartmental Program Co-ordination and Review Committee.* 23 March 1992.

Canada. Department of National Defence. National Defence Headquarters, 1150-110/J257-3 (DNR4) *Interdepartmental Program Co-ordination and Review Committee (IPCRC) – Reorganization.* 13 December 1996.

Canada. Department of National Defence. National Defence Headquarters. 1150-1 (JFC3-3-3) *National Surveillance Policy.* 20 January 2003.

Canada. Department of National Defence. National Defence Headquarters. 3301-0 (DCDS) *NDHQ Instruction DCDS 2/98: Guidance for the Conduct of Domestic Operations.* 10 July 1998.

Canada. Department of National Defence/Solicitor General of Canada. *Memorandum of Understanding between the Canadian Forces and the Royal Canadian Mounted Police concerning the Provision of Assistance by the Canadian Forces in Support of the Royal Canadian Mounted Police in its Drug Law Enforcement Role*, 20 January 2005.

Canada. Public Safety Canada. *Federal Emergency Response Plan (FERP) Volume 1 – 8 November 2006 (Draft 6).* Ottawa. 8 November 2006.

Canada. Royal Canadian Mounted Police. *National Counter-Terrorism Plan.* Annex L.

Silverman, Art. Chairman. "Record of Decision – Meeting of the Organizing Committee for the Interdepartmental Program Co-ordination and Review Committee 24 May 1991." Ottawa. 10 June 1991.

Letters and Memoranda

Memorandum from US Secretary of Defense, Caspar Weinberger, to US Secretary of Transport, John Lehman, as quoted in Michael R. Adams, "Navy Narcs," *United States Naval Institute Proceedings* (September, 1984): 37.

Statutes and Regulations

Atlantic Canada Opportunities Act, R.S.C. 1985, c.41, s.12.

Canada-Newfoundland Offshore Atlantic Accord Implementation Act, S.C. 1987, c. 3, s. 9.

Canada-Newfoundland Offshore Atlantic Accord Implementation Newfoundland and Labrador Act, R.N.S.L. 1990, c. 2, s. 9.

Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act, S.C. 1988, c. 28, s. 9.

Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act, S.N.S. 1987, c. 3, s. 9.

Canadian Environmental Assessment Act, R.S.C. 1992, c.37, as am. R.S.C. 1994, c.46, s.4.

Canadian Transportation Accident Investigation and Safety Board Act, R.S.C. 1989, c. 3, s. 7.

Constitution Act, 1867, s. 91, 92.

Criminal Code, R.S.C. 1985, c.34, s.2

Department of Public Safety and Emergency Preparedness Act, R.S.C. 2005 c.10. s 2, 5.

Department of Defense Authorization Act of 1982 (Public Law 97-86).

Department of Defense Directive 5525.5 (22 March 1982).

National Defence Act, R.S.C. 1985 c. N-4. Part XI.

Pilotage Act, R.S.C. 1985, c.P-14, s.20.

United Nations Convention on the Law of the Sea (10 Dec 1982).

Theses

Avis, Peter. "Comparing National Approaches to Maritime Security in the Post 9/11 Era." M.A. thesis, Carleton University, 2004.

Forbes, Andrew. "Protecting the National Interest: Naval Constabulary Operations in Australia's Exclusive Economic Zone." M.P.A. project, Queen's University, 2001.

Haines, Stephen W. "The Provision of Military Aid to Civil Authorities in Britain's Maritime Domain." Ph.D. dissertation, Aberdeen University, 1992.

Hobson, Brent A. "New Solutions for Old Problems? Canadian Naval Support of Sovereignty: 1971 - 2000." M.A. dissertation, Dalhousie University, 1992.

Lostracco, Joanne. "What Force for Canada: A Theoretical and Practical Study of the Canadian Navy in the 1990s." M.A. thesis, Dalhousie University, 1998).

Speeches

Address by Superintendent A. Antoniuk to RCMP officers at RCMP Training Academy, Regina, Saskatchewan. 27 September 1990.

Address by Rear-Admiral P.D. McFadden to Dalhousie University Master of Public Administration Program, Halifax, Nova Scotia, 12 September 2007.

Speech from the Throne: To Open the First Session of the Thirty-Eighth Parliament of Canada, October 5, 2004.

Trudeau, Pierre Elliott. "The Relationship of Defence Policy to Foreign Policy." *Statements and Speeches,* No. 69/8, April 12, 1969.

Newspapers

"Rage greets fishery closing," *Globe and Mail* (Toronto), 3 July 1992.

Pugliese, David. "Al-Qaeda's Naval Fleet." *Ottawa Citizen*, (Ottawa), 17 March 2004): A1-A2.

Toronto Sun (Toronto), 6 April 1995.

Internet Resources

"A Modest Proposal – Maritime Security and Canada's Economic Exclusion Zones: MCDV for an Interim Maritime Security Force?" *Canadian American Strategic Review,* 1 October 2004 <http://www.sfu.ca/casr/mp-ccgmcdv.htm> (28 February 2005).

The Port of Halifax, Annual Statistics, 2005 <http://www.portofhalifax.ca/ AbsPage.aspx?id=1245&siteid=1&lang=1> (12 April 2006).

"Russia plants flag under N Pole," BBC News, 2 August 2007 <http://news.bbc. co.uk/2/hi/ europe/6927395.stm> (22 August 2007).

Acton White and Associates, *Economic Study of Canada's Marine and Ocean Industries*, 29 March 2001 <http://strategis.ic.gc.ca/epic/ internet/inad-ad.nsf/vwapj/economicstudy.pdf/$file/economicstudy.pdf> (9 August 2006).

Association of Canadian Port Authorities, *Industry Information – Canadian Port Industry*, 2005 <http://www.acpa-ports.net/industry/industry.html> (10 August 2006).

Atkins, Chief Superintendent Ian. Royal Canadian Mounted Police. Testimony before the Standing Senate Committee on National Security and Defence, Issue 22 – Evidence 22 September 2003 <http://www.parl.gc.ca/37/2/ parlbus/commbus/senate/Com-e/defe-e/22evb-e.htm?Language=E&Parl= 37&Ses= 2&comm_id=76> (30 October 2003).

Boutilier, Dr. James A. Testimony before the Standing Senate Committee on National Security and Defence, Issue 19 – Evidence 9 June 2003 <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/com-e/defe-e/19evb -e.htm> (7 February 2005).

Canada. Atlantic Canada Opportunities Agency. *Welcome to ACOA*. 4 December 2003, <http://www.acoa.ca/ e/index.shtml> (15 December 2003).

Canada. Atlantic Pilotage Authority. *Atlantic Region Pilot Areas*. <http://www. atlanticpilotage.com/main/content/charts.htm> (14 December 2003).

Canada. Canadian Security and Intelligence Service. *The Integrated Threat Assessment Centre*. 13 April 2007 <http://www.csis-scrs.gc.ca/en/ newsroom/backgrounders/ backgrounder13.asp> (20 August 2007).

Canada. Department of Justice. *Public Safety And Anti-Terrorism (PSAT) Initiative, Summative Evaluation*. 23 July 2007 <http://www.justice. gc.ca/en/ps/eval/reports/07/psat/sum/ p5.html> (21 August 2007).

Canada. Department of National Defence. *1994 White Paper on Defence*. "Chapter 4 - Protection of Canada." 23 December 2002 <http://www. forces.gc.ca/admpol/eng/doc/ 5116_e.htm> (12 August 2006).

Canada. Department of National Defence. *Canadians on Defence: Public Perception of the Canadian Forces.* December 1999 <http://dgpa-dgap.mil.ca/DGPA/Polling/jan99/eng/dec_e_99.htm> (16 February 2002).

Canada. Department of National Defence. "Enhancing the Security of Canada's Marine Transportation Station: Canada's Marine Transportation System." *Issues and Challenges*, 28 September 2006 <http://www.navy.dnd.ca/ cms_strat/strat-issues_e.asp?id=301> (3 September 2007).

Canada. Department of National Defence. *Serving Canadians – On Guard: Watching for Polluters and Illegal Fishing.* 28 January 2003 <http://www.airforce.forces.gc.ca/athomedocs/ athodm4c_e.htm> (9 October 2003).

Canada. Department of National Defence. *Welcome to 5 Wing.* 29 March 2006 <http://www.airforce.forces.gc.ca/5wing/about_us/index_e.asp> (8 August 2006).

Canada. Environment Canada. *Climate of the Atlantic Provinces.* 23 December 2004<http://atlantic-web1.ns.ec.gc.ca/climatecentre/default.asp?lang=En &n =7D7FE131-0> (8 August 2006).

Canada. Fisheries and Oceans Canada. *2004 Value of Atlantic & Pacific Coasts Commercial Landings, by Province.* 12 May 2006 <http://www.dfo-mpo.gc.ca/communic/statistics/commercial/landings/seafisheries/s2004 pv_e.htm> (8 August 2006).

Canada. Fisheries and Oceans Canada. *Canada's Oceans Action Plan: For Present and Future Generations.* 27 May 2005, p. 4. <http://www.dfo-mpo.gc.ca/canwaters-eauxcan/oap-pao/pdf/oap_e.pdf> (22 December 2005).

Canada. Fisheries and Oceans Canada. *Domestic Exports of Selected Commodities by Major Market and Country, December 2004.* 6 July 2006 <http://www.dfo-mpo.gc.ca/communic/statistics/trade/canadian_trade export_data/xmkt04_e.htm> (8 August 2006).

Canada. Fisheries and Oceans Canada. *Exports by Major Producing Countries. 2000-2004.* 6 July 2006 <http://www.dfo-mpo.gc.ca/communic/statistics/ trade/world_trade/export_data/ wxv0004_e.htm> (8 August 2006).

Canada, Fisheries and Oceans Canada. *Introduction to the ESSIM Initiative.* 6 June 2007 <http://www.mar.dfo-mpo.gc.ca/oceans/e/essim/essim-intro-e.html> (26 January 2008).

Canada. Foreign Affairs Canada. *Canada and the Oceans.* 16 November 2004, <http://www.dfait-maeci.gc.ca/sustain/EnvironIssu/canOcean/oceans-enasp> (28 January 2005).

Canada. House of Commons. Standing Committee on Fisheries and Oceans. *Report on the Oceans Act.* October, 2001.<http://www.parl.gc.ca/ infocomdoc/37/1/FOPO/Studies/Reports/ fopo01/07-intro-e.htm# INTRODUCTION> (11 April 2005).

Canada. Natural Resources Canada. *Coastline and Shoreline.* 9 May 2005 <http://atlas.gc.ca/site/english/learningresources/facts/coastline. html#c4> (15 April 2006).

Canada. Natural Resources Canada. *Sea Islands.*10 March 2004 <http://atlas.gc.ca/ site/english/learningresources/facts/islands.html > (15 April 2006).

Canada. Office of the Auditor General Canada. "Federal Response to September 11, 2001." *Exhibit 2.1 to 2005 Report of the Auditor General of Canada*, 5 April 2005 <http://www.oag-bvg.gc.ca/domino/reports.nsf/html/20050402xe01.html> (21 August 2007).

Canada. Pacific Pilotage Authority Canada. *Welcome to the Pacific Pilotage Authority Website.* <http://www.ppa.gc.ca/english/index.html> (14 December 2003).

Canada. Public Safety and Emergency Preparedness Canada. *What We Do.* 28 July 2006 <http://www.psepc.gc.ca/abt/wwd/index-en.asp> (2 January 2007).

Canada. Royal Canadian Mounted Police. *About the RCMP.* 11 October 2006 <http://www.rcmp.ca/ about/index_e.htm> (24 December 2006).

Canada. Royal Canadian Mounted Police. *Canada / U.S. Integrated Border Enforcement Teams.* 21 November 2003 <http://www.rcmp.ca/ security/ibets_e.htm> (15 December 2003).

Canada. Royal Canadian Mounted Police. *Marine Services.* 14 November 2006 <http://www.rcmp-grc.gc.ca/marine/marine_e.htm> (30 December 2006).

Canada. Royal Canadian Mounted Police. *West Coast Marine Detachment.* 24 March 2003 <http://members.shaw.ca/rcmpwcmd/Photogallery.htm> (30 December 2006).

Canada. Statistics Canada. *Aboriginal Identity Population, 2001 Counts, for Canada, Provinces and Territories -20% Sample Data.* 13 August 2004 <http://www12.statcan.ca/english/census01/products/highlight/Aboriginal/Page.cfm?Lang=E&Geo=PR&View=1a&Table=1&StartRec=1&Sort=2&B1=Counts01&B2=Total> (16 April 2006).

Canada. Statistics Canada. *Population and Dwelling Counts for Census Metropolitan Areas and Census Agglomerations, 2001 and 1996 Censuses - 100% Data.* 16 July 2002 <http://www12.statcan.ca /english/census01/products/standard/popdwell/Table-CMA-N.cfm?T=1&SR=126&S= 3&O=D5> (8 August 2006).

Canada. Statistics Canada. *Population by mother tongue, by province and territory (2001 Census).* 27 January 2005 <http://www40.statcan.ca/ l01/cst01/demo11a.htm> (16 April 2006).

Canada. Statistics Canada. *Population by year, by province and territory.* 3 March 2006 <http://www40.statcan.ca/l01/cst01/demo02.htm> (16 April 2006).

Canada. Statistics Canada. *The Daily: Port activity.* 4 April 2005 <http://www.statcan.ca/Daily/ English/050404/d050404a.htm> (12 April 2006).

Canada. Transport Canada. "Transportation Security." *Transportation in Canada 2006*, 14 August 2007 <http://www.tc.gc.ca/pol/en/Report/anre2006/Chpt-4e_b.htm> (1 September 2007).

Canada. Transportation Safety Board of Canada. *Mandate*. 18 September 2002, <http://www.tsb.gc.ca/en/common/mandate.asp> (18 December 2003).

Canada. Treasury Board of Canada Secretariat. *The Role of Regional Councils*. 8 January 1999 <http://www.tbs-sct.gc.ca/frc-cfr/bkgrd-contexte/role_e.asp> (14 December 2003).

Canada-Newfoundland Offshore Petroleum Board. *C-NOPB Overview*, 9 December 2003, <http://www.cnopb.nfnet.com/general/media/mediaen.htm> (14 December 2003).

Canada-Nova Scotia Offshore Petroleum Board. *CNSOPB Overviews*. <http://www.cnsopb.ns.ca/Generalinfo/overviews.html> (14 December 2003).

Canadian Council of Ministers of the Environment. *About CCME*. 26 November 2003. <http://www.ccme.ca/about/whatwedo.html> (16 December 2003).

Canadian Council of Ministers of the Environment. *Statement of Interjurisdictional Coopereration on Environmental Matters*. 26 November 2003. <http://www.ccme.ca/assets/pdf/stmt_intrjrsdctnl_cprtn_envt_matters_e.pdf> (16 December 2003).

Canadian Military History Gateway. *Military Service Act*, 21 June 2004 <http://www.cmhg.gc.ca/flash/ glossary/default-en.asp?organization =&t=1 &osubject=& ss=1&Ntx=mode%20matchall&resourcetype=&Ntt=military%20service%20act&Ntk =siResource&subject=&x=36&y=9&letter=M&page =3> (7 February 2005).

Canadian Press. "Martin offers "necessary measures" in Arctic." 19 December 2005. http://www.ctv.ca/servlet/ArticleNews/story/CTVNews/20051216/ELXN_arctic_051219?s_name=election2006&no_ads=> (26 December 2005).

Durflinger, Serge. *Les Purs Canayens: French Canadian Recruitment during the First World War*, 27 September 2001 <http://www.civilisations.ca/ cwm/disp/dis001_e.html> (7 February 2005).

ExxonMobil, *Sable Project -Operations* < http://www.soep.com/cgi-bin/getpage?pageid=1/0/0> (9 August 2006).

Fantino, Julian. Commissioner of the Ontario Provincial Police. Testimony before the Standing Senate Committee on National Security and Defence, Issue 17 – Evidence 18 June 2007. <http://www.parl.gc.ca/39/1/parlbus/commbus/senate/Com-e/defe-e/17evb-e.htm? Language=E&Parl= 39&Ses=1&comm_id=76> (20 August 2007).

Gouvernement du Québec. *Vivre au Québec: La population.* 11 April 2005 <http://www.immigration-quebec.gouv.qc.ca/ vivrequebec/section9/9_1-fr.htm> (17 April 2006).

Government of Newfoundland and Labrador. Mines and Energy. *Oil and Gas Report – January 2006.* <http://www.nr.gov.nl.ca/mines&en/oil/oil_gas_report_jan06.pdf > (9 August 2006).

Great Lakes St. Lawrence Seaway System, Tonnage Information, *Seaway Monthly Traffic Results as of December 31, 2005* <http://www.greatlakes-seaway.com/en/pdf/tonnage2005_en.pdf > (9 August 2006).

Hammond, Matthew Carlton. "The Posse Comitatus Act: A Principle in Need of Renewal," *Washington University Law Quarterly* 75 (No. 2, Summer, 1997) <http://law.wustl.edu/WULQ/75-2/752-10.html#fn160> (6 February 2005).

Haydon, Peter, "Canadian Naval Requirements for the 21st Century," Council for Canadian Security in the 21st Century, 29 April 2002, <http://www.ccs21.org/ ccspapers/papers/haydon-naval.htm> (2 February 2005).

Haydon, Peter. "Why Do We Need a Navy?" Naval Officers Association of British Columbia <http://www.noabc.com/default~area~docread~docid~141.htm> (29 March 2005).

Hickey, Captain(N) Laurence. Department of National Defence. Testimony before the Standing Senate Committee on National Security and Defence, Issue 20 – Evidence 16 June 2003 <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/Com-e/defe-e/20ev-e.htm?Language=E&Parl=37&Ses=2&comm_id=76> (30 October 2003).

Juillet ,Luc. *A Report prepared for the Federal Regional Councils and the Treasury Board Secretariat,* 1 October 2000, <http://www.tbs-sct.gc.ca/frc-cfr/bkgrd-contexte/horizontality_e.asp> (15 December 2003).

Kenny, Colin. "Defending Canada's Coastal Waters: The King Canute Approach," *Toronto Star*, 29 October 2003 <http://sen.parl.gc.ca/ckenny/OPED%20Tor %20Star%20Oct%2029-03.htm> (20 March 2004).

Martin, Wendy. *Once Upon a Mine: Story of Pre-Confederation Mines on the Island of Newfoundland,* Chapter V: Isle of Iron, Men of Steel, 1983<http://www.heritage.nf.ca environment/mine/ch5p12.html> (14 April 2006).

Montréal Port Authority. *Statistics: Cruise traffic 2001-2005.* <http://www. portmontreal.com/site/6_0/ 6_4_11.jsp?lang=en> (12 April 2006).

Montréal Port Authority. *Statistics: Traffic summary 1995-2005 (metric tonnes).* <http://www.port-montreal.com/site/6_0/ 6_4_11.jsp?lang=en> (12 April 2006).

Rudd, David. *Canada's New Defence Policy.* Canadian Institute for Strategic Studies <http://www.ciss.ca/Comment_Newpolicy.htm> (5 August 2006).

State v. Nelson, 298 NC 573, 260 SE 2d 629, *cert den*; 446 U.S. 929, 100 S. Ct. 1867, 64 L. Ed. 2d 282 (1980), cited by Craig T. Trebilcock, *The Myth of Posse Comitatus*, October 2000, <http://www.homelandsecurity.org/journal/articles/Trebilcock.htm > (6 February 2005).

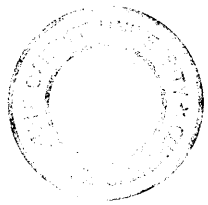
Thatcher, Chris. "Integrating Terrorism Intelligence Resources." *Vanguard* (February 2006) <http://www.vanguardcanada.com/IntegratingIntelli genceThatcher> (20 August 2007).

Thomas, John F. Testimony before the Standing Senate Committee on National Security and Defence, Issue 19 – Evidence 9 June 2003 <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/Com-e/defe-e/19 eva-e.htm?Language=E&Parl=37&Ses=2&comm_id=76> (7 February 2005).

Trebilcock, Craig T. "The Myth of Posse Comitatus," Homeland Security Institute, October 2000 <http://www.homelandsecurity.org/journal/ articles/ Trebilcock.htm> (7 March 2003).

Vancouver Port Authority, *2005 Statistical Summary,* 2005 <http://www. portvancouver.com/statistics/2005_statistical.html> (12 April 2006).

Vancouver Port Authority, *Port of Vancouver Economic Impact Study*, May 2005 <http://www.portvancouver.com/the_port/docs/Economic_Impact_Study .pdf> (10 August 2006).



THE CANADIAN NAVY

AND DOMESTIC MARITIME ENFORCEMENT

- Appendices -

by

Laurence M. Hickey

A thesis presented for the degree of
Doctor of Philosophy
at Cardiff University

2008

List of Appendices

ID	Title	Page
A	Canadian Oceans-Related Federal Legislation	A1
B	Example Marine Security Scenarios	B1
C	Naval Unit Capabilities for Domestic / Security Ops	C1
D	Maps – Marine Traffic Vessel Patterns	D1
E	Maps – Search and Rescue Activity	E1
F	Maps – Naval Fisheries Patrols	F1
G	CP-140 Aircraft Patrols Depicted in Figure 7-4	G1
H	PAL Aircraft Patrols Depicted in Figure 7-7	H1
J	Naval Fisheries and Preventative Patrols 1980 - 2003	J1
K	Naval Fisheries Patrols Depicted in Various Figures	K1
L	Naval Fisheries Patrol – Data Recording Instructions	L1
M	Naval Fisheries Patrol – Data Summary Sheet	M1
N	Participation of Fisheries Associations	N1
P	Deterrence Survey Questionnaire	P1
Q	Tools for Media Content Analysis	Q1
R	Miscellaneous Tables and Co-ordinates	R1
S	Published Articles	S1

Appendix A

CANADIAN OCEANS-RELATED FEDERAL LEGISLATION

The tables presented at this Appendix summarise the main federal oceans-related legislation in Canada. Fisheries and Oceans Canada is designated by the Oceans Act as the lead department for oceans policy development; the first table reflects this precedence and, thereafter, departments are treated alphabetically. The tables draw heavily from DFO published and internal staff sources.[1]

TABLE A-1

FEDERAL LEGISLATION – FISHERIES AND OCEANS CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Atlantic Fisheries Restructuring Act (1980)	Minister of Fisheries and Oceans	Same	Authorizes investment in and the provision of financial assistance to the Atlantic fisheries for the purpose of restructuring fishery enterprises.
Canada Shipping Act (1980)	Minister of Transport, Minister of Fisheries and Oceans	Minister of Transport, Minister of Fisheries and Oceans, **Minister of National Defence**	Marine navigation, **marine search and rescue**, pleasure craft safety, marine ship-source pollution prevention and response, lighthouses, receiver of wrecks, support to other federal departments and agencies.
Coastal Fisheries Protection Act (1985)	Minister of Fisheries and Oceans	Same	Relates to licensing with respect to the entry of foreign vessels into Canadian waters for fishing a processing.

[1] Canada, Fisheries and Oceans Canada, *The Role of the Federal Government in the Oceans Sector* (Ottawa: 1997), 33-36. See also internal DFO draft oceans policy document Paper_D6_Fed Legislation Update_240500 17 April 2000, Skillen/Chudczak/McDougall/King.

Appendix A

TABLE A-1 (continued)

FEDERAL LEGISLATION – FISHERIES AND OCEANS CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Fisheries Act (1985)	Minister of Fisheries and Oceans	Minister of Fisheries and Oceans, Minister of Environment (Sec. 36-42)	Conservation and management of fisheries and habitats, licensing, enforcement, international fisheries agreements.
Fisheries Development Act (1978)	Minister of Fisheries and Oceans	Same	Relates to fisheries enhancement and development, aquaculture and resource development research as well as to the more efficient exploitation of fishery resources, and the exploration for and development of new fishery resources and new fisheries.
Fisheries Improvement Loans Act (1955)	Minister of Fisheries and Oceans	Same	Respects loans to assist fishermen engaged in a primary fishing enterprise.
Fisheries Prices Support Act (1978)	Minister of Fisheries and Oceans	Chairman of the Fisheries Prices Support Board	Relates to the support of prices of fisheries products and establishes the Fisheries Prices Support Board.
Fishing and Recreational Harbours Act (1977)	Minister of Fisheries and Oceans	Same	Relates to the administration and development of certain fishing and recreational harbours in Canada, including use, management, maintenance and enforcement of regulations.
Government Organization Act 1979)	Prime Minister	Minister of Fisheries and Oceans	Assigns responsibility for physical oceanography, chemical oceanography, marine ecology, and ocean policy development.

Appendix A

TABLE A-1 (continued)

FEDERAL LEGISLATION – FISHERIES AND OCEANS CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
National Energy Board Act (1985)	Members of the Queen's Privy Council for Canada	National Energy Board, Minister of Fisheries and Oceans (Section 108)	Offshore oil and gas pipelines, including in submarine areas, internal or external waters, and territorial sea of continental shelf.
Navigable Waters Protection Act (1985)	Minister of Transport	Minister of Transport, Minister of Fisheries and Oceans	Protects the public right of navigation by providing for removal of obstructions and provides an approval mechanism for planned obstructions.
Oceans Act (1997)	Minister of Fisheries and Oceans	Minister of Fisheries and Oceans ,Minister of Foreign Affairs and International Trade, Minister of Justice	Declares Canada's maritime zones in accordance with the provisions of the United Nations Convention on the Law of the Sea (UNCLOS); provides for the development and implementation of a national oceans management strategy; and provides for the consolidation and clarification of federal responsibilities for the management of Canada's oceans.
Resources and Technical Surveys Act (1985)	Minister of Natural Resources	Minister of Natural Resources, Minister of Environment, Minister of Fisheries and Oceans	Provides for, among others, hydro-geological and oceanographic surveys relating to mineral exploration, development and production, and the preparation and publishing of maps and other data necessary to illustrate those Acts.

Appendix A

TABLE A-2

FEDERAL LEGISLATION – ATLANTIC CANADA OPPORTUNITIES AGENCY AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Atlantic Canada Opportunities Agency Act (1985)	President of ACOA	President of ACOA	To increase opportunities for economic development in Atlantic Canada and to enhance the growth of earned incomes and employment opportunities in that region.

TABLE A-3

FEDERAL LEGISLATION – AGRICULTURE CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Fish Inspection Act (1985)	Minister of Agriculture and Agri-Food	Same	An Act respecting the inspection of fish and marine plants. Includes fees, possession, and restrictions. Promotes and supports the value, wholesomeness and marketability of fish products produced or sold in Canada.

Appendix A

TABLE A-4

FEDERAL LEGISLATION – HERITAGE CANADA / PARKS CANADA AS LEAD AGENTS

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
National Parks Act (1998)	Minister of Canadian Heritage	Same	Provides for the establishment of national marine parks within the context of the national parks system.
Parks Canada Agency Act (1998)	Canadian Heritage - - Parks Canada	Parks Canada Agency	Establishes the Parks Canada Agency.
Saguenay-St. Lawrence Marine Park Act (1997)	Government of Canada and Government of Quebec	Parks Canada	Establishment of the Saguenay-St. Lawrence Marine Park to protect the environment, flora and fauna and the natural resources of the area for future generations.

TABLE A-5

FEDERAL LEGISLATION – CANADA TRANSPORTATION AGENCY AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Shipping Conferences Exemption Act (1987)	Commissioner of the Canadian Transportation Agency	Same	Exempts certain shipping conference (association of ocean carriers that has the purpose or effect of regulating rates and conditions for the transportation by those ocean carriers of goods by water) practices from the provisions of the *Competitive Act*.

Appendix A

TABLE A-6

FEDERAL LEGISLATION – INDIAN AND NORTHERN AFFAIRS CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Arctic Waters Pollution Prevention Act (1985)	Minister of Natural Resources	Minister of Natural Resources, Minister of Environment, Minister of Indian and Northern Affairs	Provisions concerning natural resources in areas of the Canadian Arctic for which the Minister has administrative responsibility. Regulations controlling the deposit of waste north of 60 degrees latitude. Relates to the exploitation of natural resources of arctic areas, and the transportation of those resources to the markets of the world.
Canada Petroleum Resources Act (1985)	Minister of Indian and Northern Affairs	Minister of Indian and Northern Affairs	Regulates interest in petroleum in relation to frontier lands.
Canadian Polar Commission Act (1991)	Board of Directors of the Commission / Members of the Queen's Privy Council (GIC).	Board of Directors of the Commission	To establish the Canadian Polar Commission with the purpose of promoting the development and dissemination of knowledge in respect of the polar region by monitoring the state of knowledge and reporting on it, promoting the development of knowledge, providing
Yukon Waters Act (1992)	Minister of Indian and Northern Affairs	Minister of Indian and Northern Affairs, Yukon Territory Water Board	Relates to the use of water resources in the Yukon Territory, including diversion or obstruction of waters, any alteration of the flow of waters, and any alteration of the bed or banks of a river, stream, lake or other body of water.

Appendix A

TABLE A-7

FEDERAL LEGISLATION – DEPARTMENT OF JUSTICE CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Department of Justice Act (1985)	Minister of Justice	Same	Conduct of litigation (including international).
Oceans Act (1997)	Minister of Fisheries and Oceans	Minister of Fisheries and Oceans, Minister of Justice	Some federal and provincial laws can be applied in some parts of the sea to regulate activities that fall under Canadian jurisdiction (e.g. oil and gas exploration and exploitation). Declares Canada's maritime zones in accordance with the provisions of the United Nations Convention on the Law of the Sea (UNCLOS).

TABLE A-8

FEDERAL LEGISLATION – DEPARTMENT OF NATIONAL DEFENCE AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Emergencies Act (1985)	**Minister of National Defence**	Same	**Permits temporary measures to ensure safety and security of Canadians.**
National Defence Act (1985)	**Minister of National Defence**	Same	**Establishes Canadian Forces in law.**

Appendix A

TABLE A-9

FEDERAL LEGISLATION – ENVIRONMENT CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Arctic Waters Pollution Prevention Act (1985)	Minister of Natural Resources	Minister of Natural Resources, Minister of Environment, Minister of Indian and Northern Affairs	Provisions concerning natural resources in areas of the Canadian Arctic. Regulations controlling the deposit of waste north of 60 degrees latitude. Relates to the exploitation of natural resources of arctic areas, and their transportation to the markets of the world.
Canada Water Act (1985)	Minister of Environment	Minister of Natural Resources, Minister of Environment, Minister of Indian and Northern Affairs	Management of water resources, including research and the planning and implementation of programs relating to the conservation, development and utilization of water resources. Pollution and demands on water resources of Canada.
Canada Wildlife Act (1985)	Minister of Environment, Minister of Indian and Northern Affairs	Minister of Environment, Minister of Indian and Northern Affairs (Northern Pipeline)	Wildlife conservation, research and interpretation, especially through partnerships and establishment of protected marine areas for wildlife.
Canadian Environmental Assessment Act (1992)	Minister of Environment / Canadian Environmental Assessment Agency	Canadian Environmental Assessment Agency	Establishes a federal environmental assessment process to achieve sustainable development by conserving and enhancing environmental quality and by encouraging and promoting economic development that conserves and enhances environmental quality. Integrating environmental planning into decision-making processes, preventing the degradation of environmental quality, ensuring that economic development is compatible with environmental quality.

TABLE A-9 (continued)

FEDERAL LEGISLATION – ENVIRONMENT CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Canadian Environmental Protection Act (1988)	Minister of Environment, Minister of Health	Minister of Environment	Respects the protection of the environment and of human life and health; declares the protection of the environment as essential to the well-being of Canada.
Fisheries Act (1985)	Minister of Fisheries and Oceans	Minister of Fisheries and Oceans, Minister of Environment	Sections 36-42. Control of pollution from land-based sources, toxic substances, offshore oil and mineral resources development.
Government Organization Act (1979)	Prime Minister	Minister of Environment	Assigns responsibility for ice services, marine weather and marine climate.
Migratory Birds Convention Act (1994)	Minister of Environment	Same	Relates to the implementation of a Convention for the protection of migratory birds and their nests in Canada and the United States.
Resources and Technical Surveys Act (1985)	Minister of Natural Resources	Minister of Natural Resources, Minister of Environment, Minister of Fisheries and Oceans	Provides for, among others, hydro-geological and oceanographic surveys relating to mineral exploration, development and production, and the preparation and publishing of maps and other data necessary to illustrate those Acts.

Appendix A

TABLE A-10

FEDERAL LEGISLATION – FOREIGN AFFAIRS AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Coasting Trade Act (1992)	Minister of Foreign Affairs and International Trade	Minister of Foreign Affairs and International Trade, Minister of Transport	Governs the granting of authority to foreign vessels wishing to conduct marine research within Canada's Exclusive Economic Zone.
Foreign Affairs and International Trade Act (1985)	Minister of Foreign Affairs and International Trade	Same	Maritime boundary disputes. United Nations Convention on the Law of the Sea (UNCLOS).
International Boundary Waters Treaty Act (1985)	Minister of Foreign Affairs and International Trade	Same	Respects the International Joint Commission established under the treaty of January 11, 1909, relating to boundary waters between Canada and the United States of America.
Oceans Act (1997)	Minister of Fisheries and Oceans	Minister of Fisheries and Oceans, Minister of Justice, Minister of Foreign Affairs and International Trade (maritime boundaries)	Part I of the *Oceans Act* establishes maritime boundaries (territorial sea, contiguous zone, exclusive economic zone). Declares Canada's maritime zones in accordance with the provisions of the United Nations Convention on the Law of the Sea (UNCLOS).

TABLE A-11

FEDERAL LEGISLATION – HEALTH CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Food and Drugs Act (1985)	Minister of Health	Same	Ensures safe use of marine species for human consumption.

Appendix A

TABLE A-12

FEDERAL LEGISLATION – HUMAN RESOURCES DEVELOPMENT AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Merchant Seamen Compensation Act	Minister of HRDC	Same	Relates to medical and hospital expenses and other benefits, expenses or allowances for merchant seamen.

TABLE A-13

FEDERAL LEGISLATION – INDUSTRY CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Government Organization Act, Atlantic Canada (1987)	Prime Minister	Minister of Industry	Regional economic development.
National Research Council Act (1985)	Minister of Industry	President of the NRC	Established the NRC, which includes marine engineering and marine biology research.
Natural Sciences and Engineering Research Act (1977)	Minister of Industry	President of NSERC	Established NSERC, which provides grant support to universities.
Telecommunications Act (1993)	Minister of Industry	Minister of Industry	Submarine cables.
Western Economic Diversification Act 1985)	Minister of Industry	President of WED	Regional economic development.

Appendix A

TABLE A-14

FEDERAL LEGISLATION – NATIONAL ENERGY BOARD AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
National Energy Board Act (1990)	Member of the Queen's Privy Council for Canada	National Energy Board	Offshore oil and gas pipelines, including in submarine areas, internal or external waters, and territorial sea of continental shelf.

TABLE A-15

FEDERAL LEGISLATION – NATIONAL RESEARCH COUNCIL AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
National Research Council Act (1985)	Minister of Industry	President of the NRC	Established the NRC, which includes marine engineering and marine biology research.

TABLE A-16

FEDERAL LEGISLATION – CANADA REVENUE AGENCY AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Customs Act (1985)	Minister of National Revenue	Deputy Minister of National Revenue	Includes goods transported in internal waters.
Special Import Measures Act (1985)	Minister of National Revenue	Deputy Minister of National Revenue	Applies to goods imported across waters.
Customs and Excise Offshore Application Act (1984)	Minister of National Revenue	Deputy Minister of National Revenue	Application of federal customs laws in respect of goods on their arrival within the limits of the continental shelf of Canada, and goods in respect of which all duties and taxes are paid under federal customs laws and that are moved directly from one place to another within the limits of the continental shelf of Canada.

Appendix A

TABLE A-17

FEDERAL LEGISLATION – NATURAL RESOURCES CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Arctic Waters Pollution Prevention Act (1985)	Minister of Natural Resources	Minister of Natural Resources, Minister of Environment, Minister of Indian and Northern Affairs	Provisions concerning natural resources in areas of the Canadian Arctic for which the Minister has administrative responsibility. Regulations controlling the deposit of waste north of 60 degrees latitude. Relates to the exploitation of natural resources of arctic areas, and the transportation of those resources to the markets of the world.
Canada-Newfoundland Atlantic Accord Implementation Act (1987)	Minister of Natural Resources	Same	Development of offshore resources in Newfoundland.
Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act (1988)	Minister of Natural Resources	Same	Development of offshore resources in Nova Scotia. Implements an agreement between the Government of Canada and the Government of Nova Scotia on offshore petroleum resource management and revenue sharing. Natural gas, petroleum, oil.
Canada Oil and Gas Operations Act (1985)	Minister of Natural Resources	Same	Regulation of exploration and exploitation of oil and gas.
Canada Petroleum Resources Act (1986)	Minister of Natural Resources, Minister of Indian and Northern Affairs	Same	Regulates interests in petroleum in relation to frontier lands, to amend the *Oil and Gas Production and Conservation Act* and to repeal the *Canada Oil and Gas Act*.
Hibernia Development Project Act (1990)	Minister of Natural Resources	Same	Respects the Hibernia Development Project and to amend certain Acts in relation thereto.

TABLE A-17 (continued)

FEDERAL LEGISLATION – NATURAL RESOURCES CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Resources and Technical Surveys Act (1985)	Minister of Natural Resources	Minister of Natural Resources, Minister of Environment, Minister of Fisheries and Oceans	Provides for, among others, hydro-geological and oceanographic surveys relating to mineral exploration, development and production, and the preparation and publishing of maps and other data necessary to illustrate those Acts.

TABLE A-18

FEDERAL LEGISLATION – PRIVY COUNCIL OFFICE AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Canadian Transportation Accident Investigation and Safety Board Act (1989)	President of the Privy Council Office	Any department of the Government of Canada	Establishes the Canadian Transportation Accident Investigation and Safety Board.
Canadian Polar Commission Act (1991)	Any member of the Queen's Privy Council for Canada	See above	Establishes the Canadian Polar Commission, which promotes the development and dissemination of knowledge in respect of the polar regions.
Canada Ports Corporation Act (1981)	Any member of the Queen's Privy Council for Canada	See above	Establishes the Canadian Ports Corporation.

Appendix A

TABLE A-19

FEDERAL LEGISLATION – PUBLIC WORKS AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Dry Docks Subsidies Act (1985)	Minister of Public Works and Government Services	Same	Provides for aid to the construction of any dry dock, for naval and general purposes.
Department of Public Works and Government Services Act (1996)	Prime Minister	Minister of Public Works and Government Services	Provides for acquisition services for goods and materiel, major Crown projects, Crown assets distribution and disposal, marine architecture and engineering, dredging, fleet services, and other real property services.

TABLE A-20

FEDERAL LEGISLATION – TRANSPORT CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Canada Marine Act (1998)	Minister of Transport	Canadian Transportation Agency	Purpose to make the system of Canadian ports competitive, efficient and commercially oriented, to provide for the establishment of port authorities and to divest certain harbours and ports, for the commercializing of the St. Lawrence Seaway and ferry services and other matters related to maritime trade and transport.
Canada Ports Corporation Act (1981)	Member of the Queen's Privy Council (GIC)	Minister of Transport	To establish the Canada Ports Corporation.
Canada Shipping Act (1985)	Minister of Fisheries and Oceans, Minister of Transport	Minister of Fisheries and Oceans, Minister of Transport, **Minister of National Defence**	Services for the **safe,** economical and efficient **movement of ships in Canadian waters.**

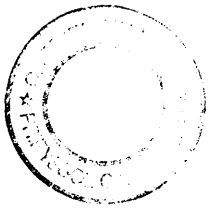


TABLE A-20 (continued)

FEDERAL LEGISLATION – TRANSPORT CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Canadian Transportation Act (1979)	Canadian Transportation Agency	Canadian Transportation Agency	Establishes the Canadian Transportation Agency.
Carriage of Goods by Water Act (1993)	Minister of Transport	Same	Carriage of goods by ship from one place in Canada to another place in Canada. Relates to the United Nations Convention on the Carriage of Goods by Sea (1978).
Coasting Trade Act (1992)	Minister of Transport	Same	Reserves cabotage in Canadian waters to domestic ships and provides for temporary use of foreign ships when no suitable Canadian ship is available. Applies to transportation of passenger and cargo and activities of a commercial nature.
Government Organization Act (1979)	Prime Minister	Minister of Transport	Includes control of ship-source discharge.
Harbour Commission Act	Minister of Transport	Same	Provides for the establishment of harbour commissions and a national port policy.
Marine Transportation Security Act (1994)	Minister of Transport	Same	Provides for the security of marine transportation, and applies to vessels and marine facilities in Canada, Canadian ships outside Canada, and marine installations and structures.
National Transportation Act (1987)	Minister of Transport	Same	Review of mergers and acquisitions of marine undertakings. Licensing of northern marine resupply. Dispute resolution mechanisms for shippers and carriers in the marine mode.

TABLE A-20 (continued)

FEDERAL LEGISLATION – TRANSPORT CANADA AS LEAD AGENT

Legislation (year)	Statutory Lead	Administrative Responsibility	Relationship to Oceans
Navigable Waters Protection Act (1985)	Minister of Transport	Minister of Transport, Minister of Fisheries and Oceans	Protects the public right of navigation by providing for removal of obstructions and provides an approval mechanism for planned obstructions.
Pilotage Act (1985)	Minister of Transport	Same	Marine pilotage in certain waters of Canada.
Canada Marine Act (1998)	Minister of Transport	Same	Provides for the management of public harbours and port facilities.
Shipping Conferences Exemptions Act (1987)	Commissioner of the CTA	Commissioner of the CTA, Minister of Transport	Provides an exemption from Canadian competition law to national and international shipping lines to collectively set prices, terms and conditions for international marine transportation. Does not apply to domestic marine transportation.
St. Lawrence Seaway Authority Act (1996)	Minister of Transport	Same	Seaway operations.

Appendix B

EXAMPLE MARINE SECURITY SCENARIOS

Chapters Four and Five identified the large number of federal departments and agencies that have responsibility for marine affairs in Canada. The chapters also outlined the specific departmental mandates, jurisdictions and extant working groups and committee structures. The following scenarios demonstrate, in tabular form, the multitude of departments or agencies that may be implicated in a maritime security or enforcement incident in Canadian waters.

TABLE B - 1

EXAMPLE MARINE SECURITY SCENARIOS

Possible Nature of Incident	Initial Federal Operational Lead	Federal Support Organisations	References
Scenario – Fire on a Merchant Ship in the Great Lakes (Canadian waters)			
-Search and Rescue -Safety -Environment	DFO / CCG	TC CBSA CRA CIC DFAIT DND/CF EC RCMP	*Canada Shipping Act* *Department of Foreign Affairs and International Trade (DFAIT) Act* *Oceans Act* *Canadian Environmental Protection Act* Boundary Waters Treaty National Search and Rescue (SAR) Manual MOU between CCG and USCG Canada/US Joint Marine Pollution Contingency Plan
Scenario – Petroleum Blow-out on Oil Platform in Hibernia (24-200 nm from Cdn coast)			
-Safety -Search and Rescue -Environment	DFO / CCG	DFAIT DND/CF EC NRCan PSC RCMP TC	*Canada Shipping Act* *Canadian Offshore Gas Lands Act* *Oceans Act* *Canadian Environmental Protection Act* *Department of Foreign Affairs and International Trade (DFAIT) Act* IMO International Convention on SAR Transport Publication 6472 "Standards Respecting Mobile Offshore Drilling Units"

Appendix B

TABLE B - 1 (continued)

EXAMPLE MARINE SECURITY SCENARIOS

Possible Nature of Incident	Initial Federal Operational Lead	Federal Support Organisations	References
Scenario – Striking workers seize control of offshore oil rig and threaten its destruction unless their demands are met (24-200 nm from Cdn coast).			
-Law Enforcement (Criminal) -Safety -Environment	RCMP	PSC DFAIT DFO/CCG DND/CF EC NRCan	*Criminal Code of Canada* *Oceans Act* *Royal Canadian Mounted Police Act* *Canadian Environmental Protection Act* *Department of Foreign Affairs and International Trade (DFAIT) Act* RCMP Prescribed Places of Employment Order (P.C. 1988-1520)
Scenario – Intelligence reports that a container ship from Colombia destined for Halifax may contain a radiological bomb.			
-Terrorism	RCMP/PSC co-leads	DND/CF CNSC CSE CSIS DFAIT DFO/CCG CRA EC HC TC	*Canada Shipping Act* *Customs Act* *Marine Transportation Security Act* *Oceans Act* *Security Offences Act* *Criminal Code of Canada* *Canadian Environmental Protection Act* *CSIS Act* *Department of Foreign Affairs and International Trade Act* International Maritime Law and Conventions (SOLAS, SUA) CF Armed Assistance Directions (CFAAD) National Counter-Terrorism Plan National Support Plan Guidelines Concerning Cooperation on Chemical, Biological, Radiological and Nuclear (CBRN) Counter-Terrorism Between the Government of Canada and the Government of the United States of America

Appendix B

TABLE B - 1 (continued)

EXAMPLE MARINE SECURITY SCENARIOS

Possible Nature of Incident	Initial Federal Operational Lead	Federal Support Organisations	References
Scenario – Intelligence determines that illegal immigrants may be stowed on a (foreign flagged) freighter 100 km offshore and moving north along the west coast of North America (24-200 nm from Cdn coast).			
-Illegal Immigration	CBSA	RCMP CIC CSIS DFAIT DFO/CCG HC PSC TC DND/CF	*Customs Act* *Immigration and Refugee Protection Act* *Marine Transportation Security Act* *National Defence Act* *Oceans Act* *Canada Shipping Act* *CSIS Act* *Department of Foreign Affairs and International Trade Act*
Scenario – A foreign trawler is reported to be fishing for cod on the Grand Banks without permission. (24-200 nm from Cdn coast).			
-Law Enforcement (Fisheries) -Conservation -Sovereignty issue	DFO	DFAIT DND/CF RCMP PSC	*Oceans Act* *Fisheries Act* *National Defence Act* *Coastal Fisheries Protection Act* (and Regulations) *Department of Foreign Affairs and International Trade Act*
Scenario – A re-supply ship in the Arctic reports it has hit an ice flow and is leaking oil.			
-Environment -Search and Rescue -Safety	DFO/CCG	DFAIT DND/CF EC PSC TC	*Arctic Waters Pollution Prevention Act* (and Regulations) *Canada Shipping Act* *Canadian Environmental Protection Act* *Department of Foreign Affairs and International Trade Act*
Scenario – A freighter carrying hazardous materials in Lake Superior loses power during a storm (in Canadian waters in the Great Lakes).			
-Search and Rescue -Safety -Environment	DFO/CCG	DFAIT DND/CF EC HC DOJ PSC TC	*Canada Shipping Act* *Transportation of Dangerous Goods Act* *Navigable Waters Protection Act* *Canadian Environmental Protection Act* *Department of Foreign Affairs and International Trade Act* Canada/US Joint Marine Pollution Contingency Plan

Appendix B

TABLE B - 1 (continued)

EXAMPLE MARINE SECURITY SCENARIOS

Possible Nature of Incident	Initial Federal Operational Lead	Federal Support Organisations	References
Scenario – Terrorists seize control of a cruise ship after it leaves Halifax and it remains in Canadian waters.			
-Terrorism	PSC/RCMP co-leads	CBSA DND/CF CNSC CSE CSIS DFAIT CRA CIC DFO/CCG EC HC TC	*Customs Act* *Criminal Code of Canada* *Marine Transportation Security Act* *Security Offences Act* *Oceans Act* *CSIS Act* *Department of Foreign Affairs and International Trade Act* *Immigration and Refugee Protection Act* International Maritime Law and Conventions (SOLAS, SUA) CF Armed Assistance Directions (CFAAD) National Counter Terrorism Plan
Scenario – Terrorists seize control of a cruise ship after it leaves Halifax and it has left Canadian waters and is in international waters.			
-Terrorism	DFAIT	PSC RCMP CBSA DND/CF CNSC CSE CSIS CRA CIC DFO/CCG EC HC TC	*Customs Act* *Criminal Code of Canada* *Marine Transportation Security Act* *Security Offences Act* *Oceans Act* *CSIS Act* *Department of Foreign Affairs and International Trade Act* *Immigration and Refugee Protection Act* International Maritime Law and Conventions (SOLAS, SUA) CF Armed Assistance Directions (CFAAD) National Counter Terrorism Plan
Scenario – A civilian passenger aircraft crashes off the coast near Machias Island in the Bay of Fundy (0-12nm in Canadian waters).			
-Search and Rescue	DFO/CCG	RCMP TC CRA DFAIT DND/CF	*Customs Act* *Oceans Act* *Aeronautics Act* *CSIS Act* *Department of Foreign Affairs and International Trade Act*

Appendix B

TABLE B - 1 (continued)

EXAMPLE MARINE SECURITY SCENARIOS

Possible Nature of Incident	Initial Federal Operational Lead	Federal Support Organisations	References
Scenario – A passing ship reports a suspicious rendezvous between a freighter and a fishing trawler at dusk just beyond 12 miles off of Canadian/US territory.			
-Unknown -Possible criminal or terrorist activity.	RCMP	CBSA CRA CIC CSIS DFAIT DFO/CCG DND/CF PSC TC	*Criminal Code of Canada* *Environment Act* *Immigration and Refugee Protection Act* *Excise Act* *Oceans Act* *Customs Act* *Controlled Drugs and Substances Act* *Marine Transportation Security Act* *CSIS Act* *Department of Foreign Affairs and International Trade Act* *Royal Canadian Mounted Police Act* RCMP Prescribed Places of Employment Order (P.C. 1988-1520)
Scenario – A passing RCMP has been informed that a ship spotted sailing in the Great Lakes is transporting drugs to Canada.			
-Law Enforcement (Criminal)	RCMP	CBSA CIC DFAIT DFO/CCG DND/CF TC	*Customs Act* *Controlled Drugs and Substances Act* *Criminal Code of Canada* *Oceans Act* *National Defence Act* *Canada Shipping Act* *Immigration and Refugee Protection Act* *Department of Foreign Affairs and International Trade Act* DND/RCMP MOU on Counter Drug Operations
Scenario – Two ships collide in the Gulf of St. Lawrence.			
-Search and Rescue -Safety -Environment	TC (if minor) DFO/CCG (if major)	TC EC CBSA CRA DFAIT DFO/CCG DND/CF	*Customs Act* *Canada Shipping Act* *Department of Foreign Affairs and International Trade Act*

Appendix C

NAVAL CAPABILITIES FOR ENFORCEMENT AND DOMESTIC OPERATIONS

Table C-1 summarizes the core capabilities that Atlantic-based naval vessels and shore units could bring to bear for maritime enforcement or domestic operations. These are generic capabilities that may be lessened or enhanced depending on the state of readiness of a particular unit at a given time.

TABLE C - 1

NAVAL UNIT CAPABILITIES FOR ENFORCEMENT/DOMESTIC OPERATIONS

Units	Capability	Remarks
IROQUOIS Class Destroyers ***HMCS Athabaskan*** ***HMCS Iroquois*** Max Speed : 29 kts plus Max Range : 4500nm at 10 kts Complement: 280 **Pacific-based Destroyers** ***HMCS Algonquin***	Command and Control Platform	Very good capability to relocate to remote locations and provide full suite of Command and Control (C^2) services to both military and civilian agencies. Services include; -secure/open satellite and radio communications -workspaces -task group staff -briefing facilities -radar/communication surveillance -rations and quarters -Internet/Intranet -secure workplaces.
	Area Air Defence	Large area coverage. Ability to detect, classify, identify and, if necessary, destroy airborne threats.
	Search and Rescue	On-scene command, helicopter equipped.
	Seaward Security	Anti-air, anti-surface and anti-submarine weapons and sensors. Trained combat teams.

Appendix C

TABLE C - 1 (continued)

NAVAL UNIT CAPABILITIES FOR ENFORCEMENT/DOMESTIC OPERATIONS

Units	Capability	Remarks
IROQUOIS Class Destroyers	Boarding Parties	20 man team plus 50% in reserve. Container search trained including rappelling Able to provide up to 3 prize crews (custodial) to commandeered vessels.
	Explosives Ordnance Disposal (EOD)	Organic capability to dispose of IED immediately threatening the ship.
	Casualty Clearing / Medical Assistance	12-16 crew members crossed trained as casualty clearers, advanced First Aiders.
	Maritime Interdiction	- detecting - intercepting - hailing - questioning - searching - rerouting - seizing/arresting
	CH-124 Helicopter	3 Hr PLE 125 kts (150 max) 4 aircrew Rescue capacity 4 - 6 (depending on A/C weight)
	Flight Deck	Able to accommodate a variety of rotary wing from both Canadian and Allied forces. Dependent on the Helairdet status of the ship as well as her current flight deck certification. Deck cycle 12-18 hours depending on size of embarked Helairdet.
	Diving	12 man dive team.
	Small Boats	2 Zodiacs 1 Rigid Hull Inflatable Boat (RHIB) Facilities to tie up numerous craft (boats booms/ladders).

Appendix C

TABLE C - 1 (continued)

NAVAL UNIT CAPABILITIES FOR ENFORCEMENT/DOMESTIC OPERATIONS

Units	Capability	Remarks
IROQUOIS Class Destroyers	Refueling	Aviation Fuel (JP5) Diesel/gasoline for small boats.
	Cranage	1 Stores Crane - 1200lb SWL.
	Work Parties	Dependent on the other tasks ongoing, up to 50 man work parties could be made available for duties ashore including humanitarian assistance and security functions.
	Fire Fighting	6 professional Firefighters Ships company trained in shipboard firefighting and flood control.
	Engineering	Mechanical, electrical, construction journeyman personnel. Workshops available.
HALIFAX Class Frigates (FFH) ***HMCS Charlottetown*** ***HMCS Fredericton*** ***HMCS Halifax*** ***HMCS Montréal*** ***HMCS St John's*** ***HMCS Toronto*** ***HMCS Ville de Québec*** Max Speed: 30 kts + Max Range: 7100nm at 15 kts Complement: 225	Command and Control Platform	Good capability to relocate to remote locations and provide full suite of C^2 services to both military and civilian agencies. Services include; -secure/open Satellite and radio communications -workspaces -briefing facilities -radar/communication surveillance -rations and quarters -Internet/Titan/DIN -secure site
Pacific-based Frigates ***HMCS Calgary*** ***HMCS Ottawa*** ***HMCS Regina*** ***HMCS Vancouver*** ***HMCSWinnipeg***		

Appendix C

TABLE C - 1 (continued)

NAVAL UNIT CAPABILITIES FOR ENFORCEMENT/DOMESTIC OPERATIONS

Units	Capability	Remarks
HALIFAX Class Frigates	Air Defence	Self-defence or threat bearing picket only with very limited effectiveness against crossing targets. Ability to detect, classify, identify and if necessary destroy airborne threats within 10nm of own ship.
	Search and Rescue	On-scene command, Helicopter equipped.
	Seaward Security	Anti-air, anti-surface and anti-submarine weapons and sensors. Trained combat teams .
	Boarding Parties	20 man team plus 50% in reserve. Container search trained including rappelling. Able to provide up to 3 prize crews (custodial) to commandeered vessels.
	Casualty Clearing/Medical Assistance	1 senior Physician Assistant 1 junior Physician Assistant 12-16 Steward/Cooks crossed trained as Casualty Clearers – Advanced First Aiders.
	Maritime Interdiction	- detecting - intercepting - hailing - questioning - searching - rerouting - seizing/arresting.
	CH-124 Helicopter	3 Hr PLE 125 kts (150 max) 4 aircrew Rescue capacity 4 - 6 (depending on A/C weight).
	Diving	12 man dive team.

Appendix C

TABLE C - 1 (continued)

NAVAL UNIT CAPABILITIES FOR ENFORCEMENT/DOMESTIC OPERATIONS

Units	Capability	Remarks
HALIFAX Class Frigates	Flight Deck	Able to accommodate a variety of rotary wing from both Canadian and Allied forces. Dependent on the Helairdet status of the ship as well as her current flight deck certification. Deck cycle 12 hours with embarked Helairdet.
	Small Boats	2 Zodiacs 1 Rigid Hull Inflatable Boat (RHIB) Facilities to tie up numerous craft (boats booms/ladders).
	Refueling	Aviation Fuel (JP5) Diesel/gasoline for small boats.
	Cranage	1 Stores Crane - 1200lb SWL
	Work Parties	Dependent on the other tasks ongoing, up to 50 man work parties could be made available for duties ashore including humanitarian assistance and security functions.
	Fire Fighting	6 professional Firefighters. Ships company trained in shipboard firefighting and flood control.
	Engineering	Mechanical, electrical, construction journeyman personnel. Workshops available.

Appendix C

TABLE C - 1 (continued)

NAVAL UNIT CAPABILITIES FOR ENFORCEMENT/DOMESTIC OPERATIONS

Units	Capability	Remarks
KINGSTON Class Maritime Coastal Defence Vessels (MCDV) ***HMCS Glace Bay*** ***HMCS Goose Bay*** ***HMCS Kingston*** ***HMCS Shawinigan*** ***HMCS Moncton*** ***HMCS Summerside*** Max Speed: 15 kts Max Range: 5000nm at 8 kts Complement: 31-40 (+ 8 if accommodations payload embarked) 18 days endurance provided RODs can be operated.	Limited Command and Control Platform	Can relocate to remote areas. Very limited capability to operate in ice. Limited number of comms circuits but capable of HF/UHF/INMARSAT secure/unsecure voice/data comms. VHF unsecure comms -secure briefing facilities -radar surveillance -no ESM -rations and quarters -Internet/Titan/DIN.
Pacific-based MCDVs ***HMCS Brandon*** ***HMCS Edmonton*** ***HMCS Nanaimo*** ***HMCS Saskatoon*** ***HMCSWhitehorse*** ***HMCS Yellowknife***	Mine Hunting/Clearance	Ship can embark Remotely Operated Vehicles (ROVs) or Side Scan Sonar systems to identify mine/objects on seabed. Ship can embark Containerized Dive System and Clearance Diving Team, in which case ship can dispose of any non-NBC ordnance. Ship can embark mechanical mine sweeping payloads to clear tethered mines
	Search and Rescue	On-scene Commander
	Seaward Security	40mm and 50cals Visual engagements only Small Arms
	Boarding Parties	Nil.
	Explosives Ordnance Disposal (EOD)	Nil - Unless ship is carrying Containerized Dive System and Clearance Diving Team embarked in which case ship can dispose of any non-NBC ordnance .

Appendix C

TABLE C - 1 (continued)

NAVAL UNIT CAPABILITIES FOR ENFORCEMENT/DOMESTIC OPERATIONS

Units	Capability	Remarks
KINGSTON Class Maritime Coastal Defence Vessels (MCDV)	Casualty Clearing/Medical Assistance	3 pers Casualty Clearing Team Advance First Aid qualified.
	Maritime Interdiction	- hailing - questioning
	CH-124 Helicopter	Nil
	Diving	Nil – 3 rescue swimmers Ship can embark Containerized Dive System and Clearance Diving Team.
	Flight Deck	Nil – Capable of VERTREP for personnel/stores transfer.
	Small Boats	6 pers Zodiac Can embark 10 pers RHIB.
	Refueling	Gasoline for small engines.
	Cranage	2000lb SWL.
	Work Parties	Dependent on the other tasks ongoing and crew size, up to 12 man work parties could be made available for duties ashore.
	Fire Fighting	Ship's company trained for shipboard firefighting and damage control.
	Engineering	Electrical and Electronic journeymen embarked. Very limited on board repair facilities as maintenance provided by civilian contractor.

Appendix C

TABLE C - 1 (continued)

NAVAL UNIT CAPABILITIES FOR ENFORCEMENT/DOMESTIC OPERATIONS

Units	Capability	Remarks
HMCS Preserver As the only east coast AOR (Auxiliary Oiler – Replenishment) unique capabilities are her large size, capable of transporting men and materiel, her enhanced helicopter maintenance facilities, enhanced medical facilities and large number of small boats. Max Speed: 20 kts Max Range: 7500nm at 12kts Complement: 365	Command and Control Platform	Good capability to relocate to remote locations and provide full suite of C^2 services to both military and civilian agencies. Services include; -secure/open Satellite and radio comms -workspaces -briefing facilities -radar/communication surveillance -rations and quarters -Internet/Titan/DIN -secure site.
Pacific-based AOR ***HMCS Protecteur***	Air Defence	Limited to self-defence of own ship.
	Cargo Capacity	Dry Cargo – 1000 tons. Ammo – 1250 tons.
	Search and Rescue	On-scene Command, Helicopter equipped.
	Boarding Parties	20 man team plus 50% in reserve. Container search trained including rappelling.
	Casualty Clearing/Medical Assistance	1 Medical Officer 1 Dental Officer 1 senior Physicians Assistant 1 junior Physicians Assistant 6 Bed Sick Bay with facilities for minor surgeries and X-ray 12-16 Steward/Cooks crossed trained as Casualty Clearers – Advanced First Aiders.
	Diving	12 man dive team.
	Maritime Interdiction	- hailing - questioning - searching - rerouting - seizing/arresting

Appendix C

TABLE C - 1 (continued)

NAVAL UNIT CAPABILITIES FOR ENFORCEMENT/DOMESTIC OPERATIONS

Units	Capability	Remarks
HMCS Preserver	CH-124 Helicopter	3 Hr PLE 125 kts (150 max) 4 aircrew.
	Diving	12 man dive team.
	Flight Deck	Able to accommodate a variety of rotary wing from both Canadian and Allied forces. Dependent on the Helairdet status of the ship as well as her current flight deck certification. Deck cycle 12 hours with embarked Helairdet.
	Small Boats	2 LCVP (40 man landing craft) 2 Zodiacs 1 RHIB Facilities to tie up numerous craft (boats booms/ladders).
	Refueling	Distillate (ship)14,590 tons. Aviation Fuel (JP5) 400 tons. Diesel/gasoline for small boats.
	Cranage	2 10 tonne flight deck/stores cranes.
	Work Parties	Dependent on the other tasks ongoing, up to 50 man work parties could be made available for duties ashore including humanitarian assistance and security functions.
	Fire Fighting	6 professional Firefighters. Ships company trained in shipboard firefighting and flood control.
	Engineering	Mechanical, electrical, construction journeyman personnel. Workshops available.

Appendix C

TABLE C - 1 (continued)

NAVAL UNIT CAPABILITIES FOR ENFORCMENT/DOMESTIC OPERATIONS

Units	Capability	Remarks
Explosives Ordnance Disposal (EOD)	Military EOD team deals with conventional military ordnance on military property. If it is not something in military property then it becomes the problem of the local police/RCMP. If civilian organizations need help then it becomes a provision of service.	EOD can deploy 3 teams of 3 at any one time. However, 1 team will have all the kit and the other two teams will have partial kit. EOD have a 1 hour roll (time from call to team until the truck is leaving FDU) out response for in area call after hours. During working hours it will be much faster. EOD can short notice deploy away from FDU for 3-5 days before support issues start to cause difficulties. Otherwise, EOD really needs 72 hours heads up to move.
Port Security Unit (PSU) The mission of the PSU is to provide waterside security of harbours, anchorages and their immediate approaches to the high water mark in times of crisis or contingency in Canada and North America.	Surveillance. Contact analysis and reporting. Interdiction of vessels going in and out of the harbour. Waterside security for military forces or OGDs. Force Protection - a deterrence against waterborne threats. Command, Control and Communications support vessel movement control – i.e. assigning anchorages and berths.	PSU is activated under the authority of Commander Canada Command in response to a threat to Canada. Deployability - factors and limitations: the PSU requires combat service support and landward security commensurate with the threat. The PSU may also require intelligence, communications and other operational support, dependant on the threat and mission.

TABLE C - 1 (continued)

NAVAL UNIT CAPABILITIES FOR ENFORCEMENT/DOMESTIC OPERATIONS

Units	Capability	Remarks
Port Security Unit (PSU)	Port safety.	Monitoring and enforcing safety and/or exclusion zones.
	Law enforcement support.	
	EOD operations.	Through provision of transportation and C^2
	Salvage and safe navigation.	
	Aids to navigation.	
	Diving	Port Inspection Dive Team

Appendix D

Maps – Marine Vessel Detection Patterns

Unless otherwise noted, the vessel data for all maps in Appendix D originated from Fisheries and Oceans Canada as PAL flight mission data. These data were parsed from all sensor sources at the Maritime Operations Centre at Maritime Forces Atlantic Headquarters in 2002.

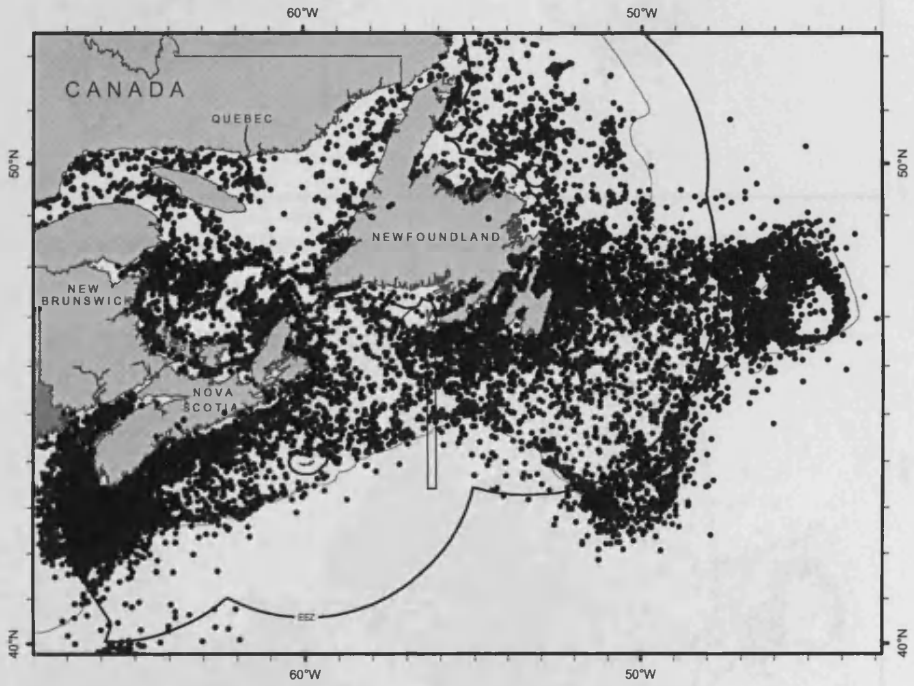


Figure D-1. Cumulative Vessel Detections by PAL Flights – 2002

Appendix D

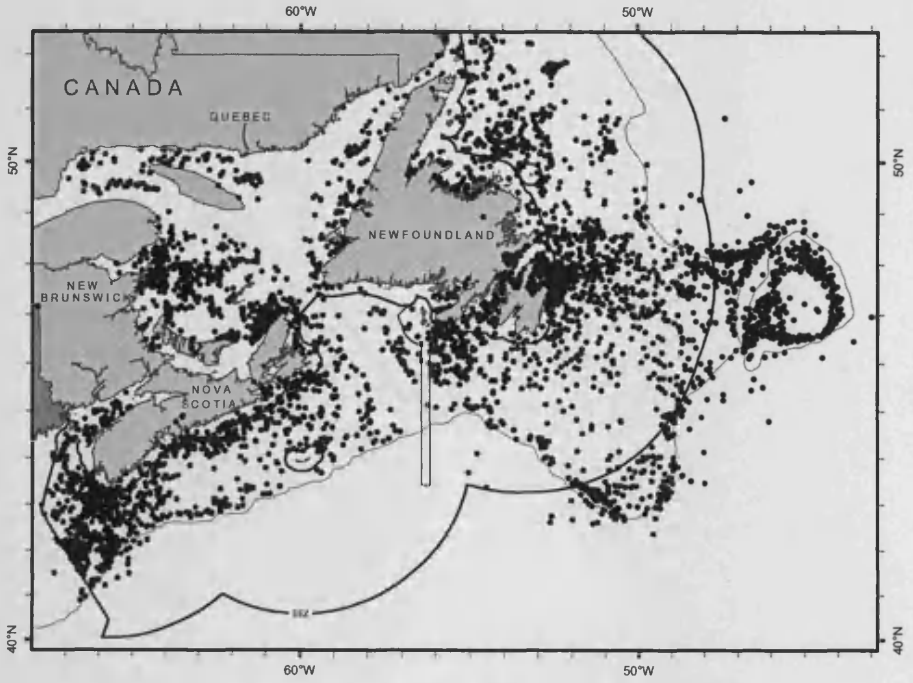


Figure D-2. Vessel Detections by PAL Flights – January 2002

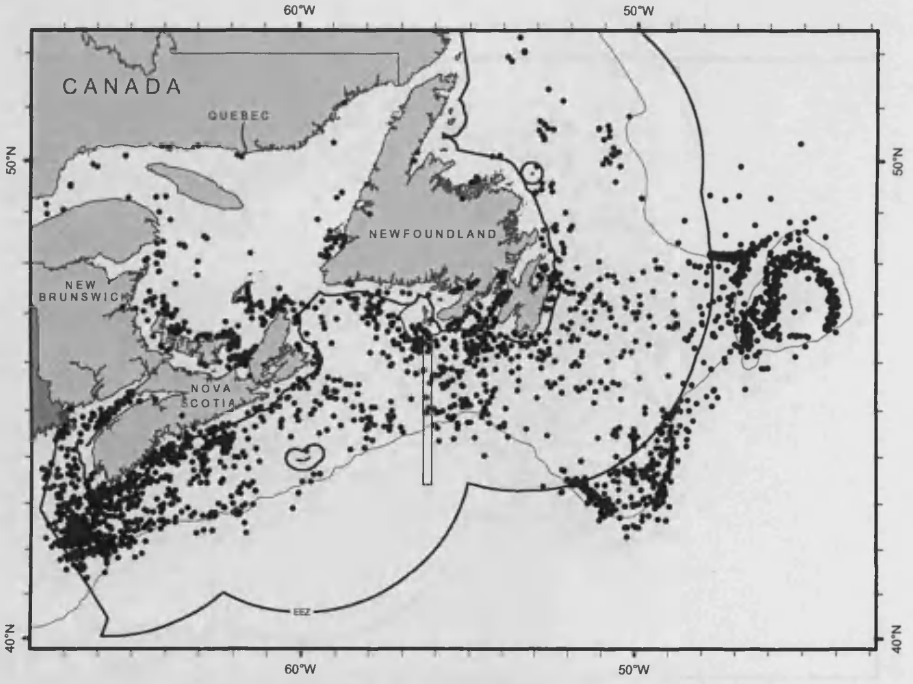


Figure D-3. Vessel Detections by PAL Flights – February 2002

Appendix D

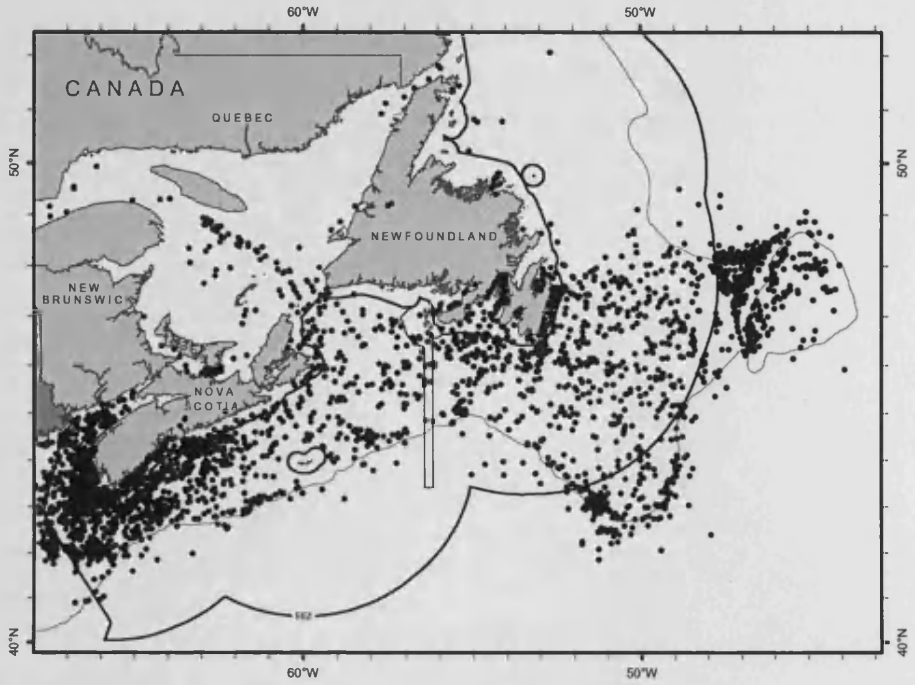


Figure D-4. Vessel Detections by PAL Flights – March 2002

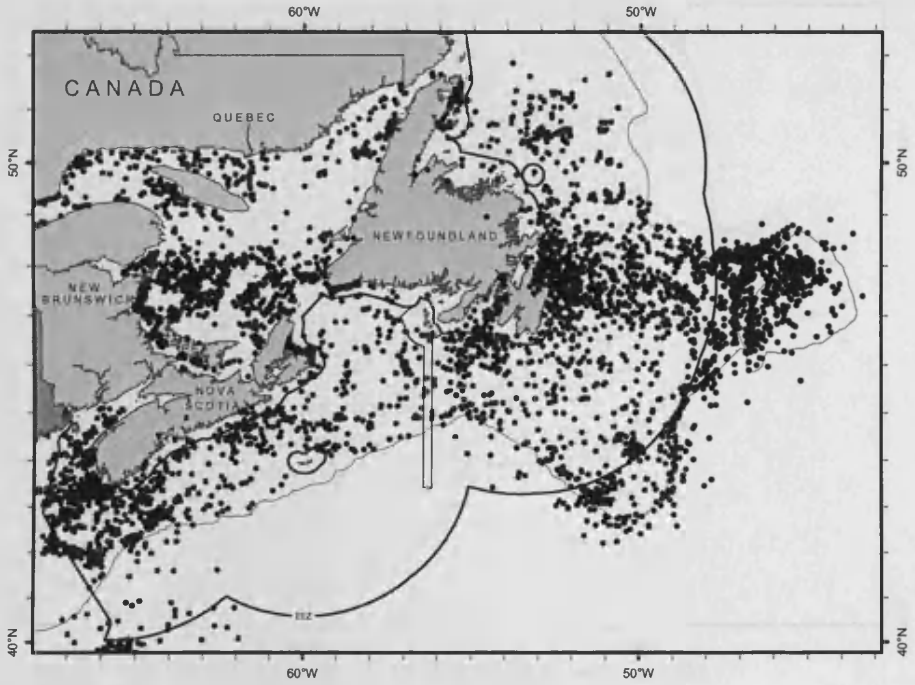


Figure D-5. Vessel Detections by PAL Flights – April 2002

Appendix D

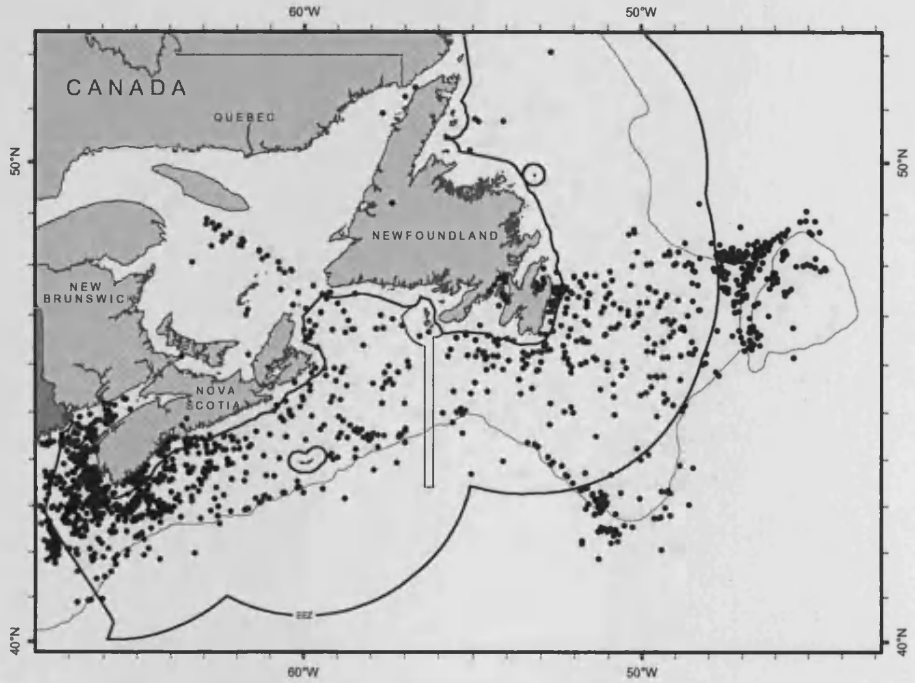


Figure D-6. Vessel Detections by PAL Flights – May 2002

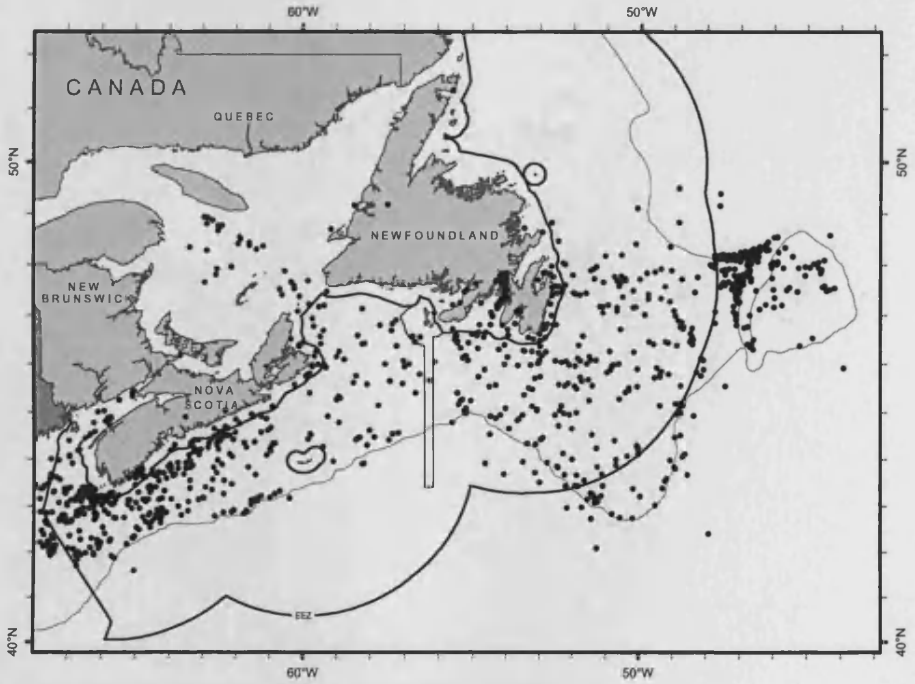


Figure D-7. Vessel Detections by PAL Flights – June 2002

Appendix D

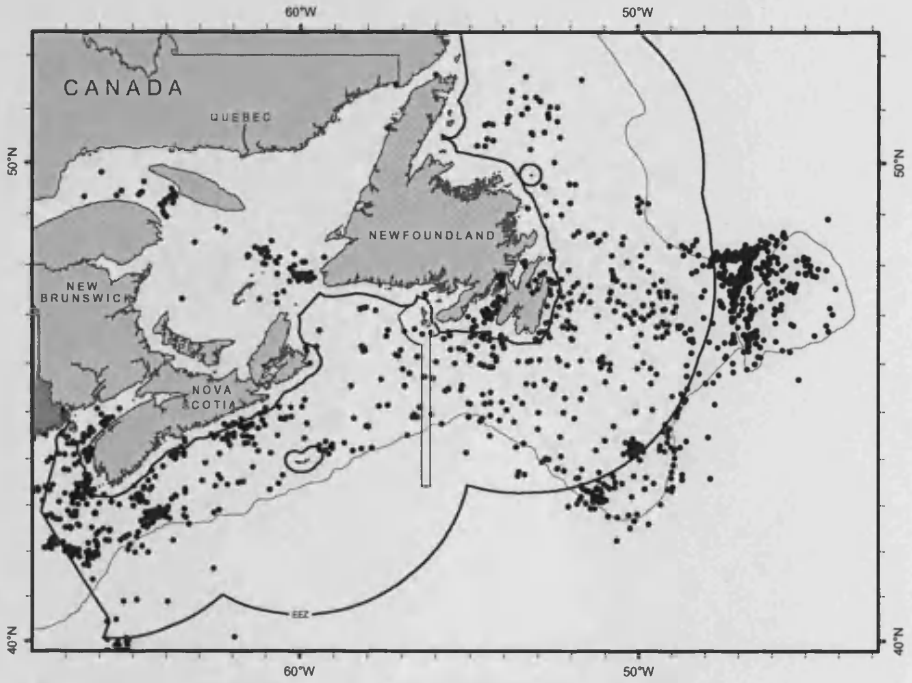


Figure D-8. Vessel Detections by PAL Flights – July 2002

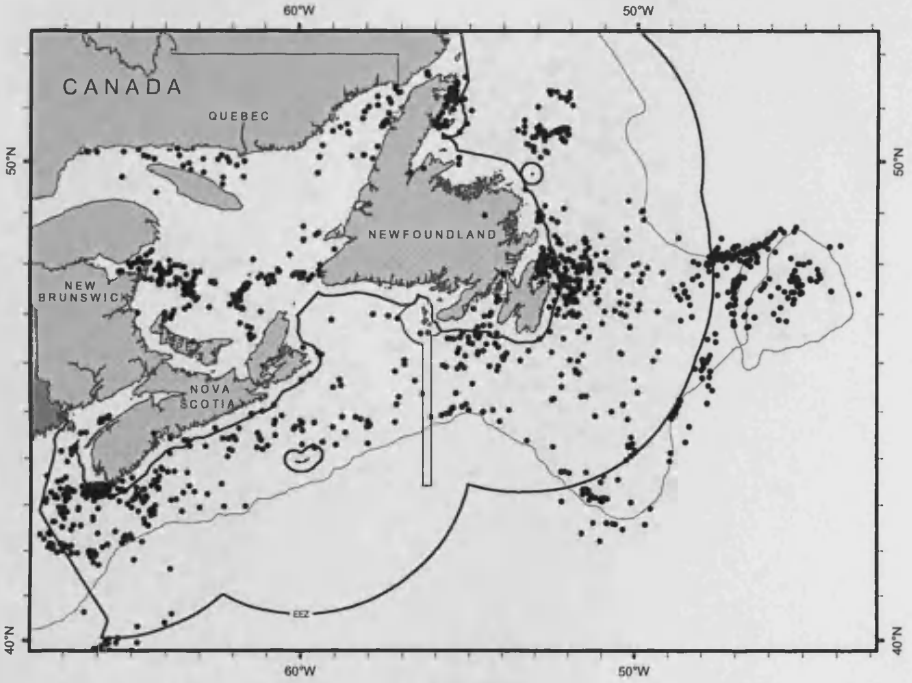


Figure D-9. Vessel Detections by PAL Flights – August 2002

Appendix D

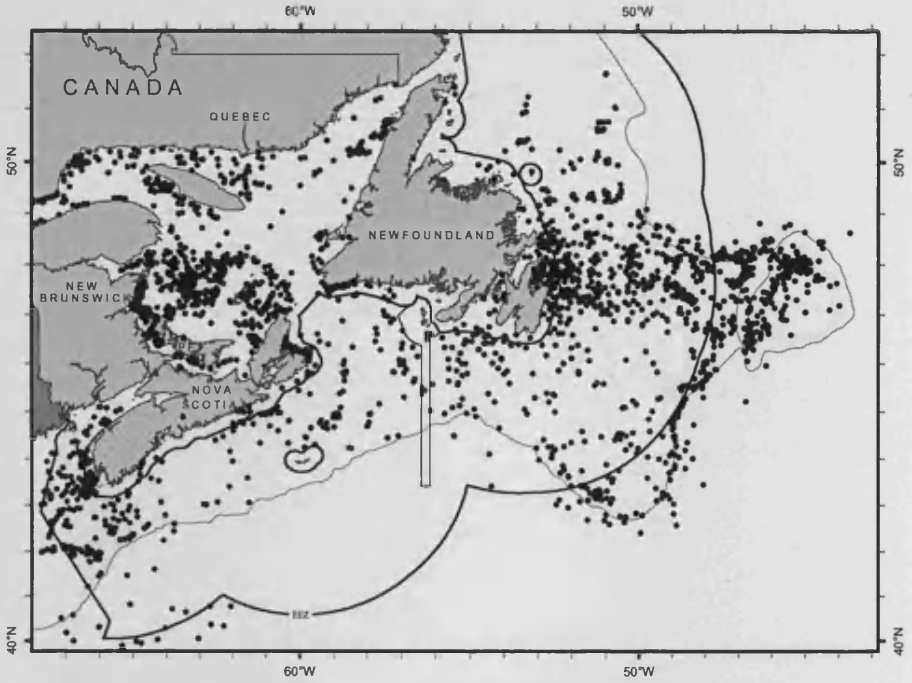


Figure D-10. Vessel Detections by PAL Flights – September 2002

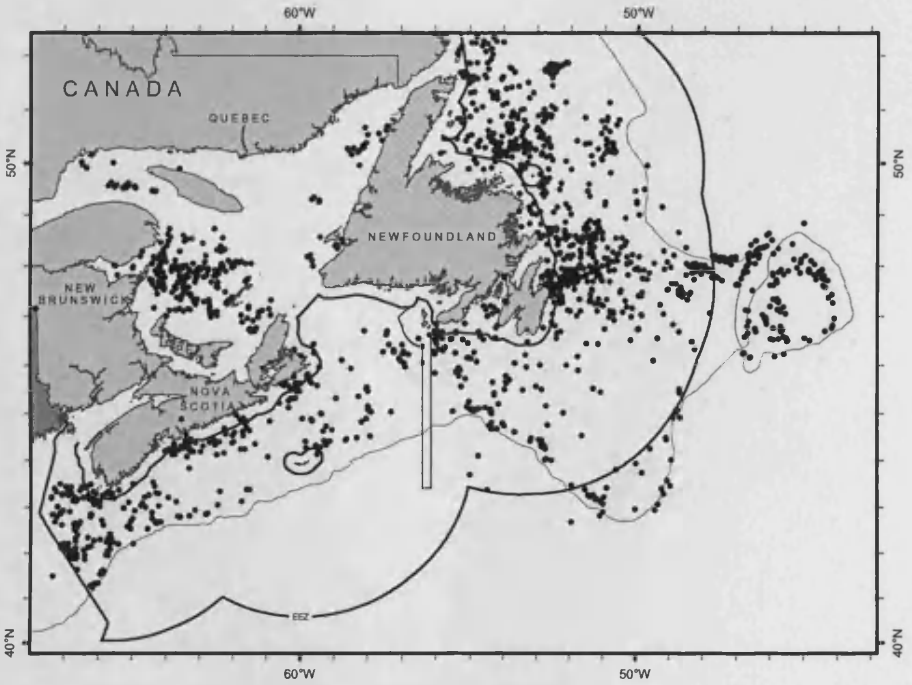


Figure D-11. Vessel Detections by PAL Flights – October 2002

Appendix D

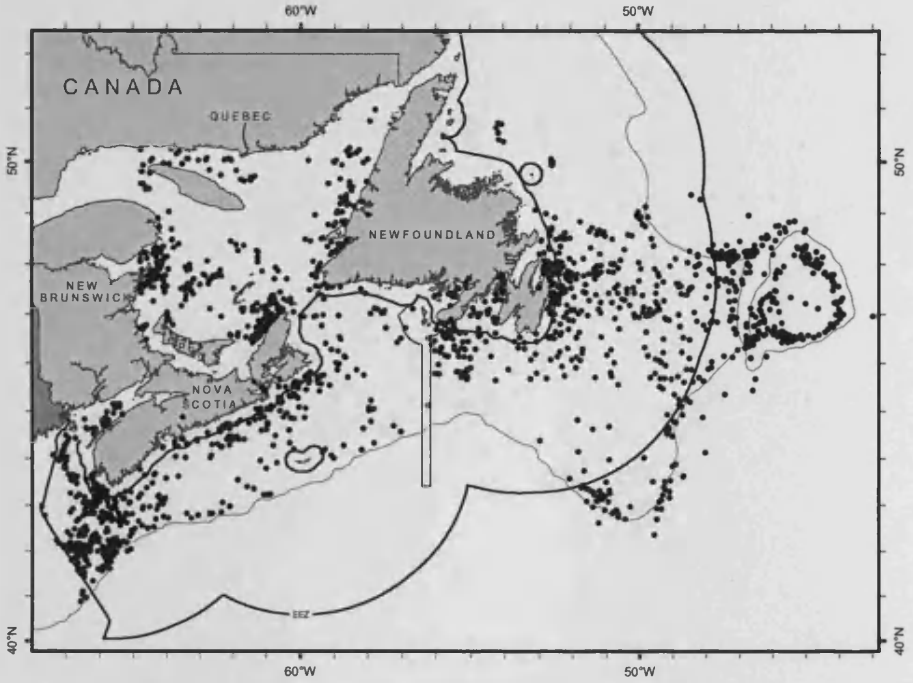


Figure D-12. Vessel Detections by PAL Flights – November 2002

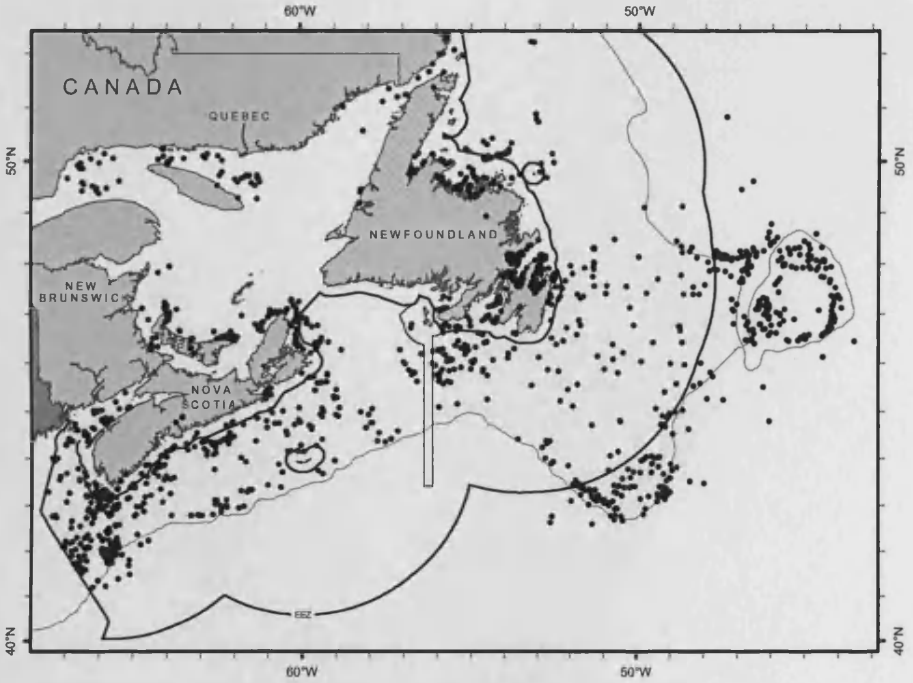


Figure D-13. Vessel Detections by PAL Flights – December 2002

Appendix D

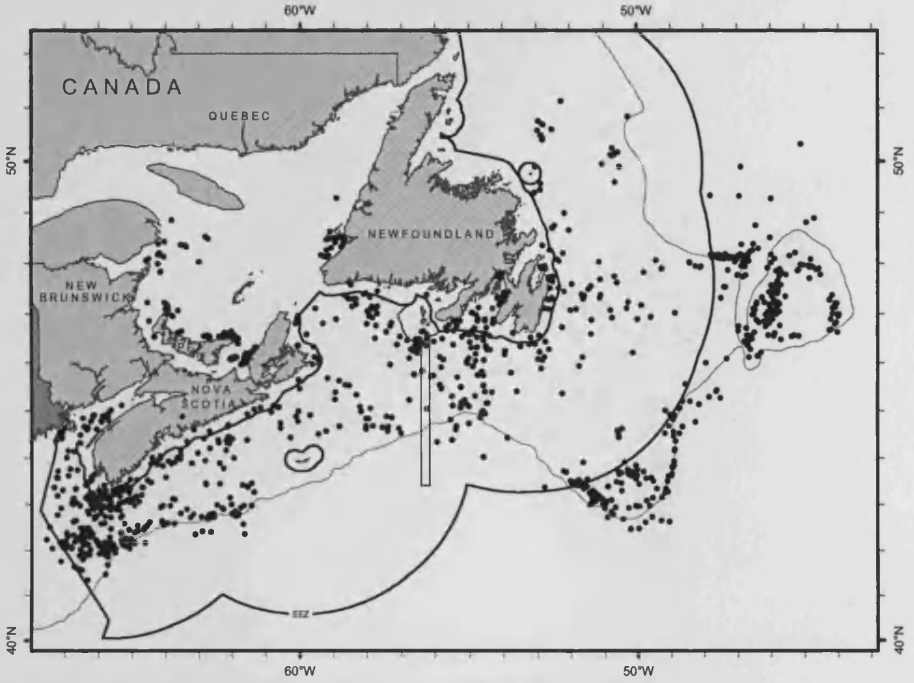


Figure D-14. Vessel Detections by PAL Flights – Summer 2002

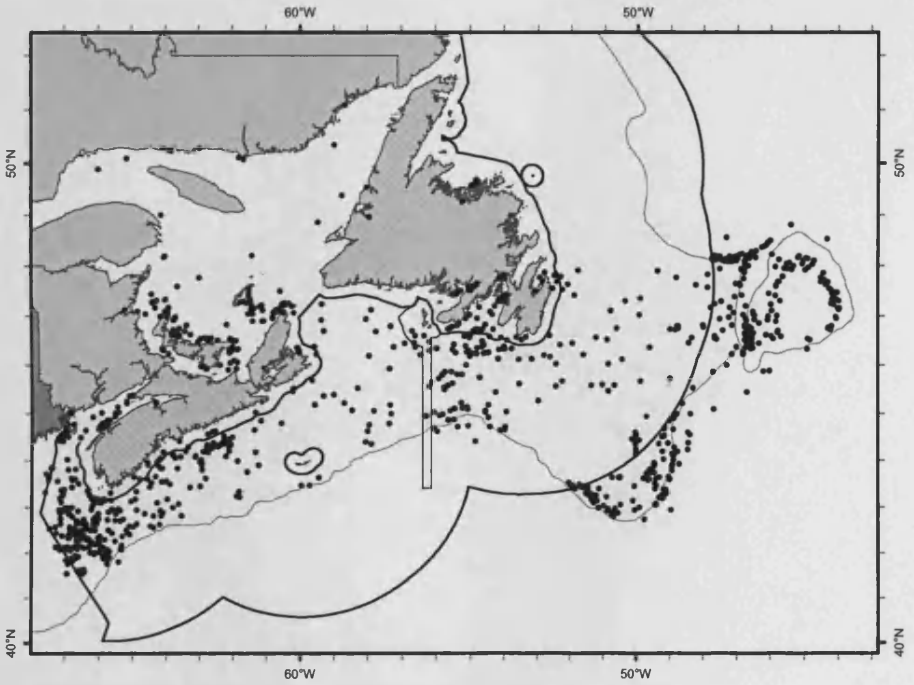


Figure D-15. Vessel Detections by PAL Flights – Fall 2002

Appendix D

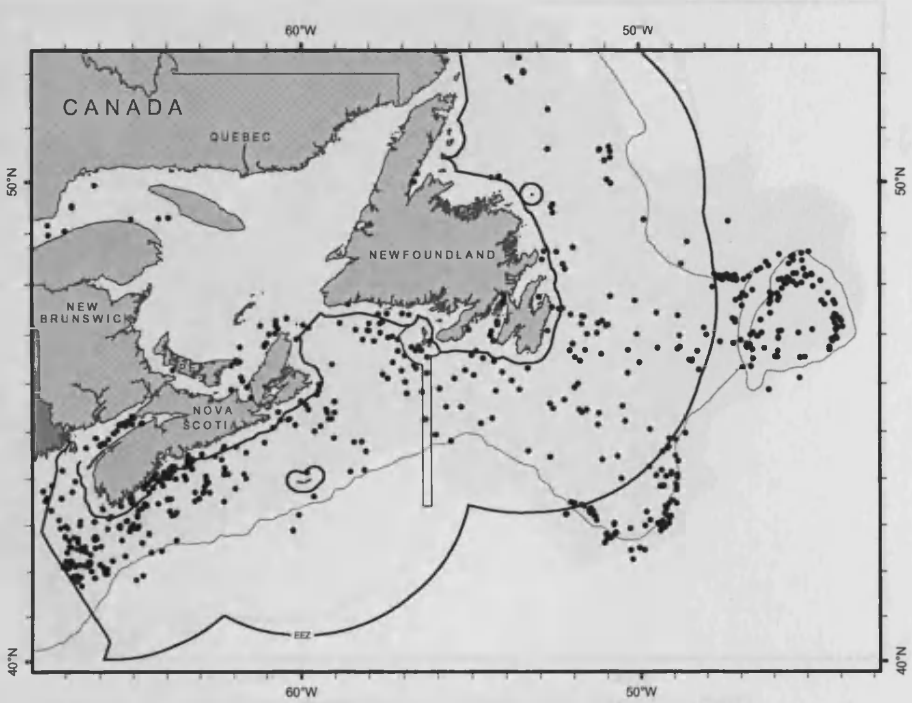


Figure D-16. Vessel Detections by PAL Flights – Winter 2002

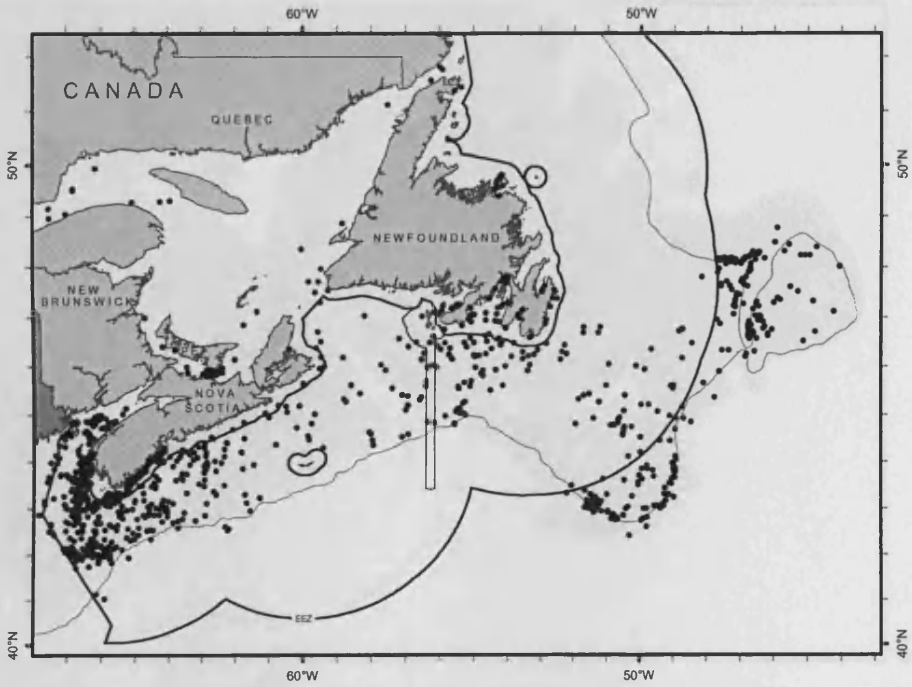


Figure D-17. Vessel Detections by PAL Flights – Spring 2002

Appendix D

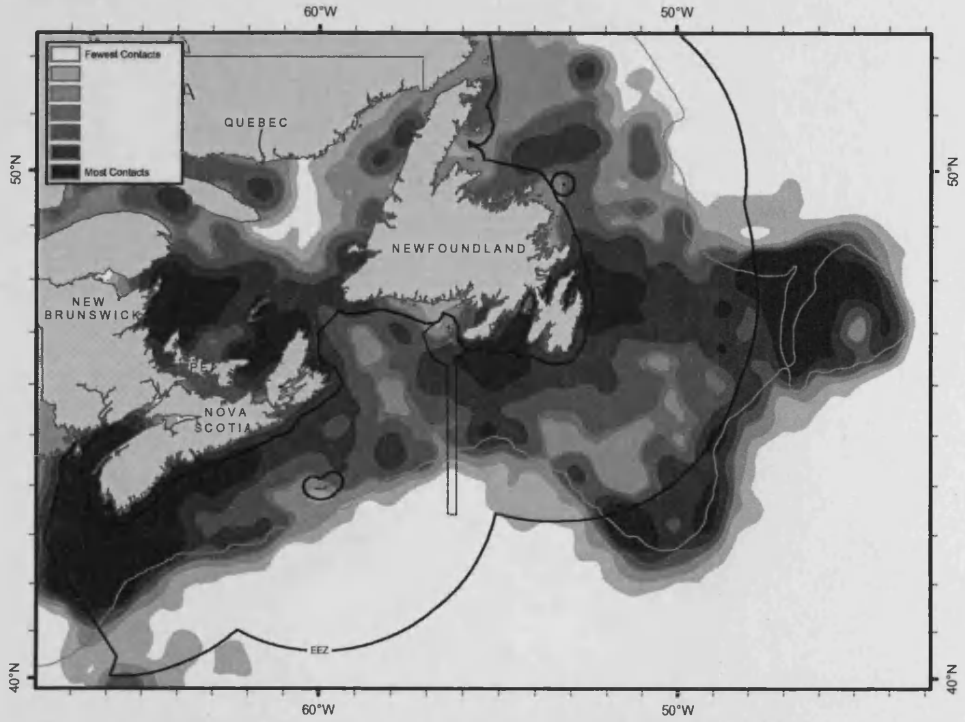


Figure D-18. Cumulative Vessel Detections by PAL Flights – 2002

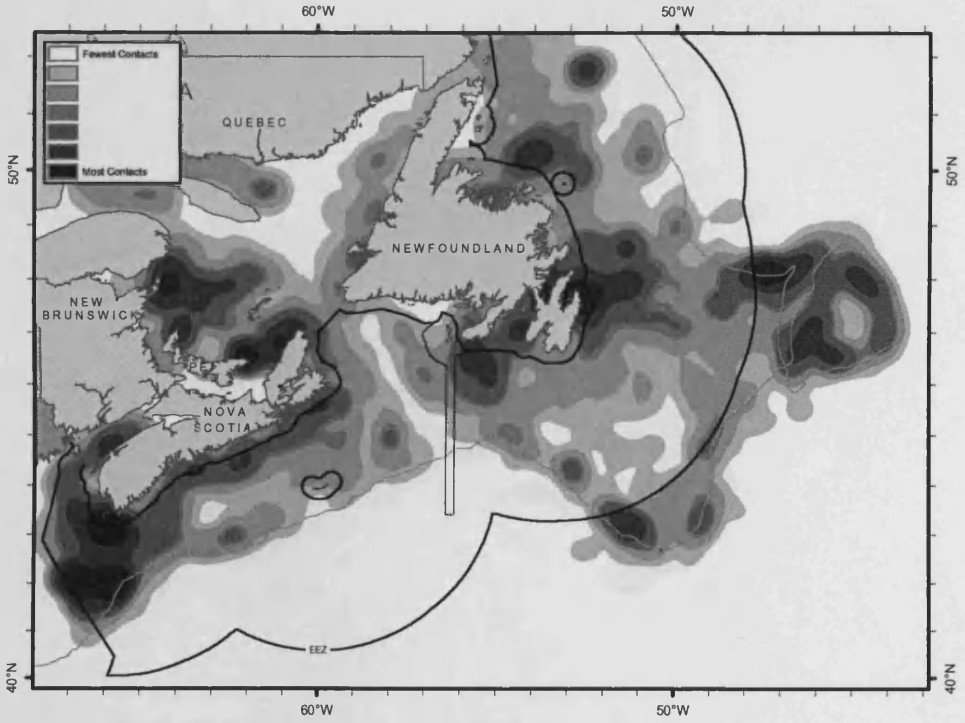


Figure D-19. Vessel Detections by PAL Flights – January 2002

Appendix D

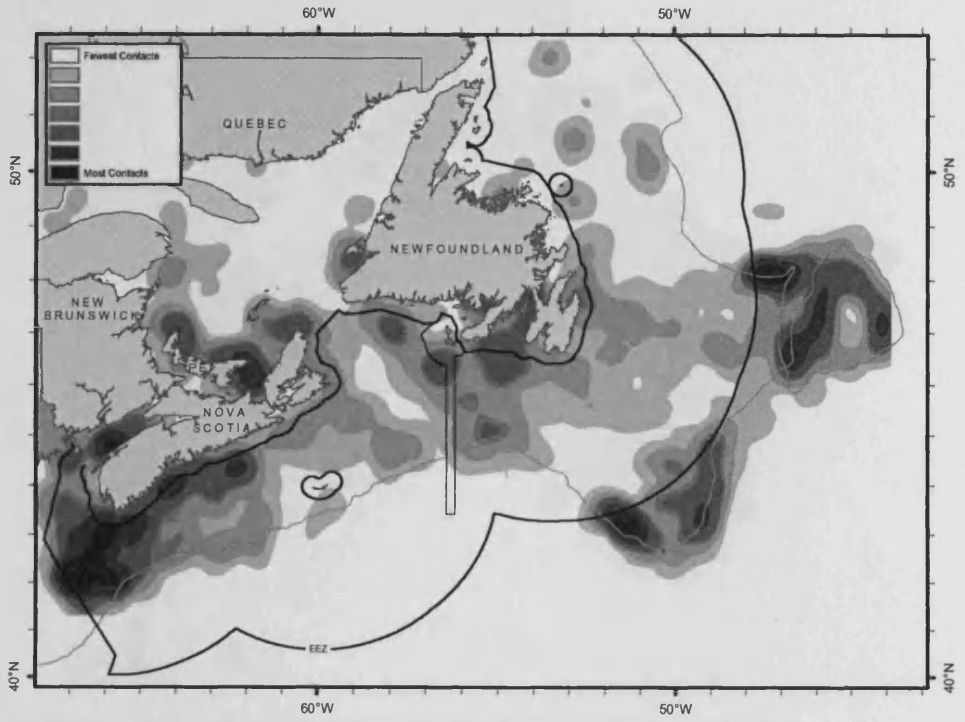


Figure D-20. Vessel Detections by PAL Flights – February 2002

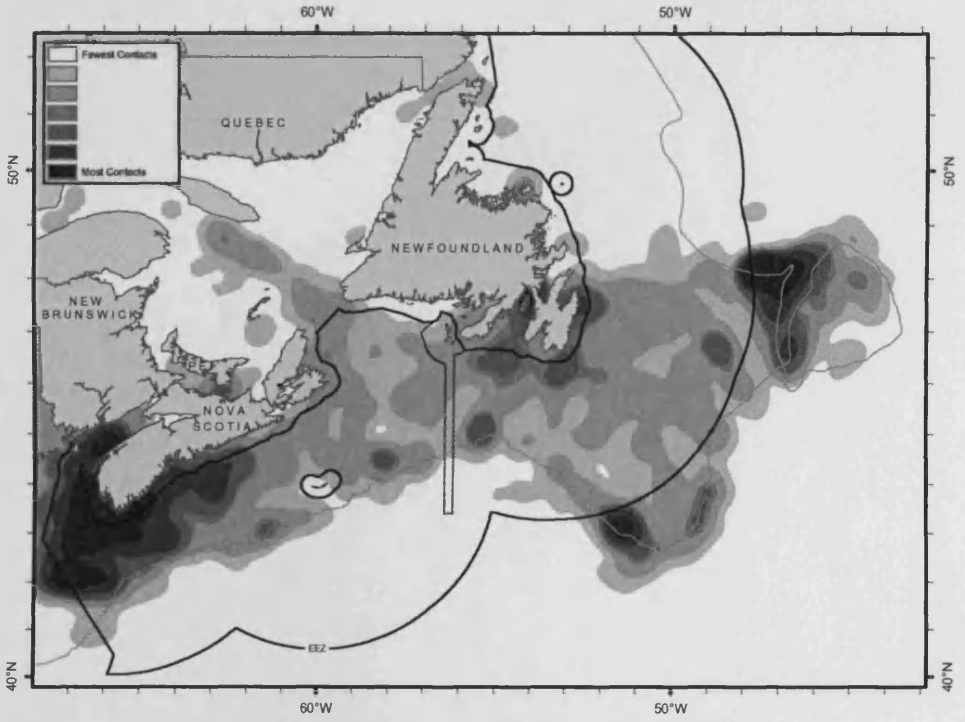


Figure D-21. Vessel Detections by PAL Flights – March 2002

Appendix D

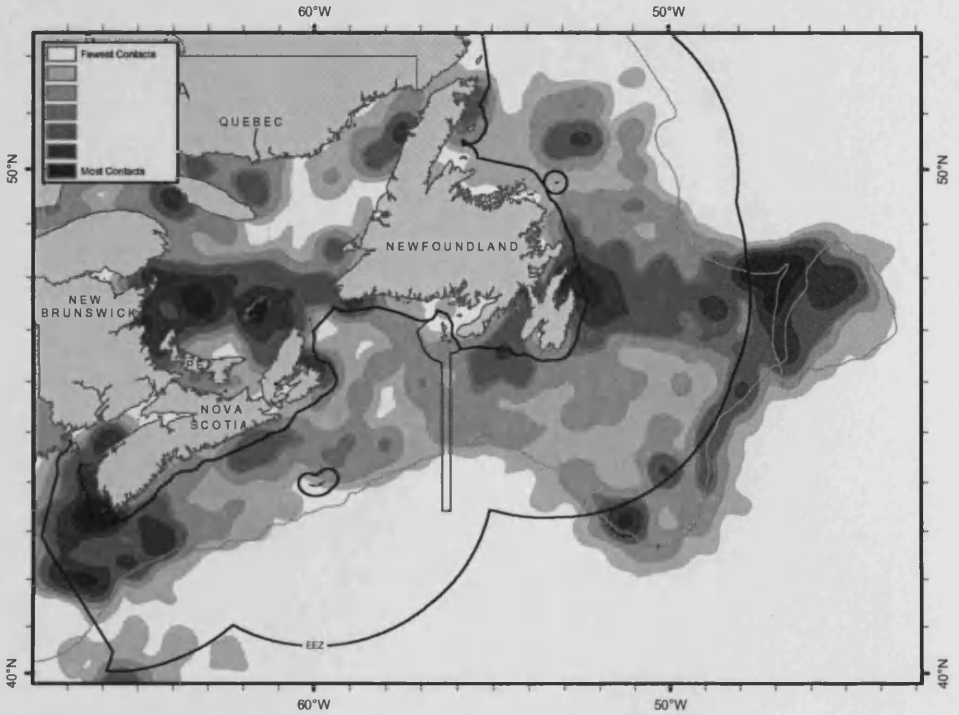


Figure D-22. Vessel Detections by PAL Flights – April 2002

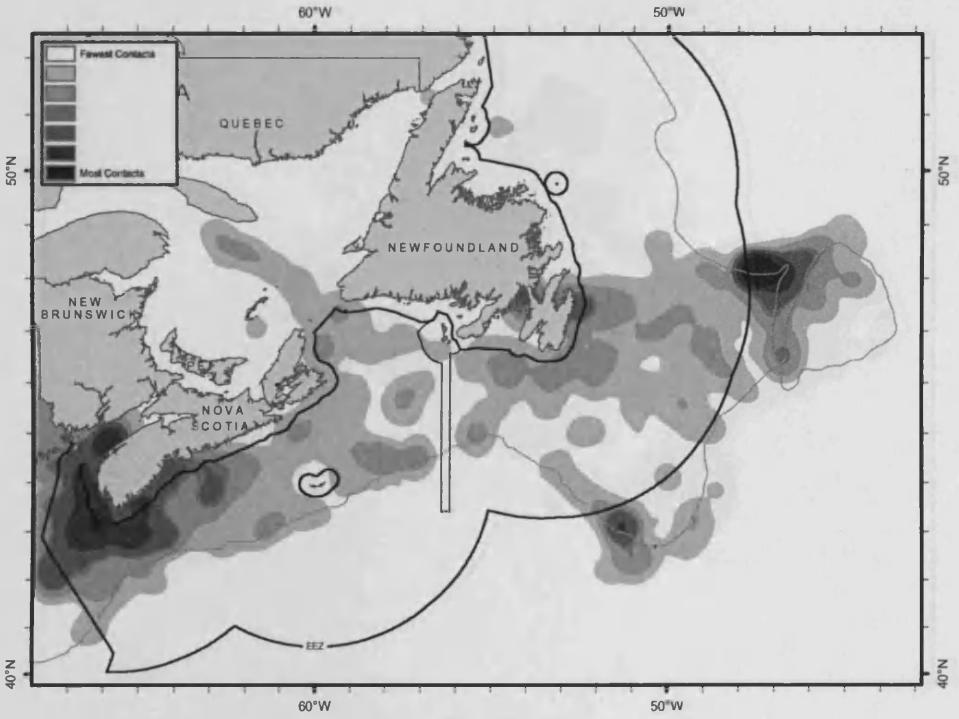


Figure D-23. Vessel Detections by PAL Flights – May 2002

Appendix D

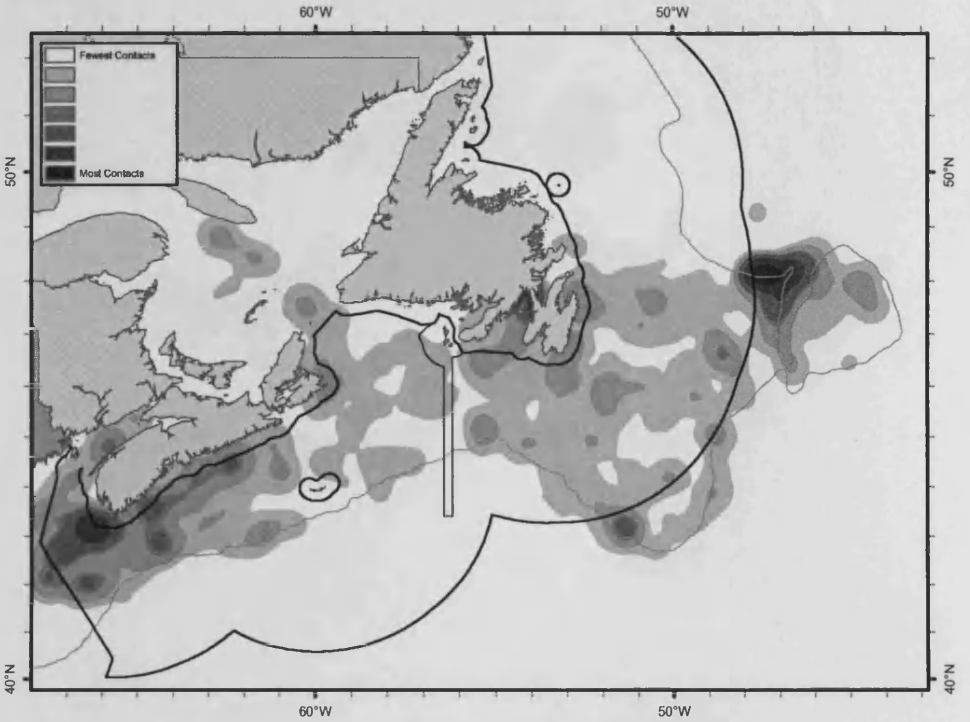


Figure D-24. Vessel Detections by PAL Flights – June 2002

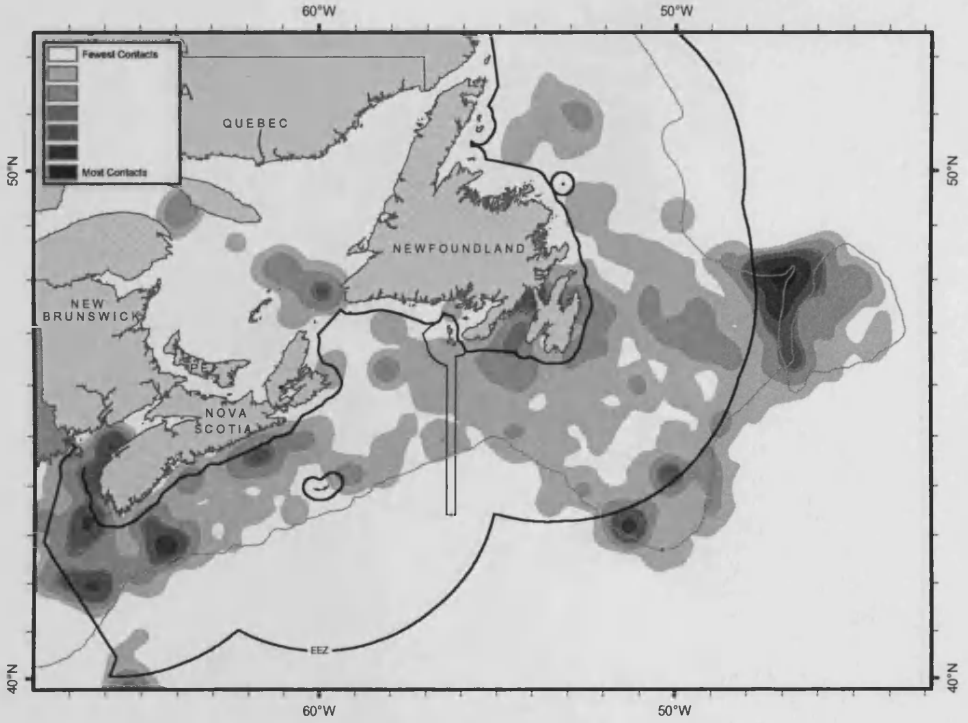


Figure D-25. Vessel Detections by PAL Flights – July 2002

Appendix D

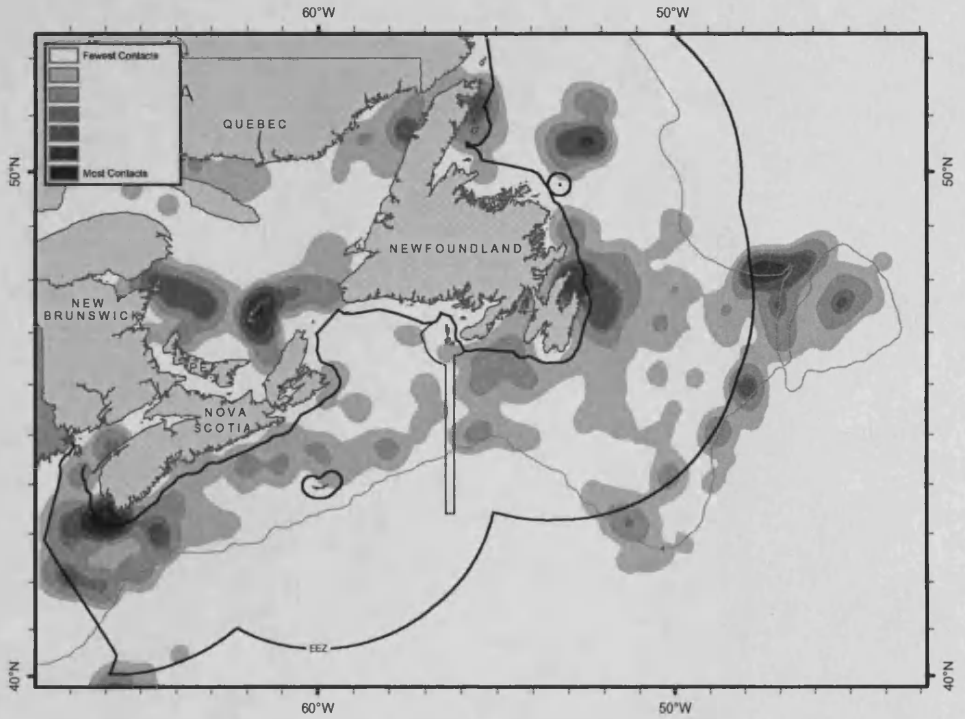


Figure D-26. Vessel Detections by PAL Flights – August 2002

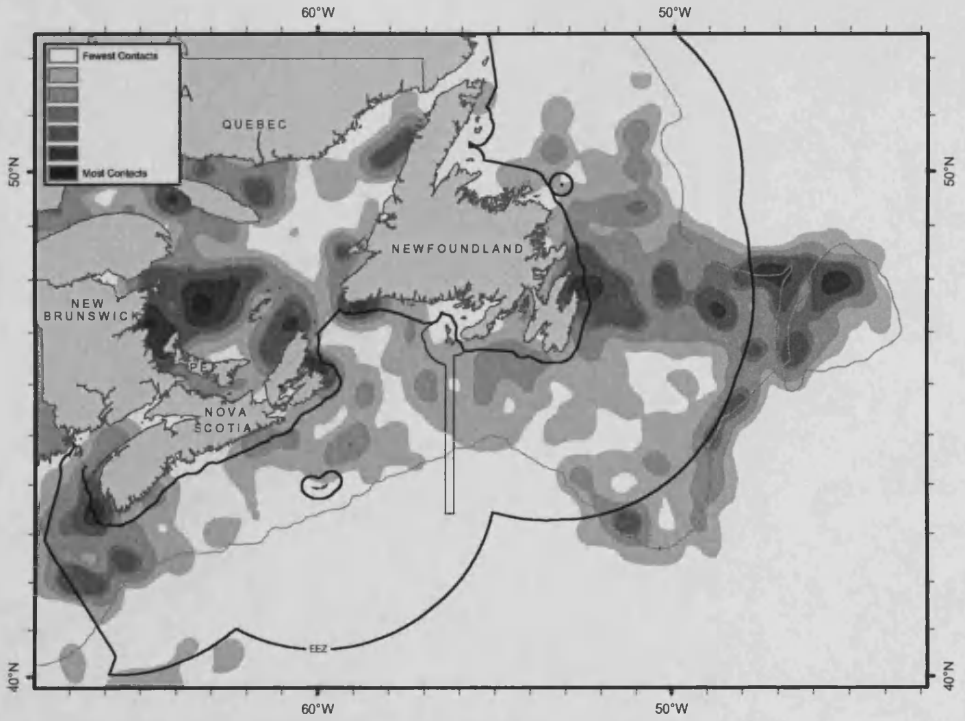


Figure D-27. Vessel Detections by PAL Flights – September 2002

Appendix D

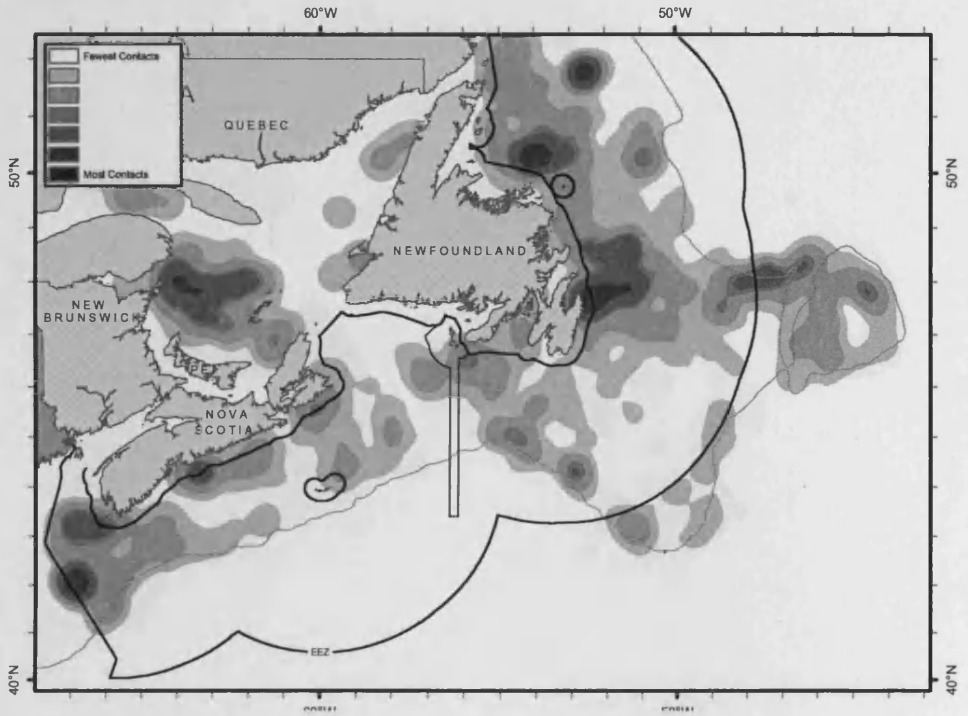


Figure D-28. Vessel Detections by PAL Flights – October 2002

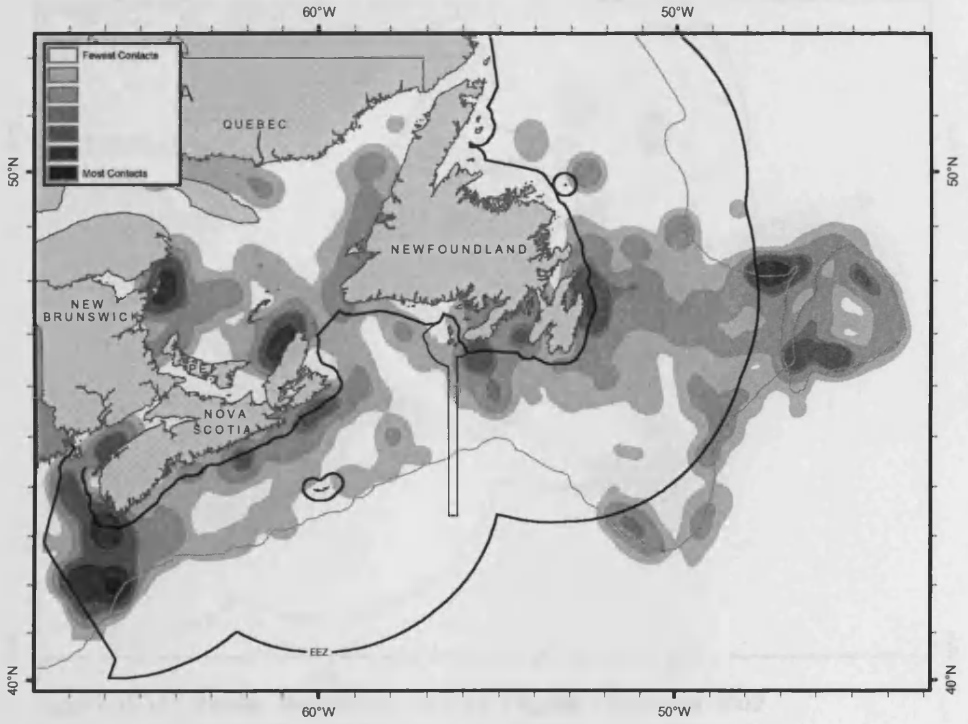


Figure D-29. Vessel Detections by PAL Flights – November 2002

Appendix D

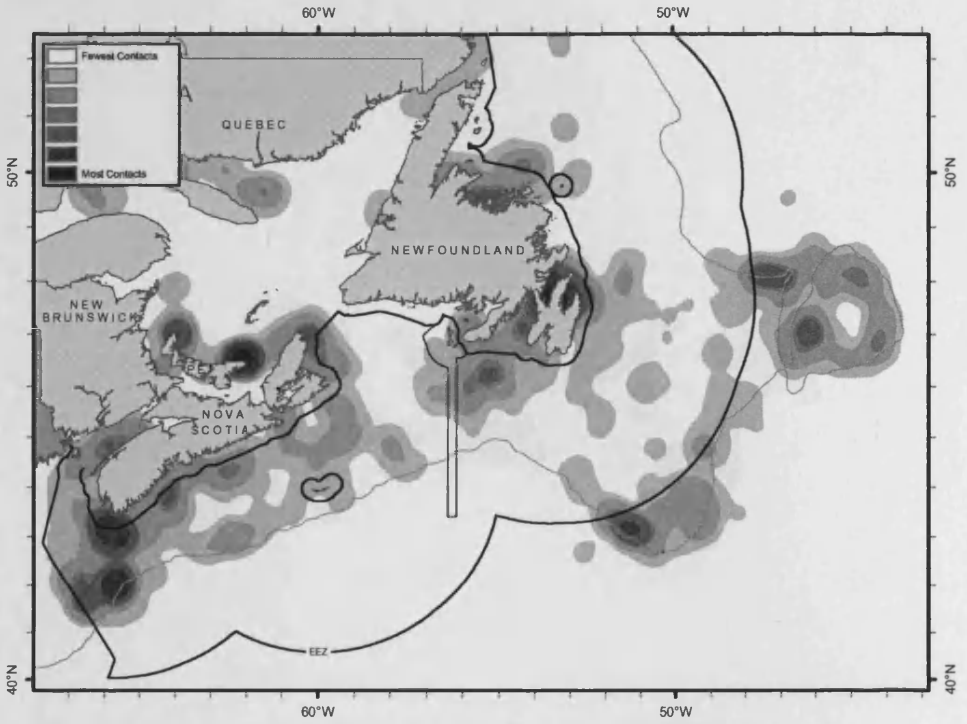


Figure D-30. Vessel Detections by PAL Flights – December 2002

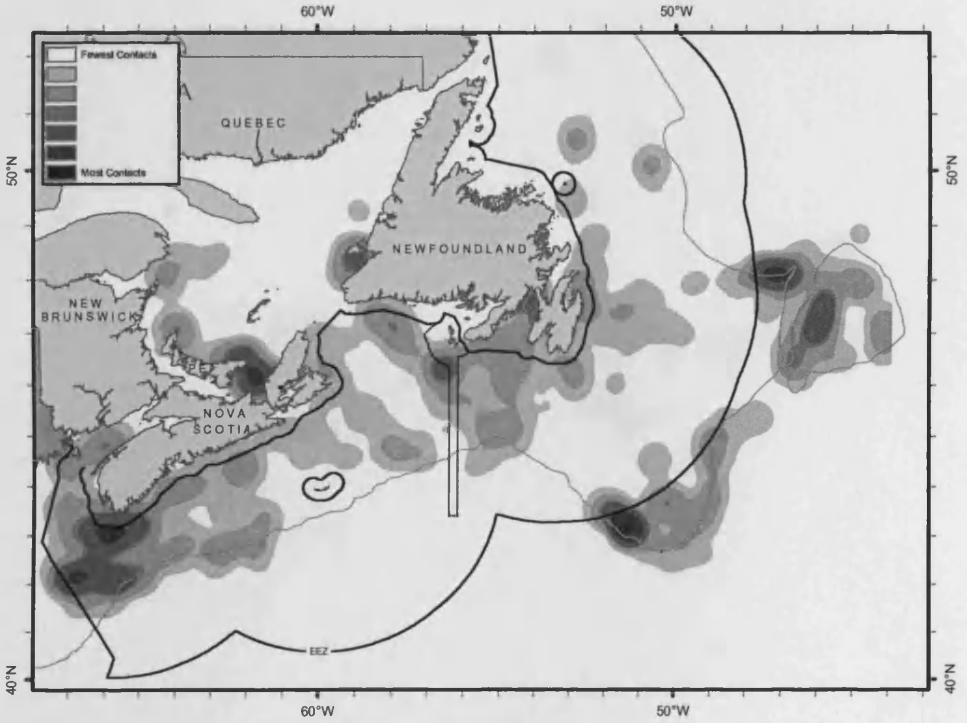


Figure D-31. Vessel Detections by PAL Flights – Summer 2002

Appendix D

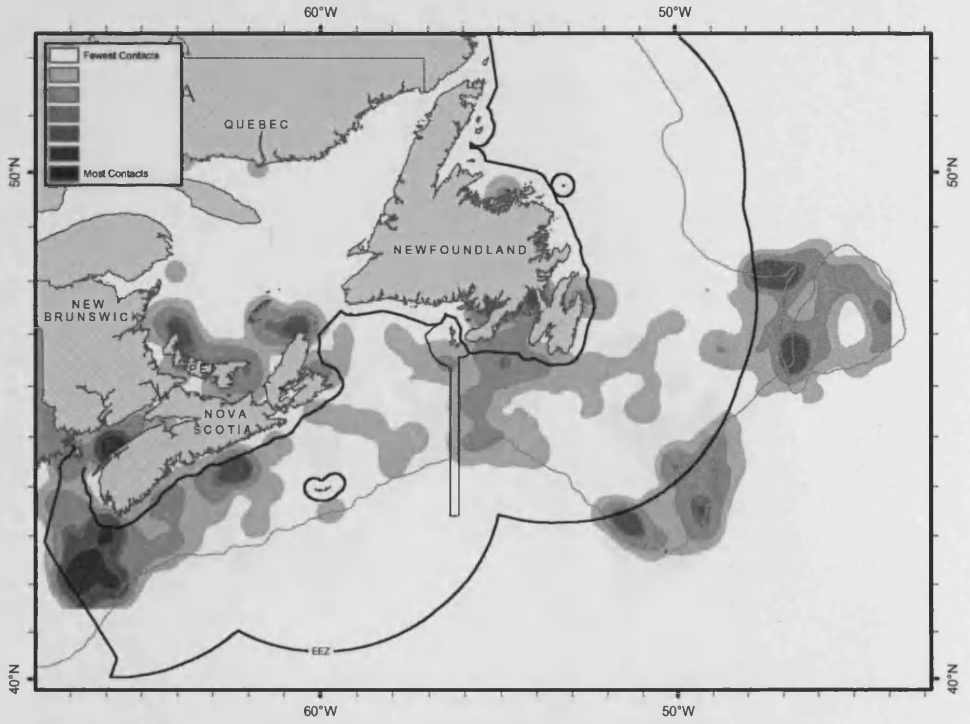


Figure D-32. Vessel Detections by PAL Flights – Fall 2002

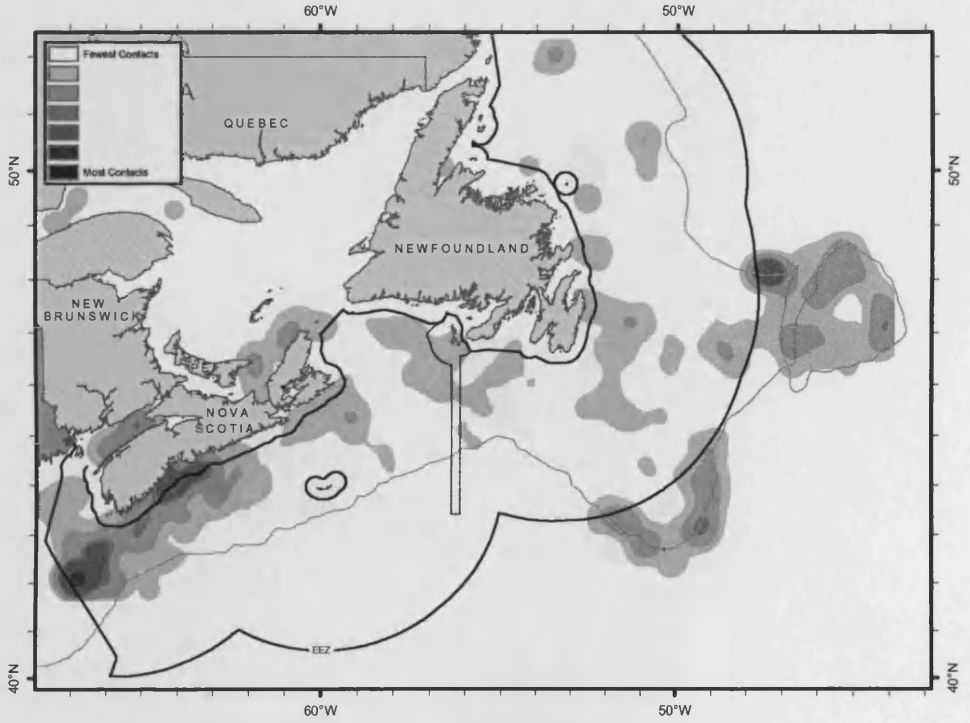


Figure D-33. Vessel Detections by PAL Flights – Winter 2002

Appendix D

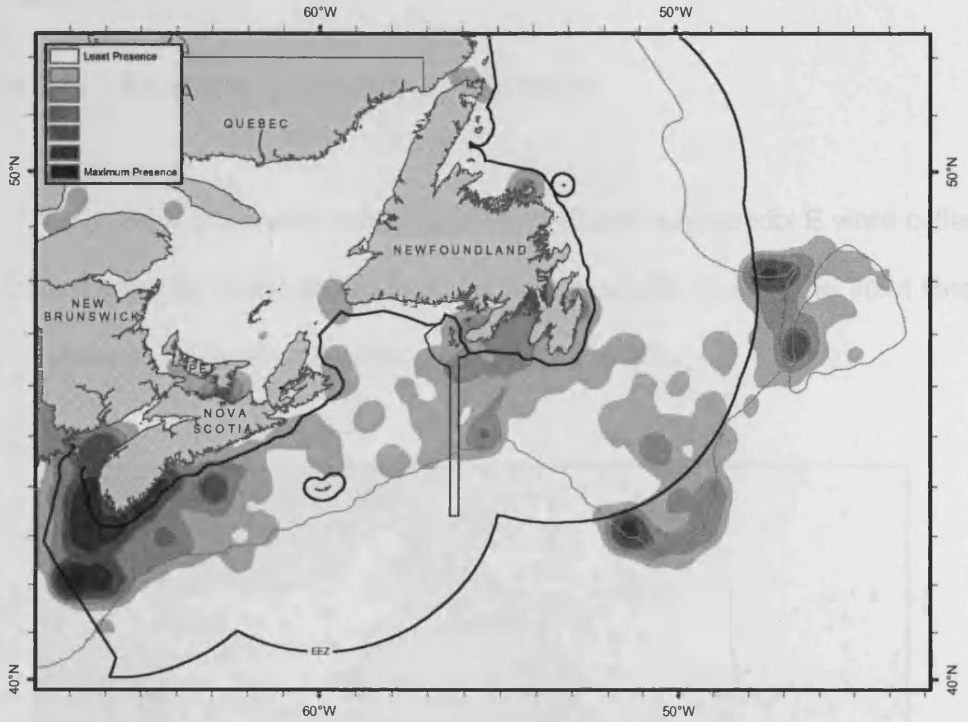


Figure D-34. Vessel Detections by PAL Flights – Spring 2002

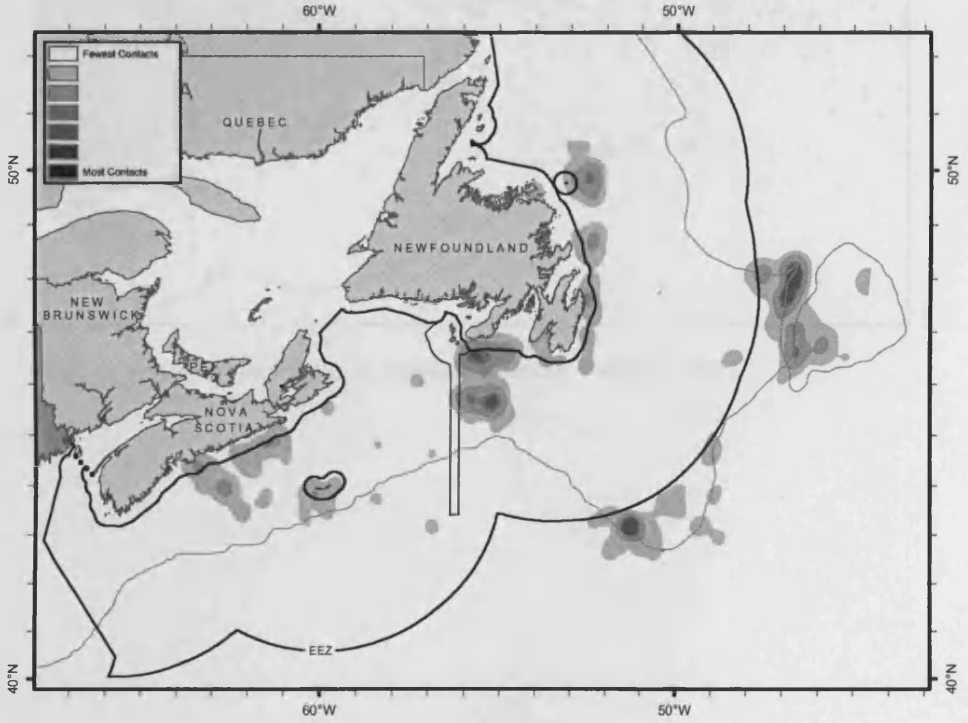


Figure D-35. Vessel Detections by Naval Vessels – 1999 to 2000
Source: Researcher's contact logs aboard 13 naval vessels.

Appendix E

MAPS – SEARCH AND RESCUE ACTIVITY

Unless otherwise noted, data for all maps in Appendix E were collected from Canadian Coast Guard national headquarters through the Joint Rescue Co-ordination Centre at Halifax, Nova Scotia in 2002.

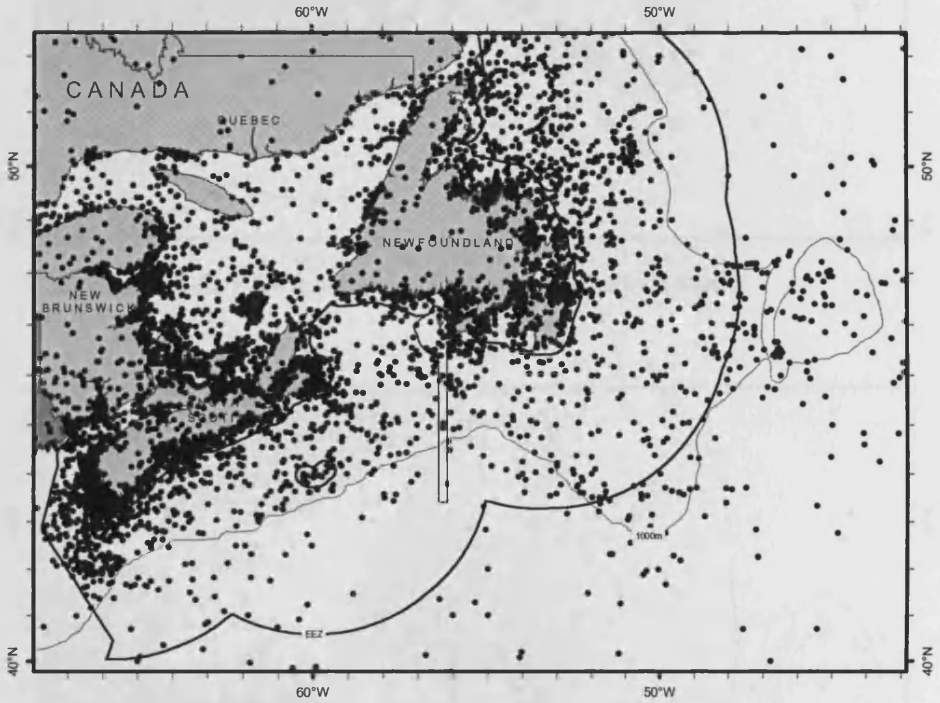


Figure D-1. SAR Incidents in Atlantic Canada – 1999 to 2002

Appendix E

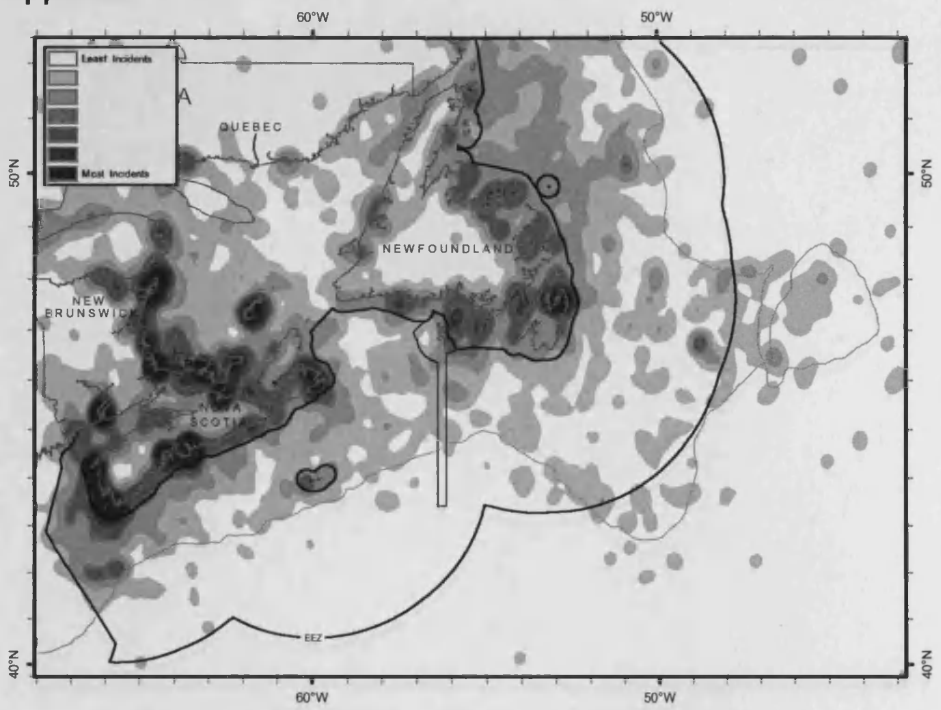


Figure D-2. SAR Incidents – 1999 to 2002 Surface Model

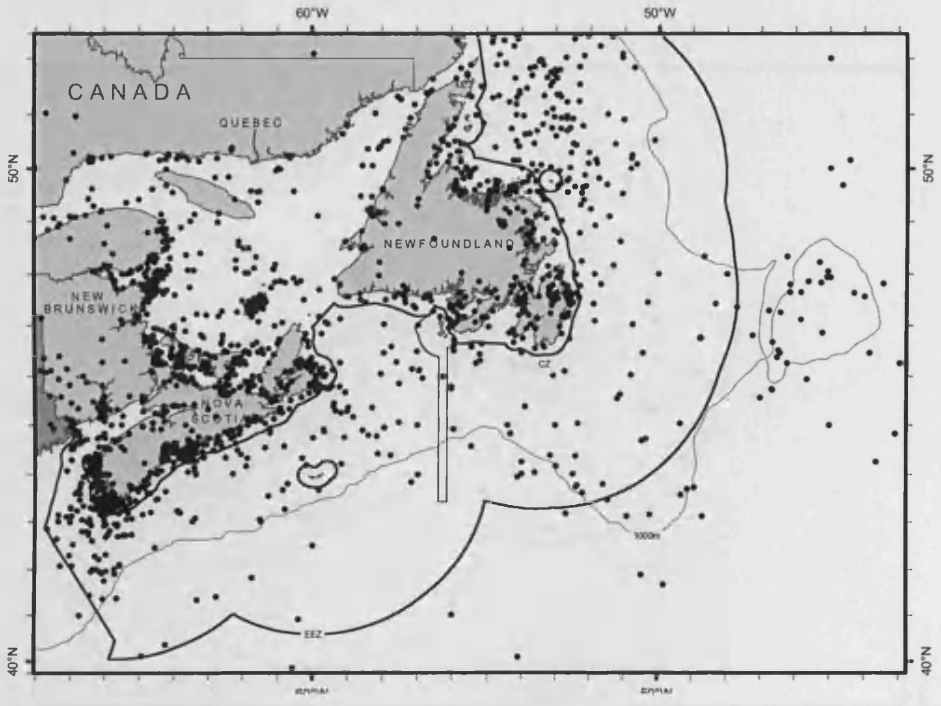


Figure D-3. SAR Incidents 1999

Appendix E

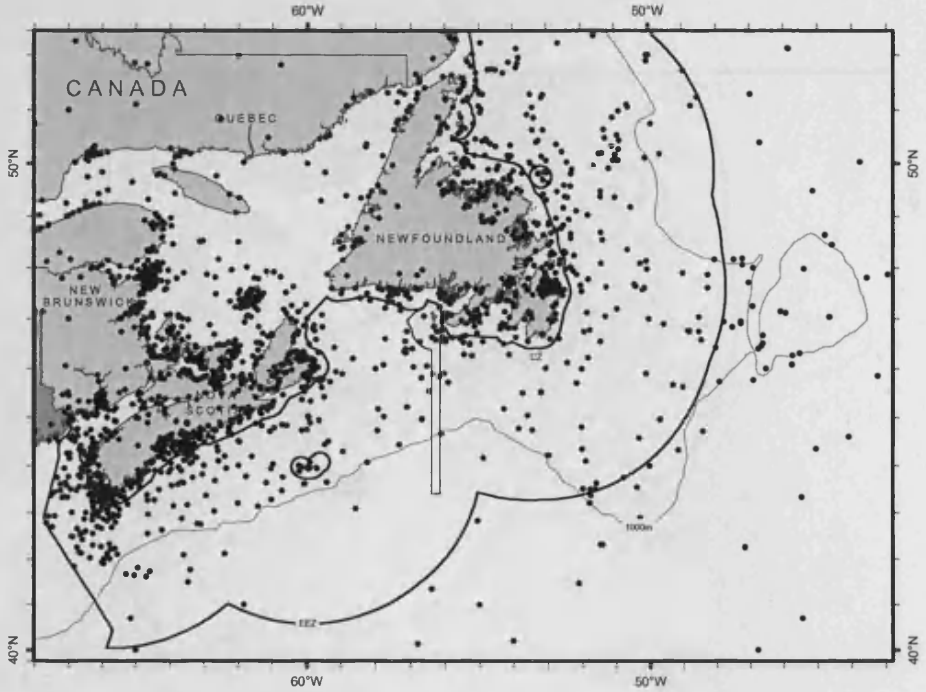


Figure D-4. SAR Incidents 2000

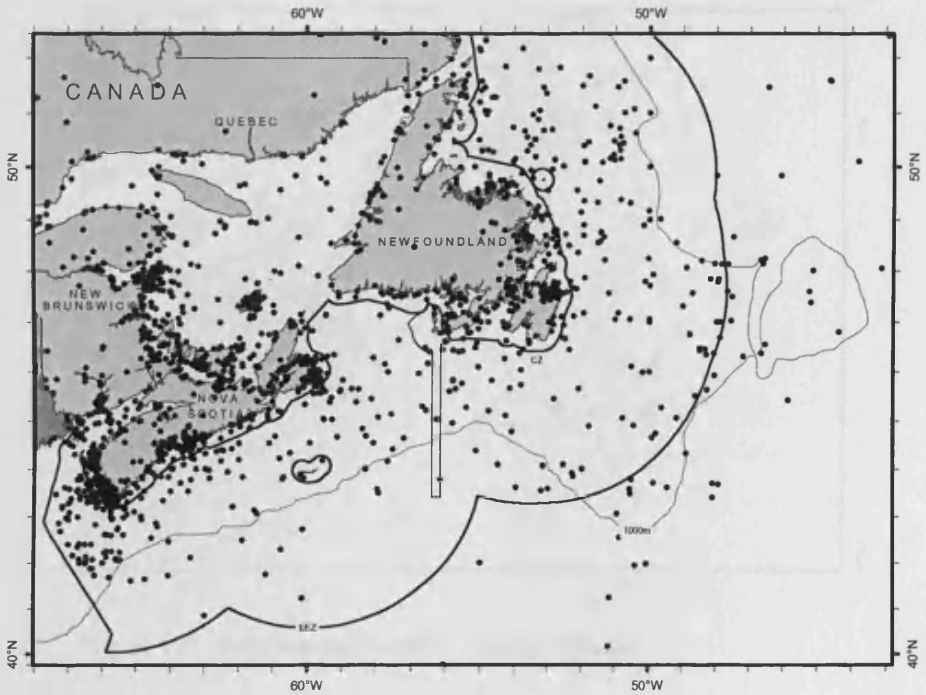


Figure D-5. SAR Incidents 2001

Appendix E

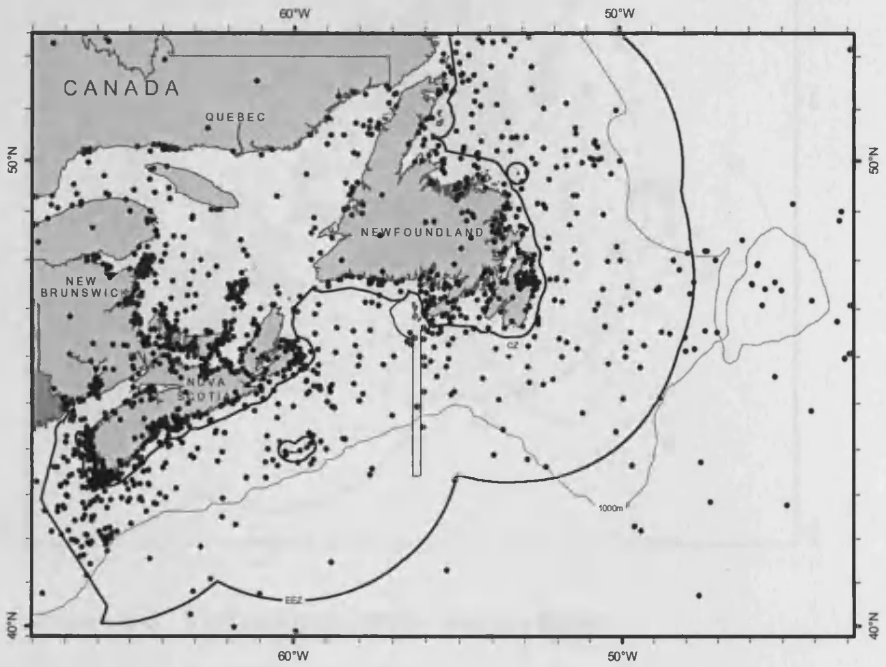


Figure D-6. SAR Incidents 2002

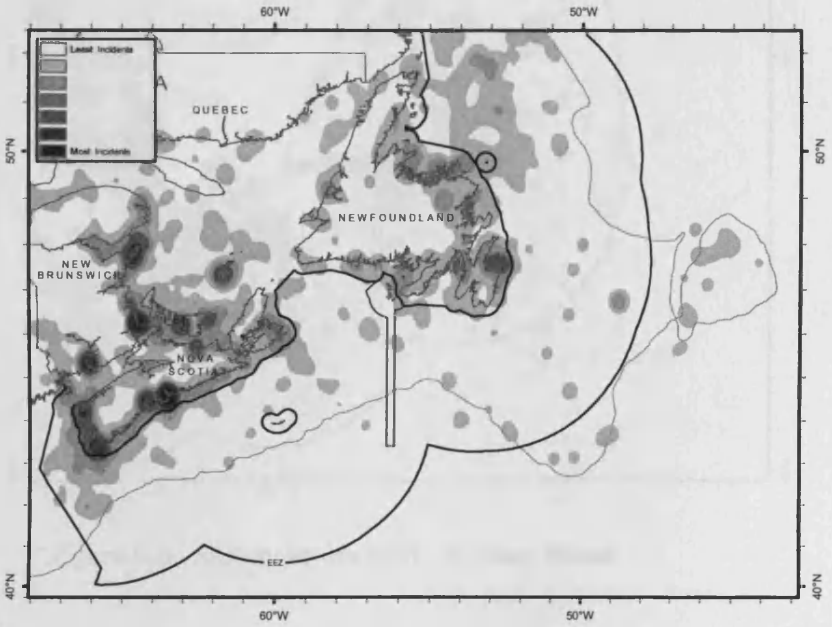


Figure D-7. SAR Incidents 1999 – Surface Model

Appendix E

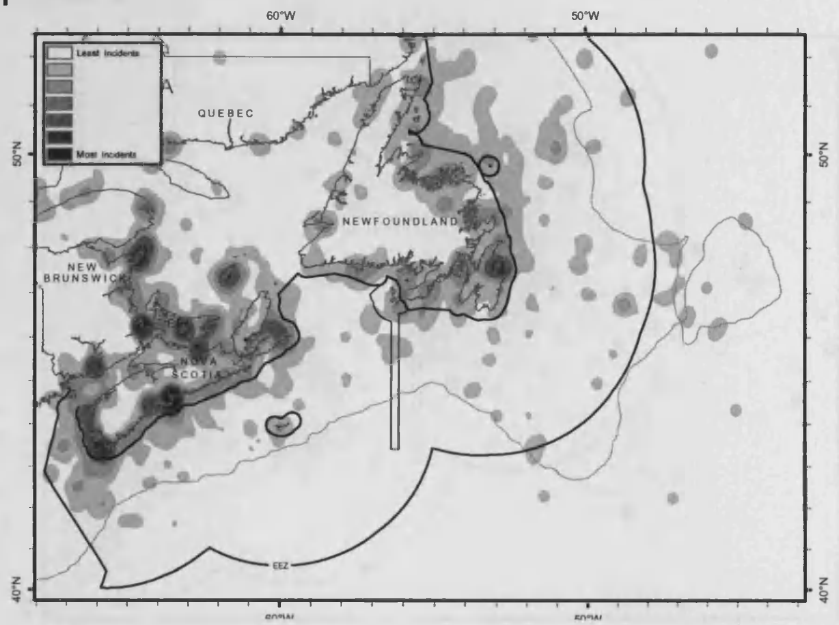


Figure D-8. SAR Incidents 2000 – Surface Model

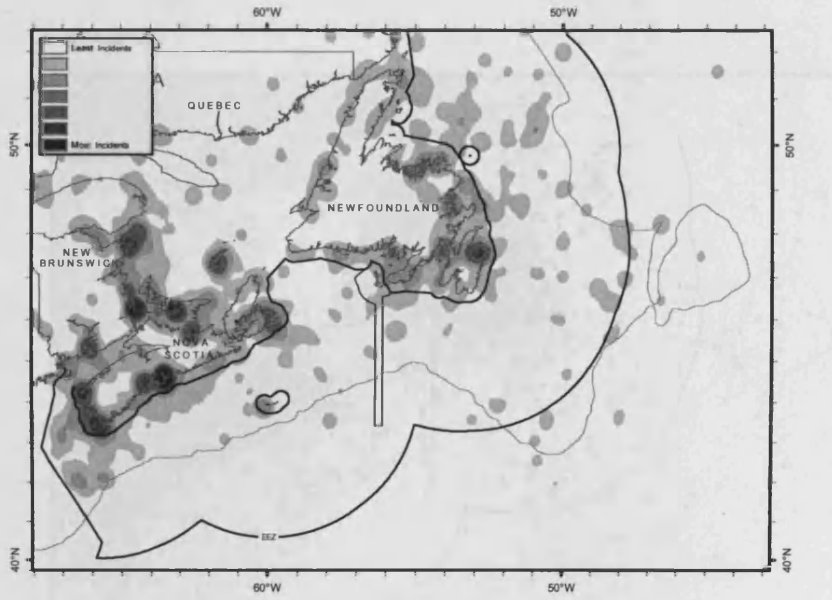


Figure D-9. SAR Incidents 2001 – Surface Model

Appendix E

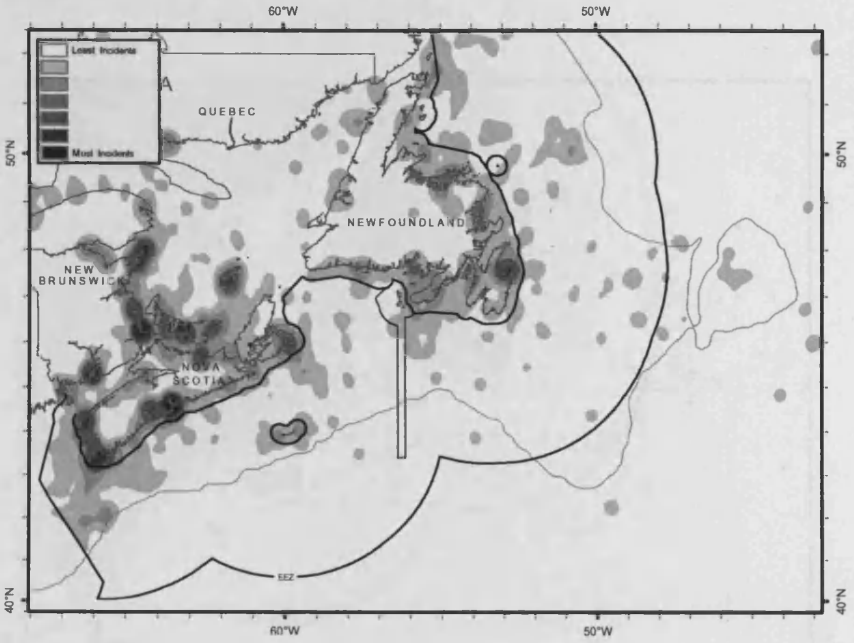


Figure D-10. SAR Incidents 2002 – Surface Model

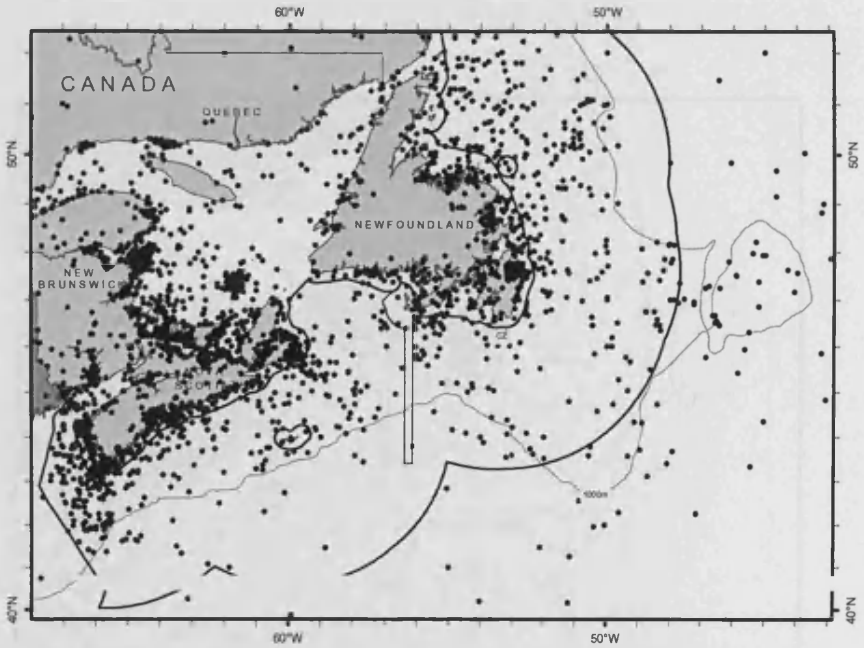


Figure D-11. SAR Incidents 1999-2002 – Summer Months

Appendix E

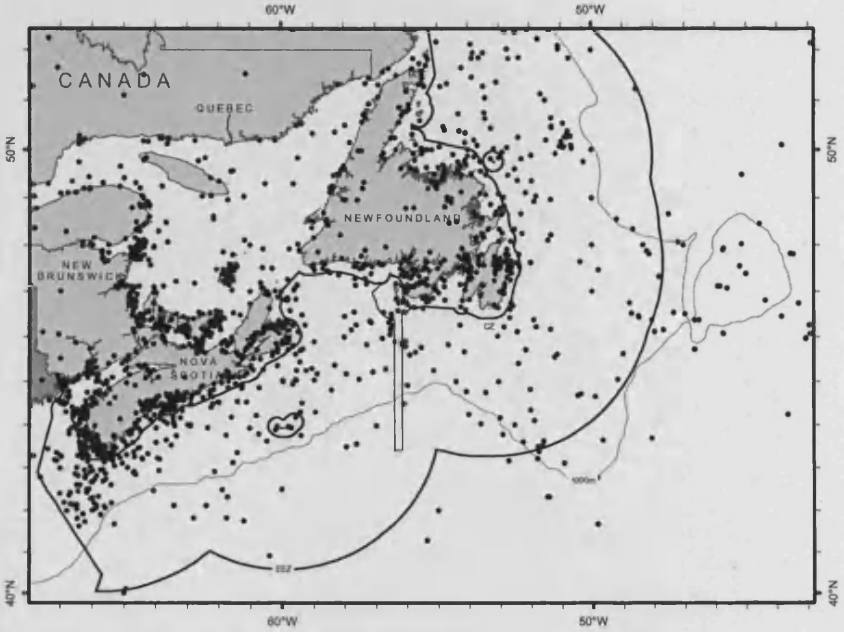


Figure D-12. SAR Incidents 1999-2002 – Fall Months

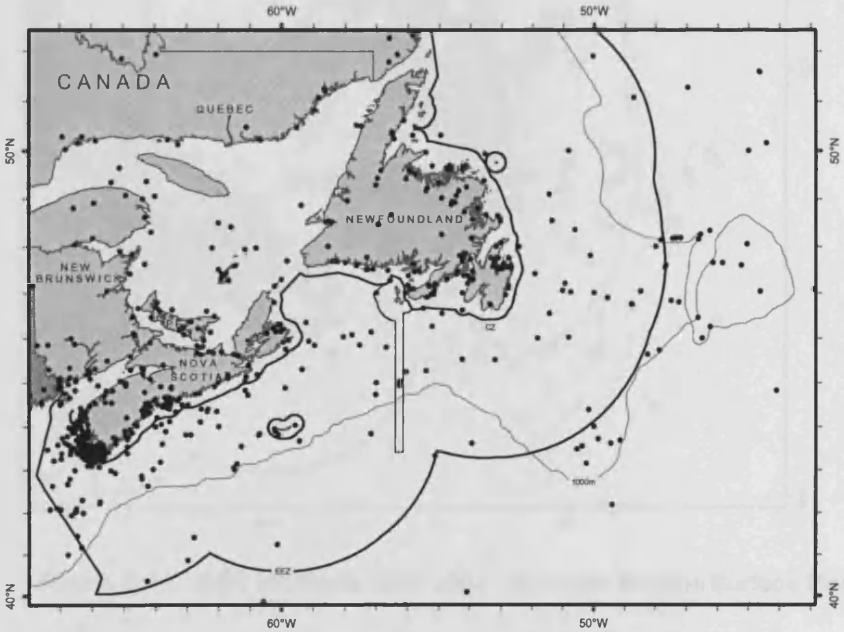


Figure D-13. SAR Incidents 1999-2002 – Winter Months

Appendix E

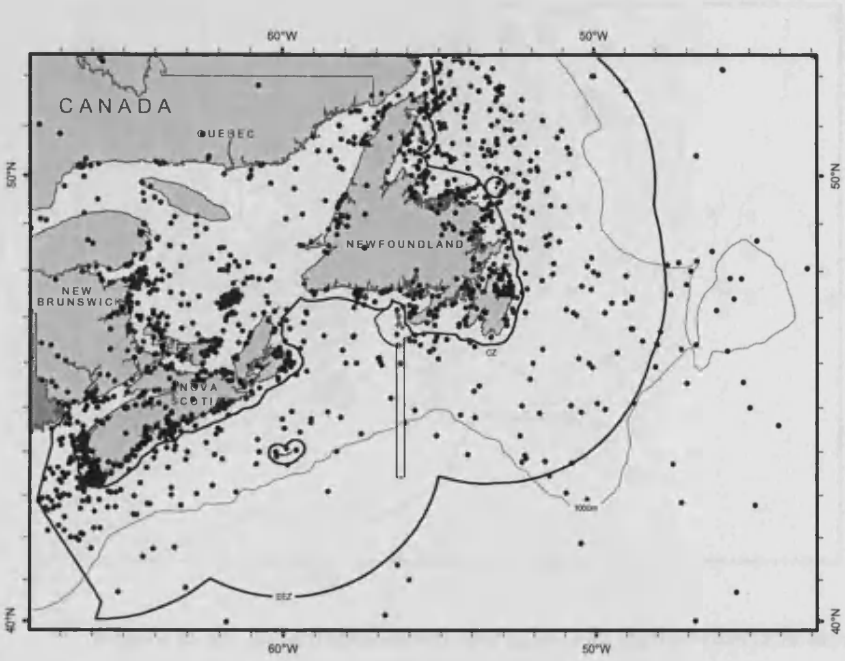


Figure D-14. SAR Incidents 1999-2002 – Spring Months

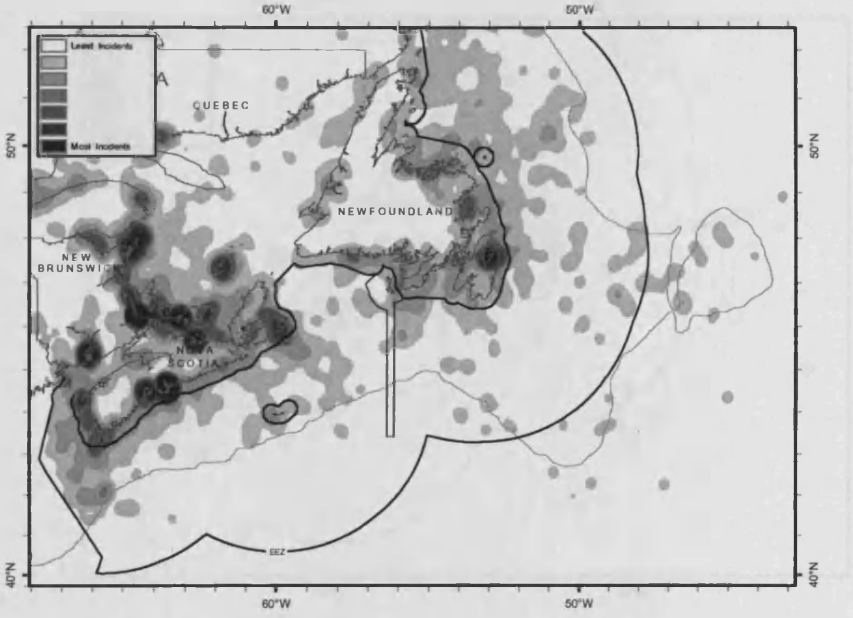


Figure D-15. SAR Incidents 1999-2002 – Summer Months Surface Model

Appendix E

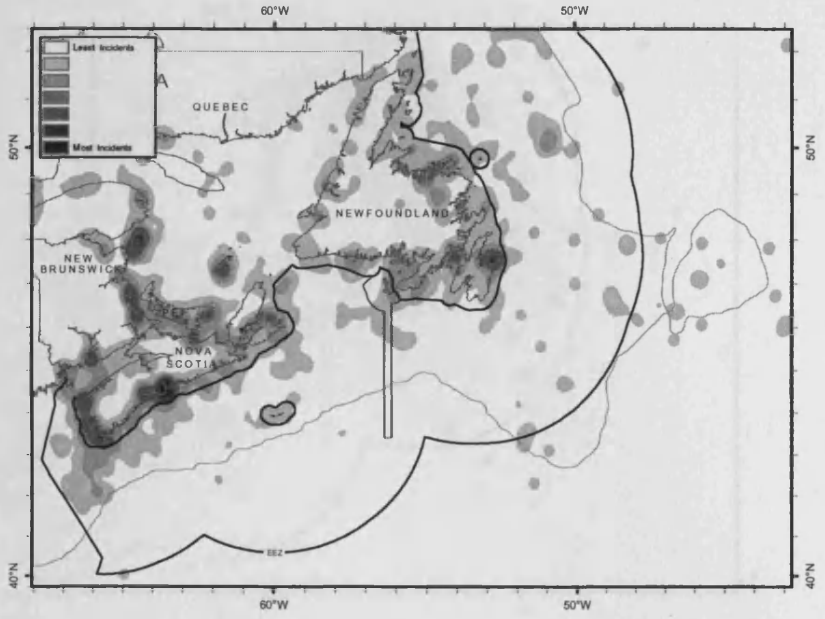


Figure D-16. SAR Incidents 1999-2002 – Fall Months Surface Model

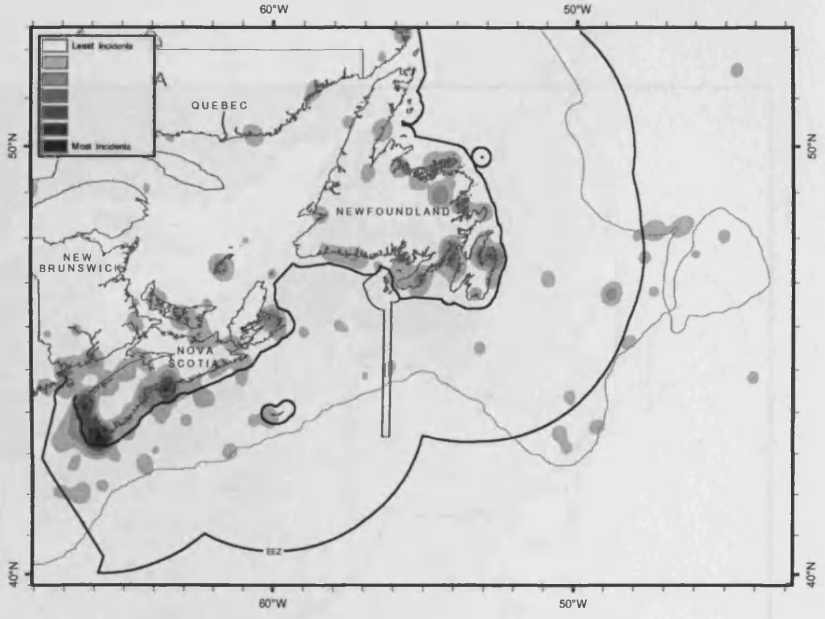


Figure D-17. SAR Incidents 1999-2002 – Winter Months Surface Model

Appendix E

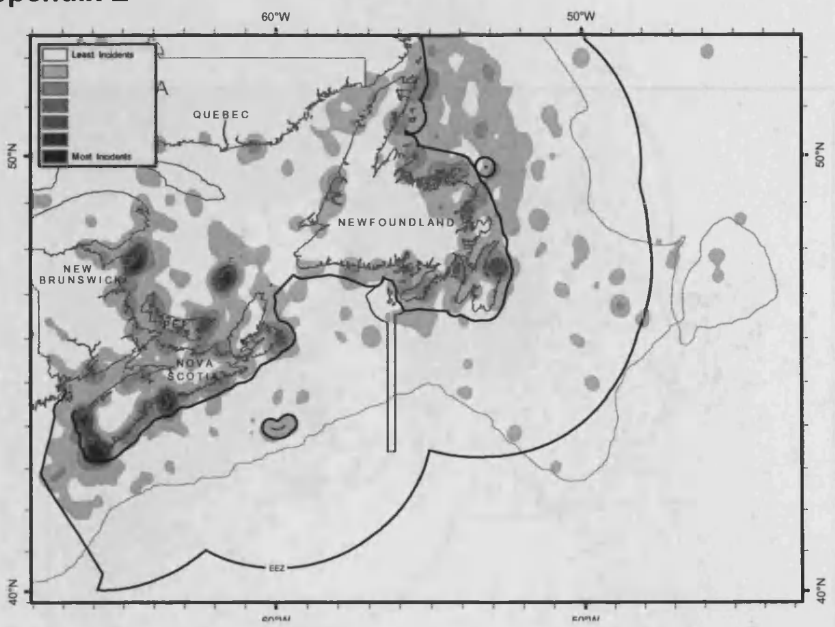


Figure D-18. SAR Incidents 1999-2002 – Spring Months Surface Model

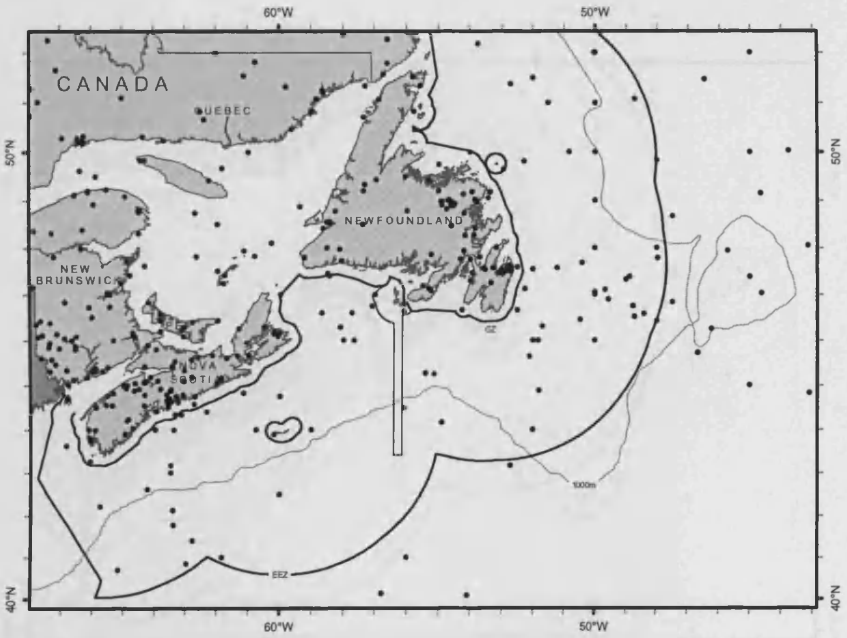


Figure D-19. SAR Incidents 1999-2002 – Air

Appendix E

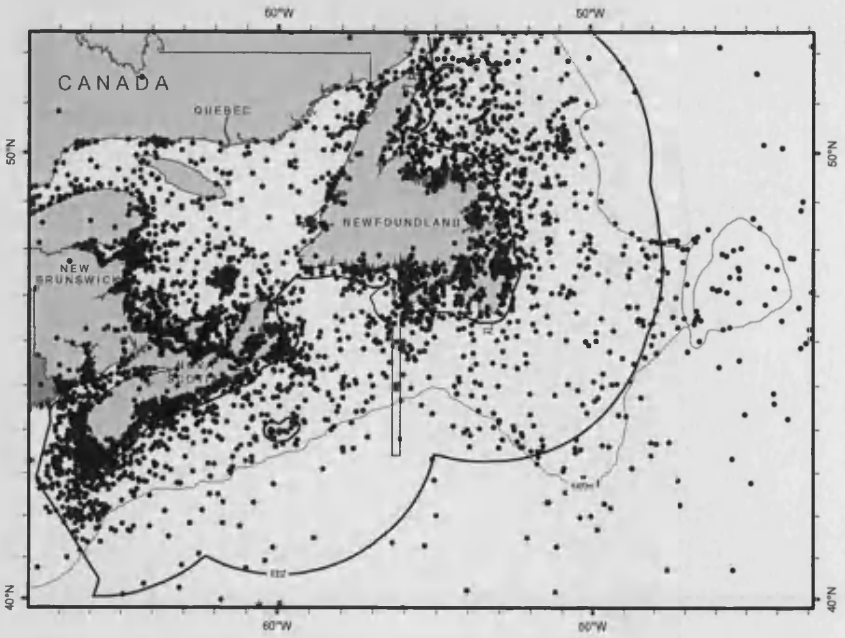


Figure D-20. SAR Incidents 1999-2002 – Marine

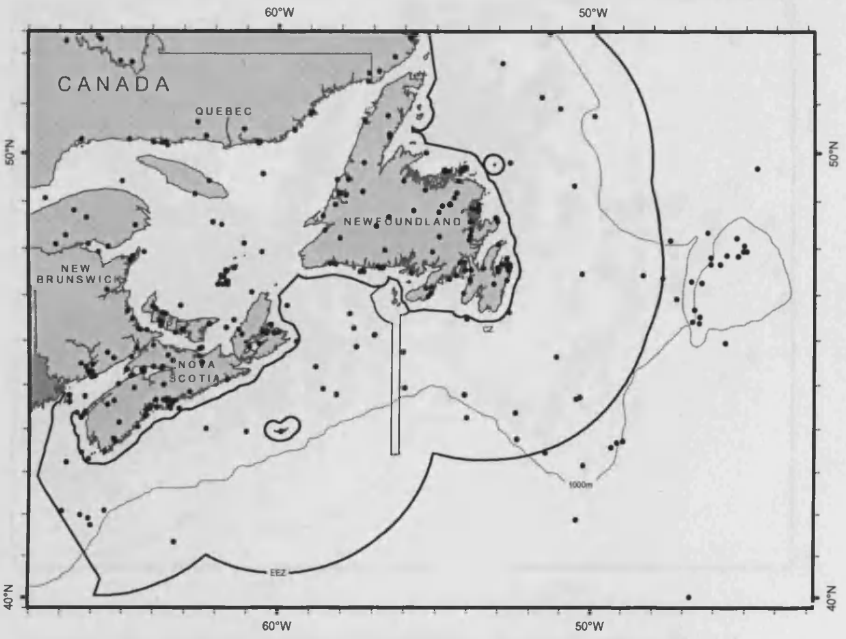


Figure D-21. SAR Incidents 1999-2002 – Humanitarian

Appendix E

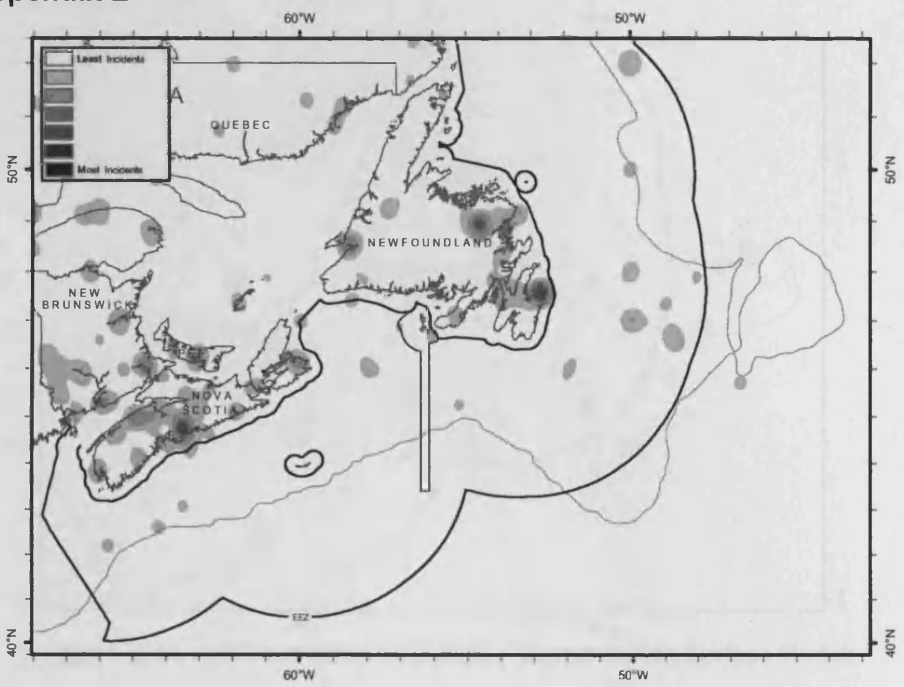


Figure D-22. SAR Incidents 1999-2002 – Air Surface Model

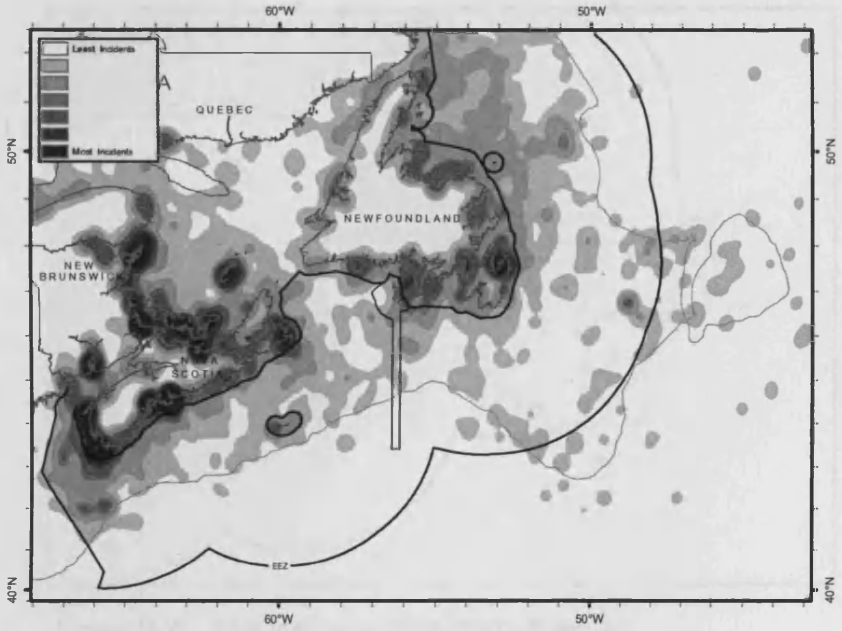


Figure D-23. SAR Incidents 1999-2002 – Marine Surface Model

Appendix E

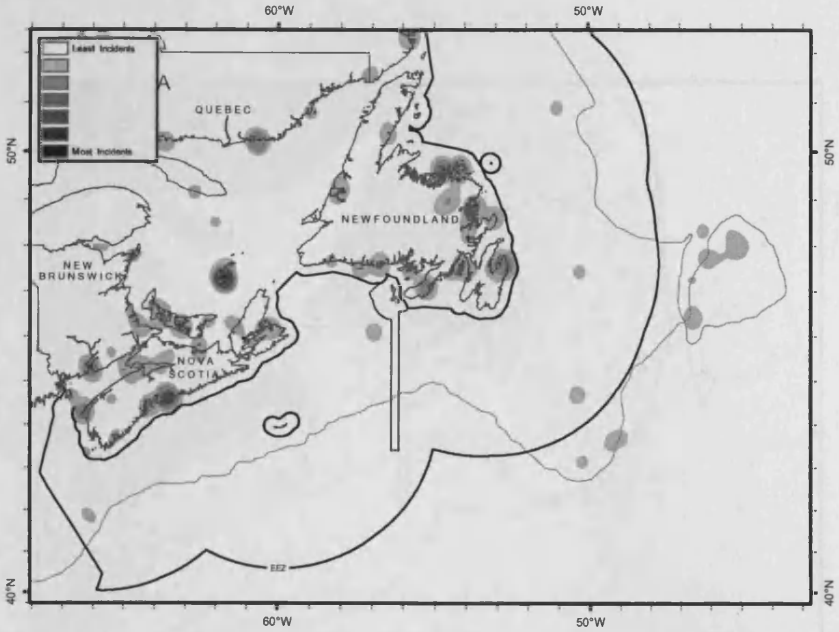


Figure D-24. SAR Incidents 1999-2002 – Humanitarian Surface Model

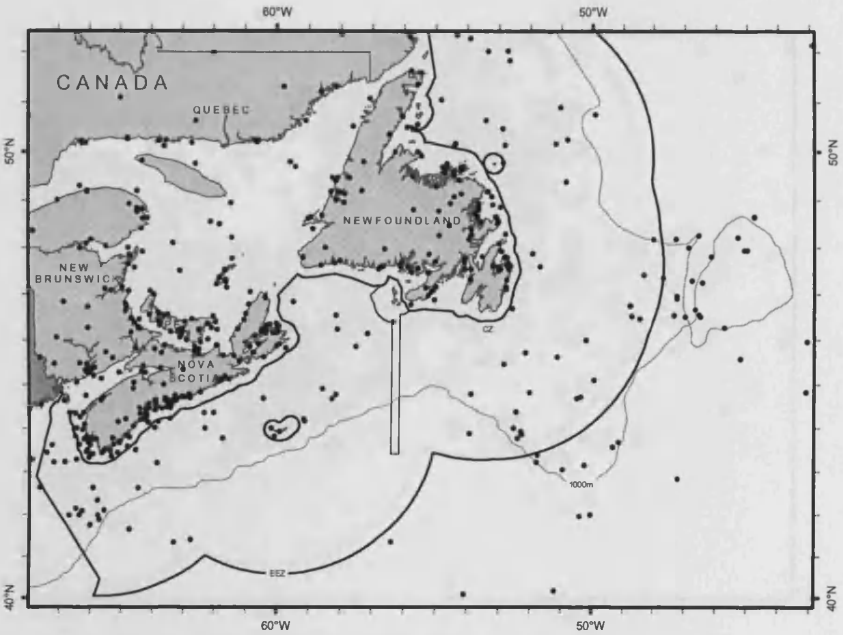


Figure D-25. SAR Incidents 1999-2002 – Distress

Appendix E

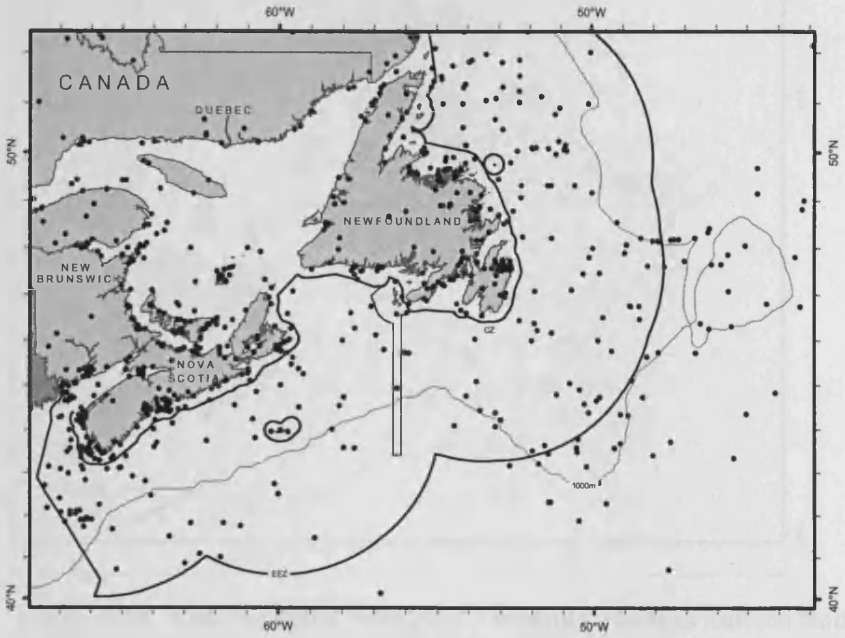


Figure D-26. SAR Incidents 1999-2002 – Potential Distress

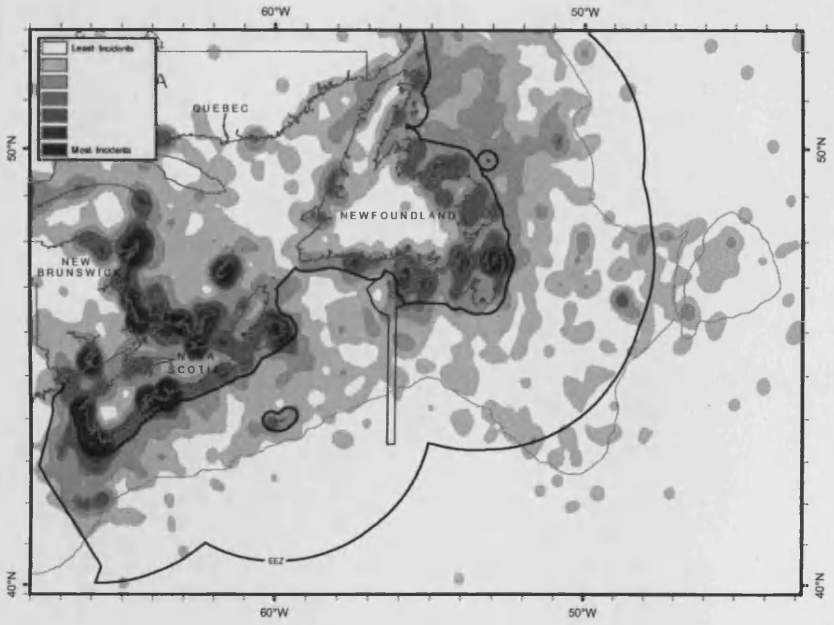


Figure D-27. SAR Incidents 1999-2002 – Distress Surface Model

Appendix E

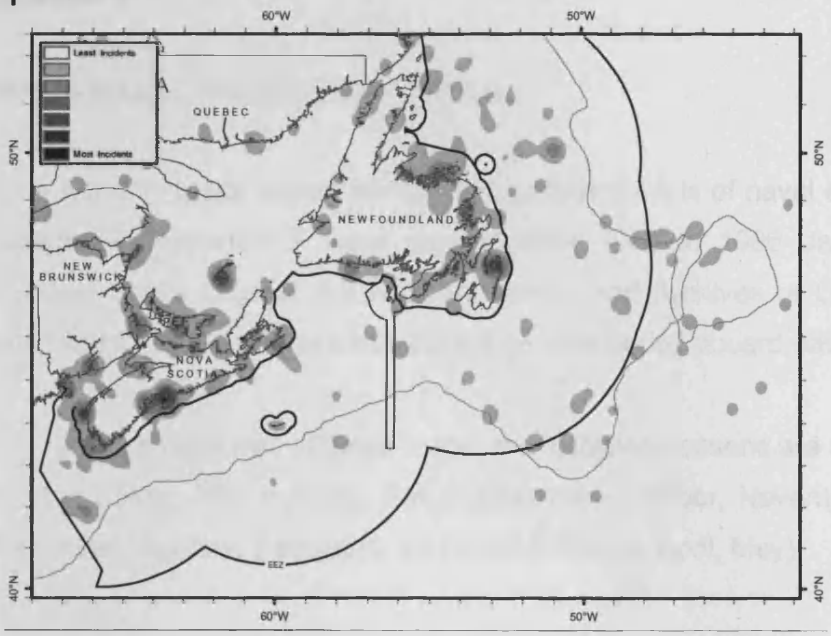


Figure D-28. SAR Incidents 1999-2002 – Potential Distress Surface Model

Appendix F

MAPS – NAVAL FISHERIES PATROLS

Maps of naval vessel tracks, and surface models of naval enforcement presence in Appendix F were created from 1980 to 1996 data found in individual Ship's Logs at the National Library and Archives of Canada, and from 1999 to 2003 from research track logs maintained aboard naval vessels.

For the purposes of these maps, the following seasons are defined: Summer (June, July, August), Fall (September, October, November), Winter (December, January, February), and Spring (March, April, May).

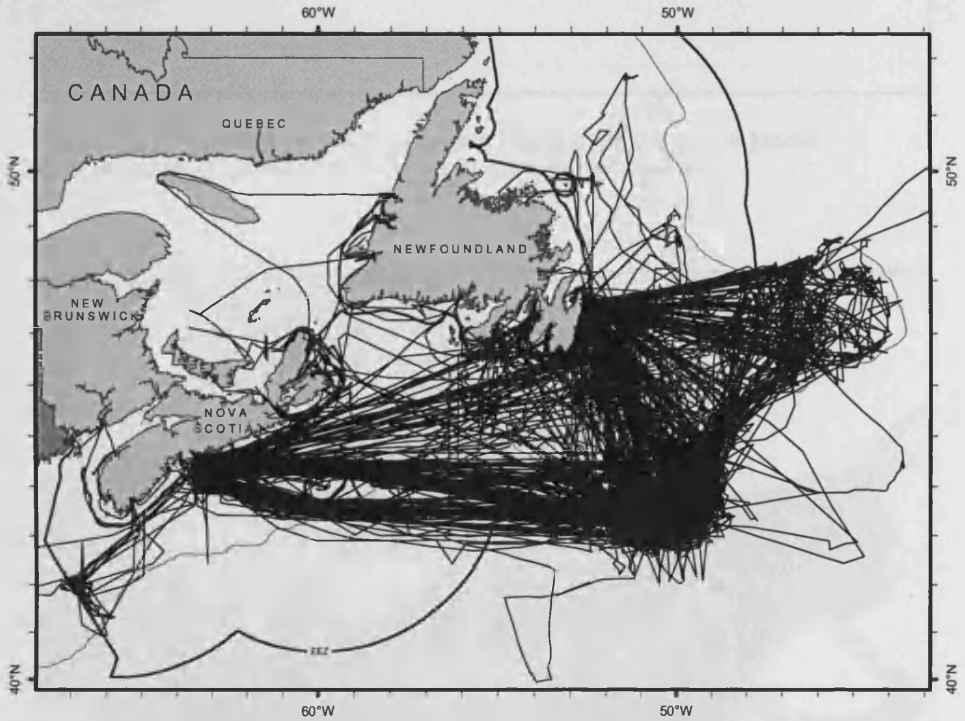


Figure F-1. Naval Fisheries Patrols 1980 – 2003 – Raw Tracks
Source: National Library and Archives of Canada (87 vessels); Ship track logs (33 vessels)

Appendix F

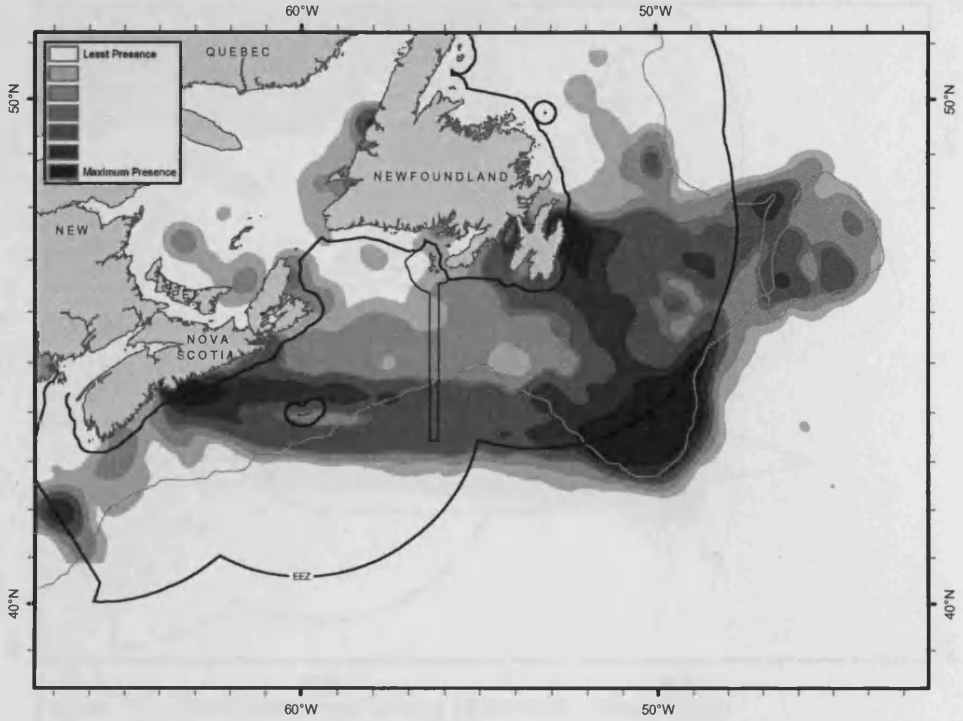


Figure F-2. Naval Fisheries Presence 1980 to 1997 – Surface Model
Source: National Library and Archives of Canada (86 vessels)

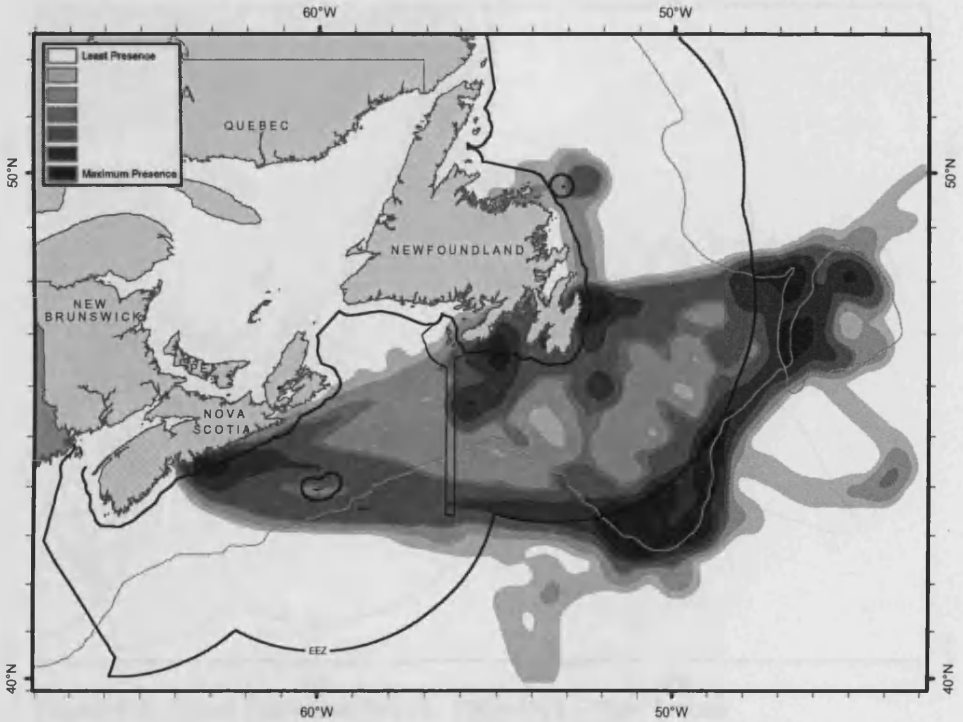


Figure F-3. Naval Fisheries Presence 1999 to 2003 – Surface Model
Source: Ship track logs (33 vessels)

Appendix F

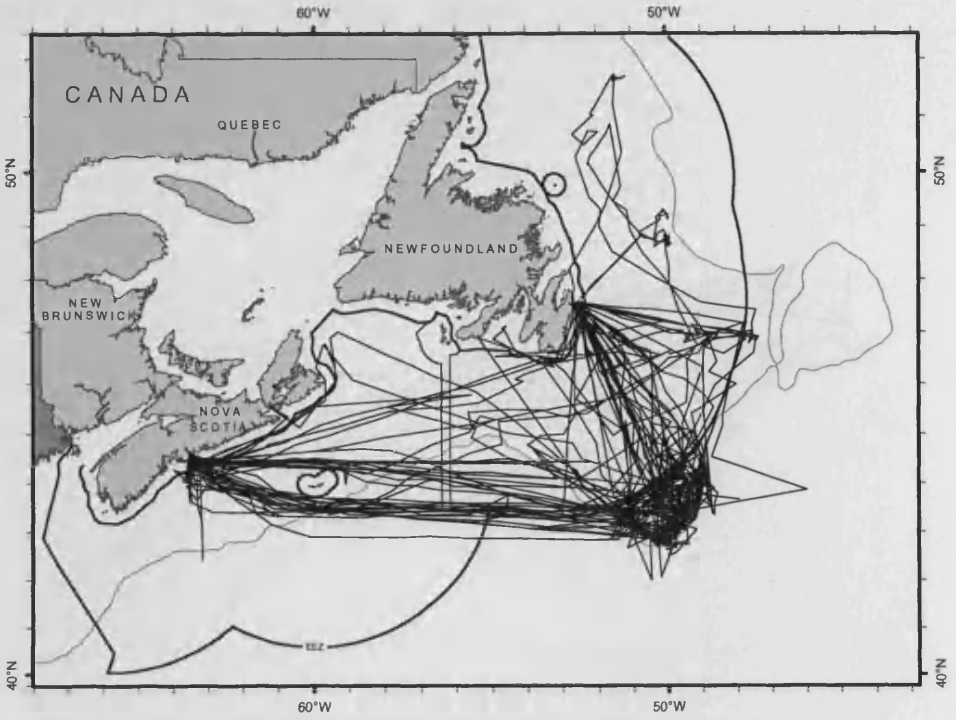


Figure F-4. Naval Fisheries Patrols 1980-1984 – Raw Tracks
Source: National Library and Archives of Canada (17 vessels)

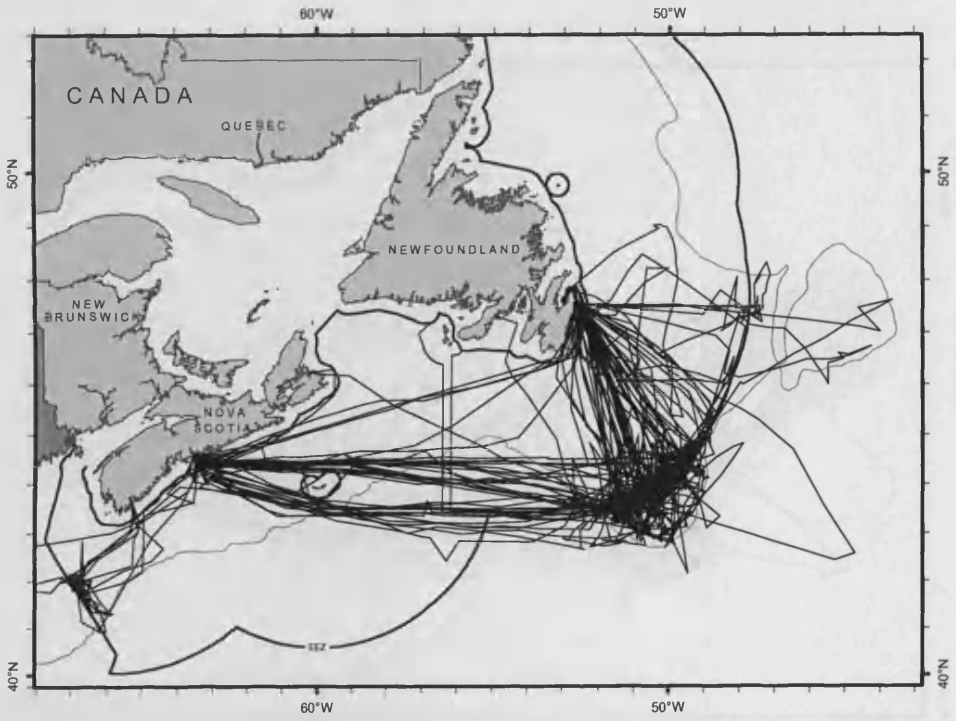


Figure F-5. Naval Fisheries Patrols 1985-1989 – Raw Tracks
Source: National Library and Archives of Canada (23 vessels)

Appendix F

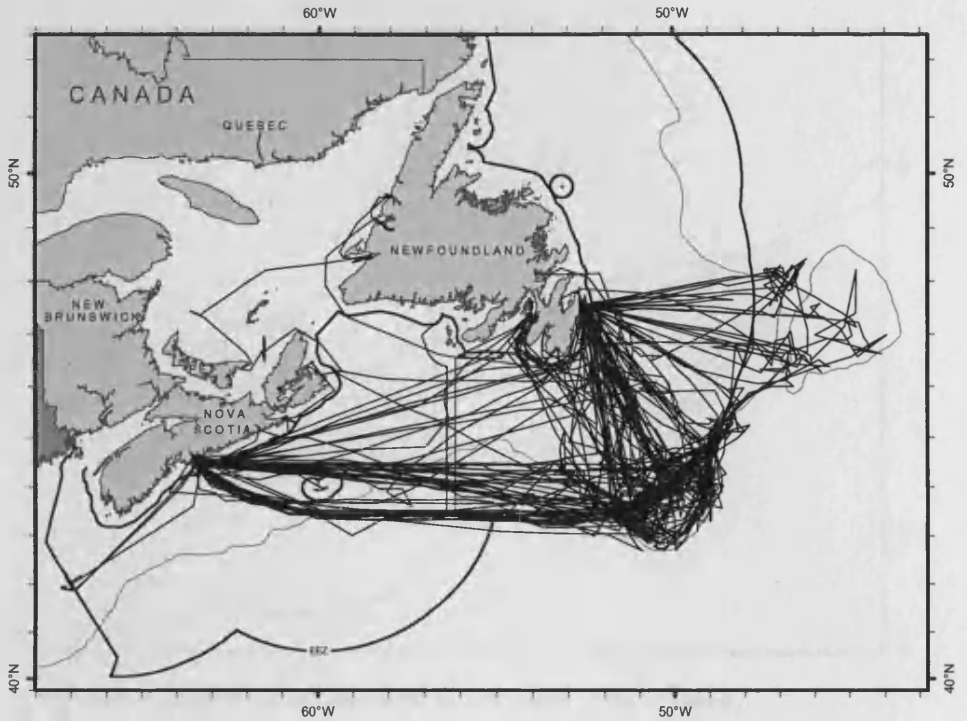


Figure F-6. Naval Fisheries Patrols 1990-1994 – Raw Tracks
Source: National Library and Archives of Canada (29 vessels)

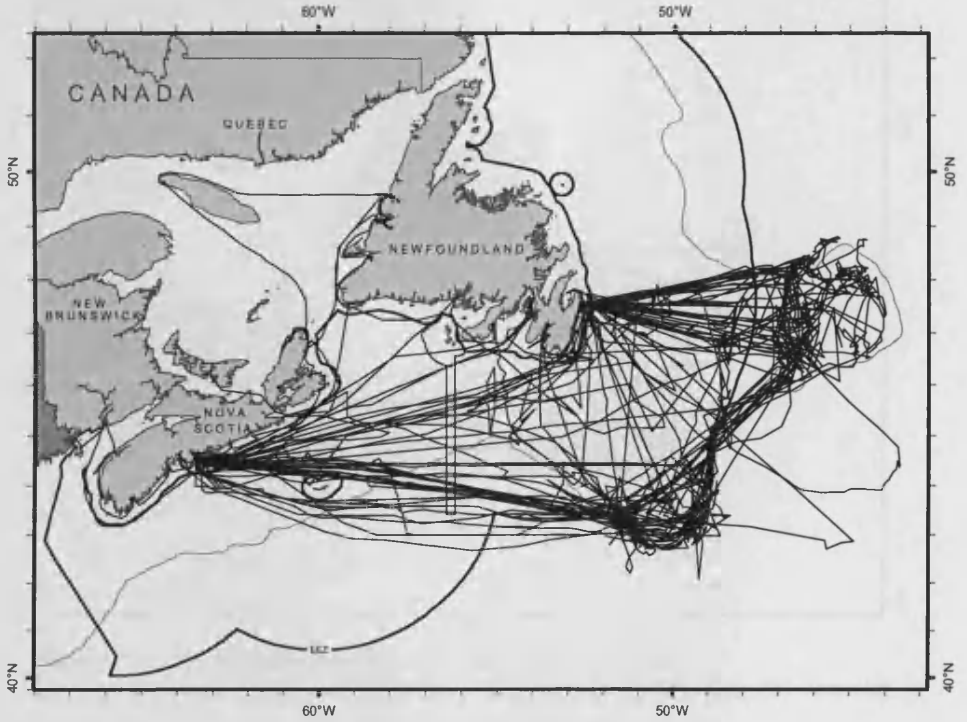


Figure F-7. Naval Fisheries Patrols 1995-1999 – Raw Tracks
Source: National Library and Archives of Canada (27 vessels)

Appendix F

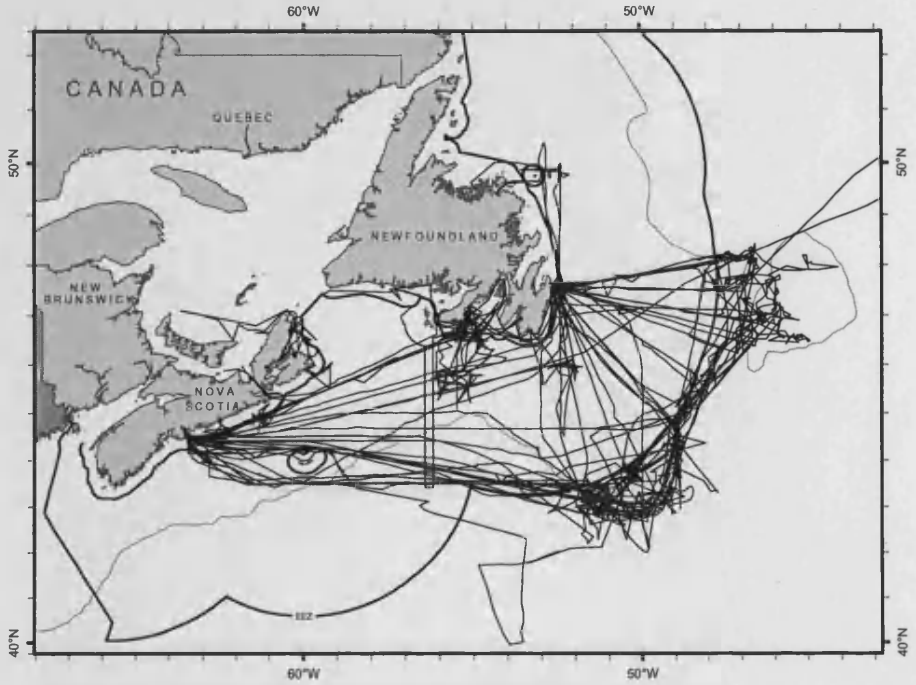


Figure F-8. Naval Fisheries Patrols 2000-2003 – Raw Tracks
Source: National Library and Archives of Canada (23 vessels)

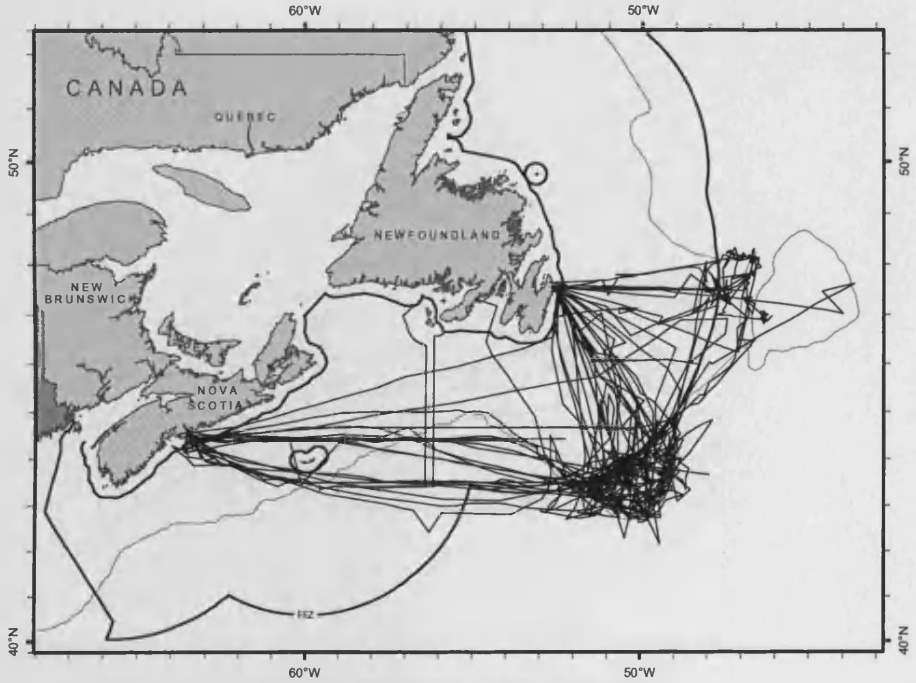


Figure F-9. Naval Fisheries Patrols 1980-2003 – January
Source: National Library and Archives of Canada, Ship track logs (11 vessels)

Appendix F

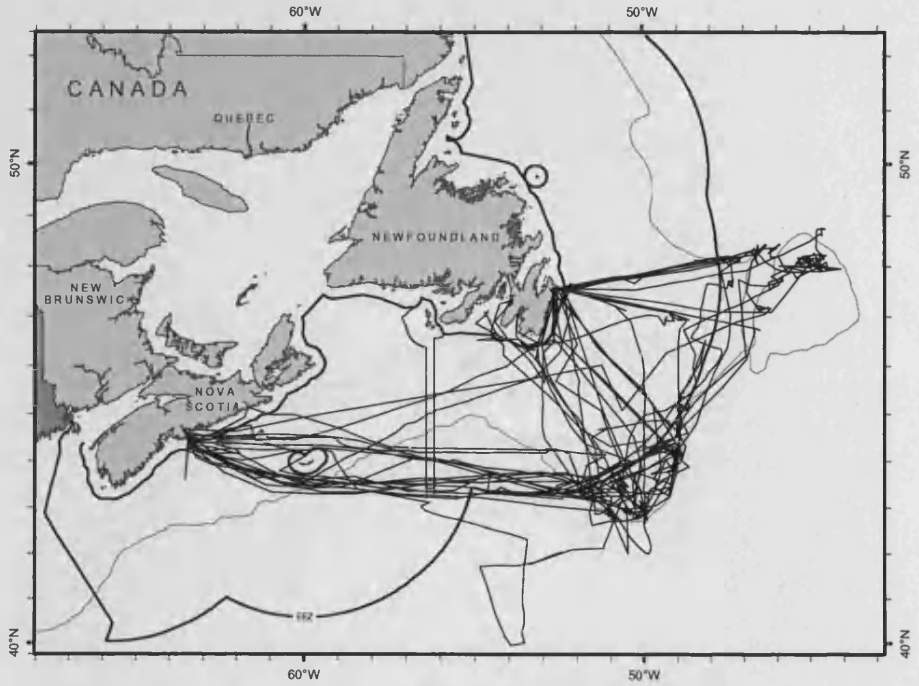


Figure F-10. Naval Fisheries Patrols 1980-2003 – February
Source: National Library and Archives of Canada, Ship track logs (10 vessels)

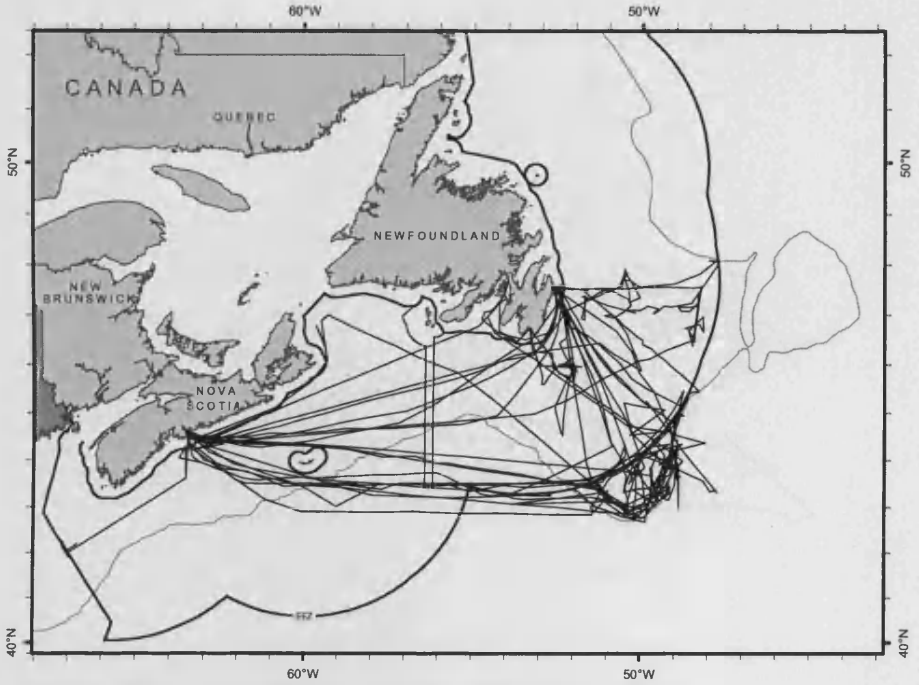


Figure F-11. Naval Fisheries Patrols 1980-2003 – March
Source: National Library and Archives of Canada, Ship track logs (10 vessels)

Appendix F

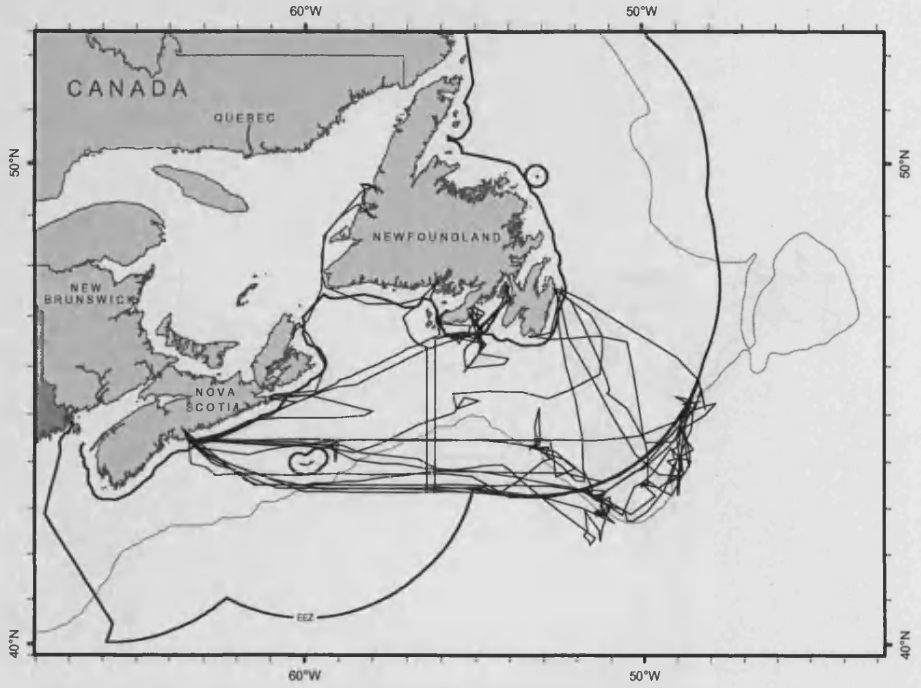


Figure F-12. Naval Fisheries Patrols 1980-2003 – April
Source: National Library and Archives of Canada, Ship track logs (8 vessels)

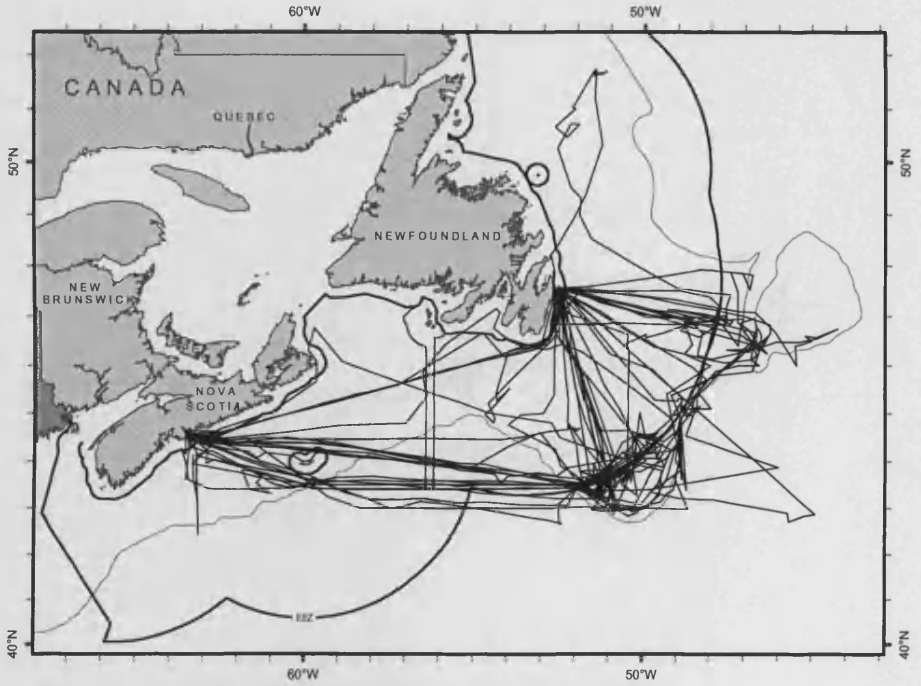


Figure F-13. Naval Fisheries Patrols 1980-2003 – May
Source: National Library and Archives of Canada, Ship track logs (12 vessels)

Appendix F

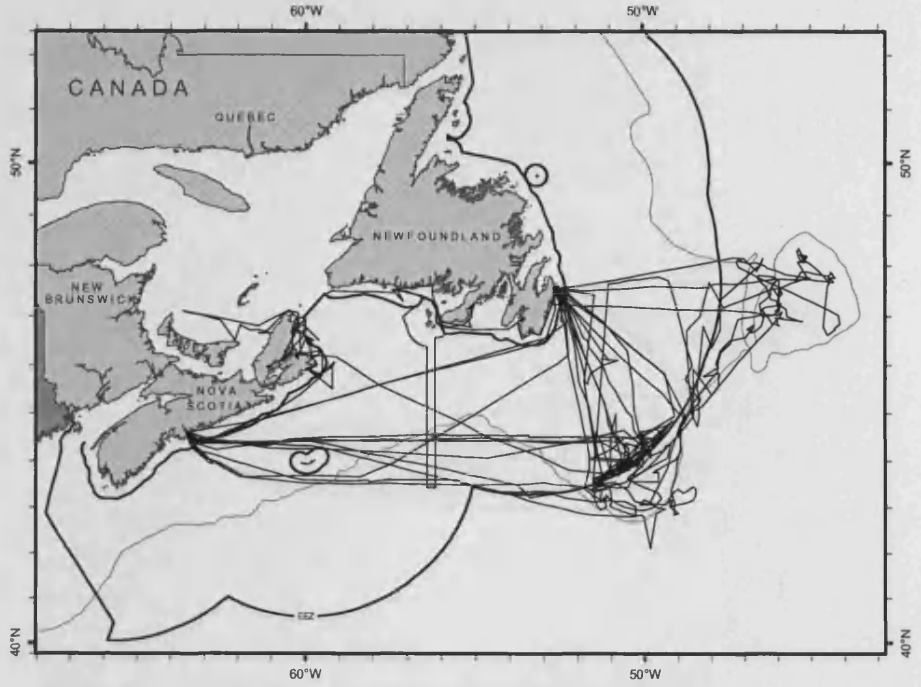


Figure F-14. Naval Fisheries Patrols 1980-2003 – June
Source: National Library and Archives of Canada, Ship track logs (10 vessels)

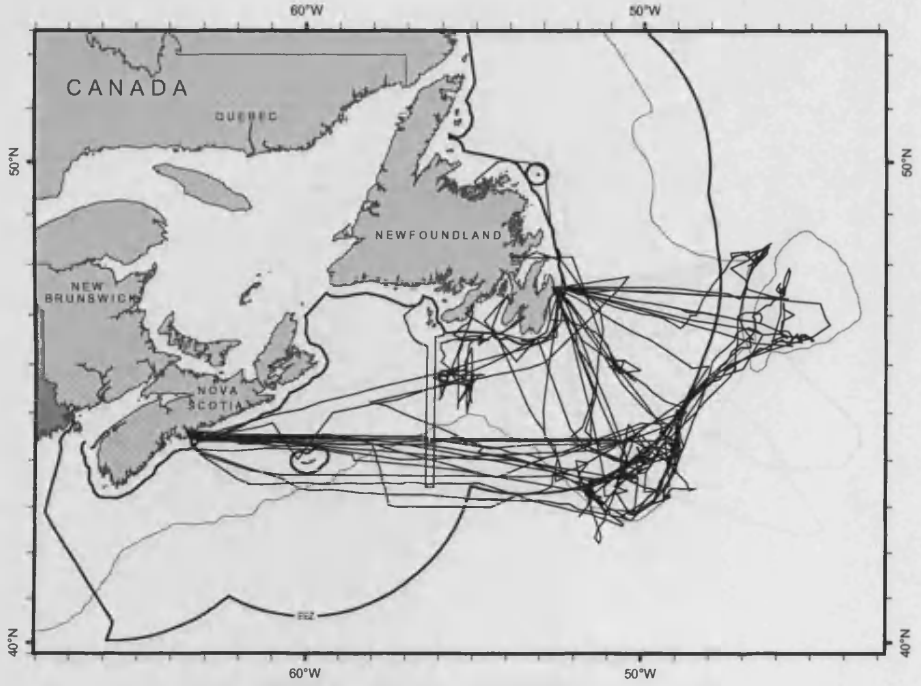


Figure F-15. Naval Fisheries Patrols 1980-2003 – July
Source: National Library and Archives of Canada, Ship track logs (9 vessels)

Appendix F

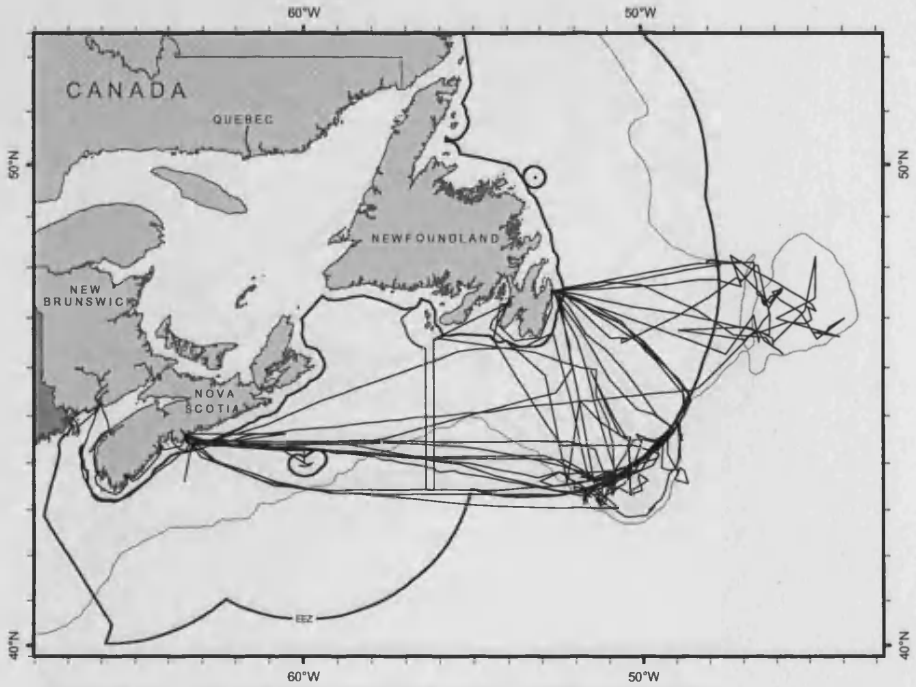


Figure F-16. Naval Fisheries Patrols 1980-2003 – August
Source: National Library and Archives of Canada, Ship track logs (7 vessels)

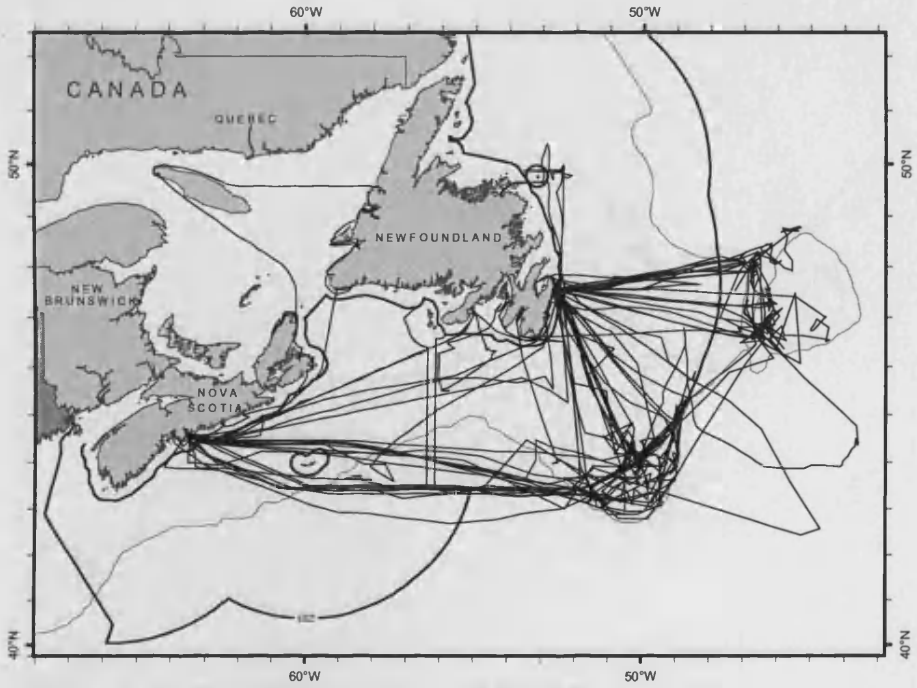


Figure F-17. Naval Fisheries Patrols 1980-2003 – September
Source: National Library and Archives of Canada, Ship track logs (14 vessels)

Appendix F

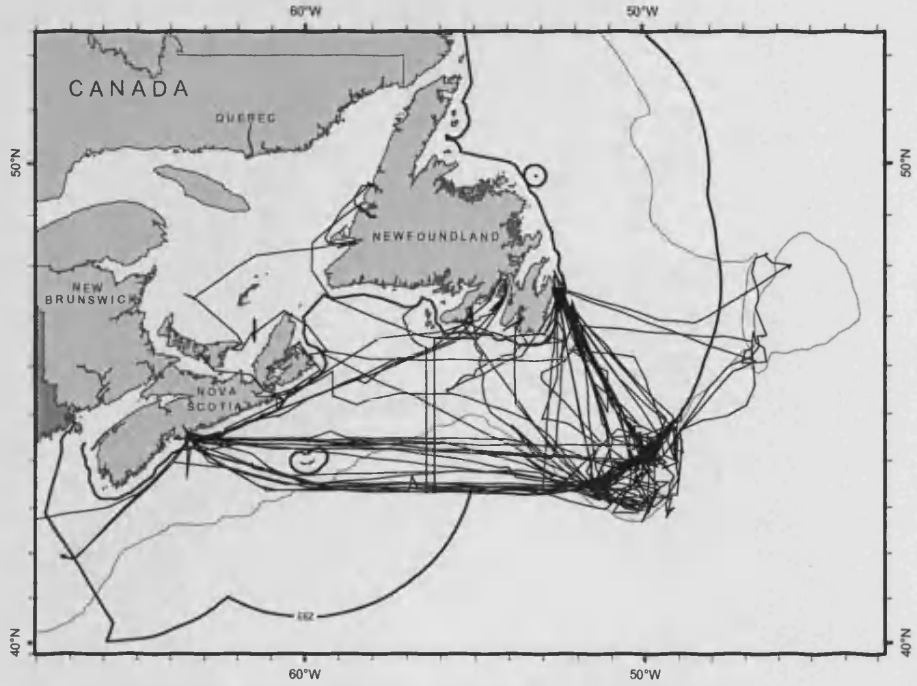


Figure F-18. Naval Fisheries Patrols 1980-2003 – October
Source: National Library and Archives of Canada, Ship track logs (13 vessels)

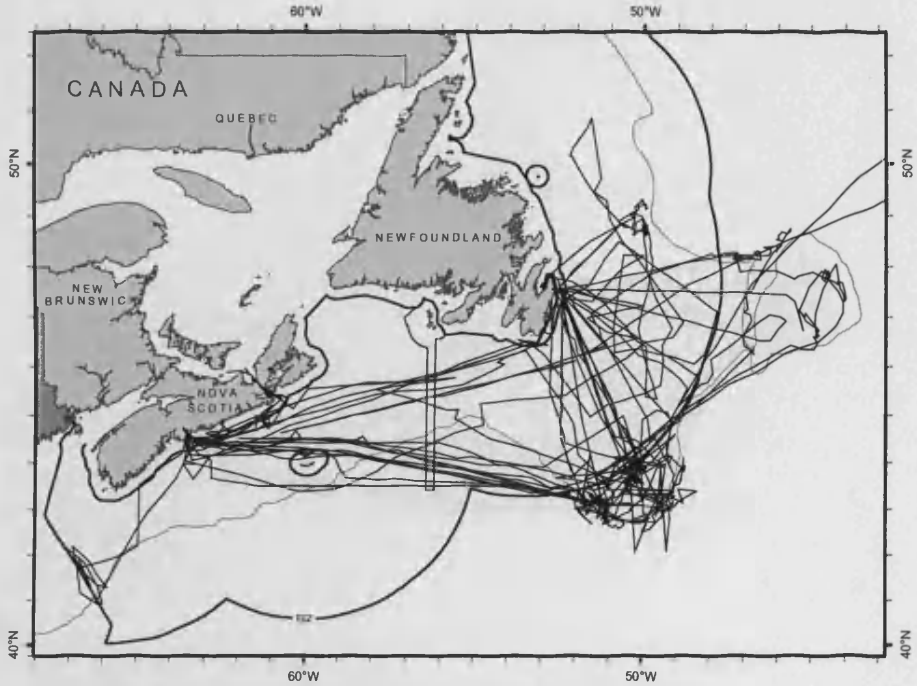


Figure F-19. Naval Fisheries Patrols 1980-2003 – November
Source: National Library and Archives of Canada, Ship track logs (12 vessels)

Appendix F

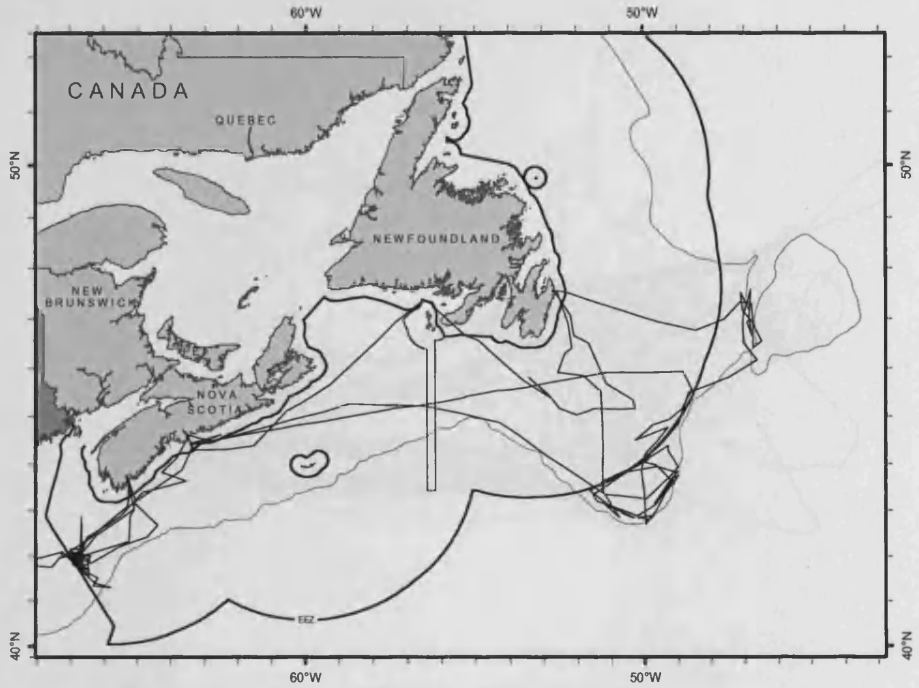


Figure F-20. Naval Fisheries Patrols 1980-2003 – December
Source: National Library and Archives of Canada, Ship track logs (3 vessels)

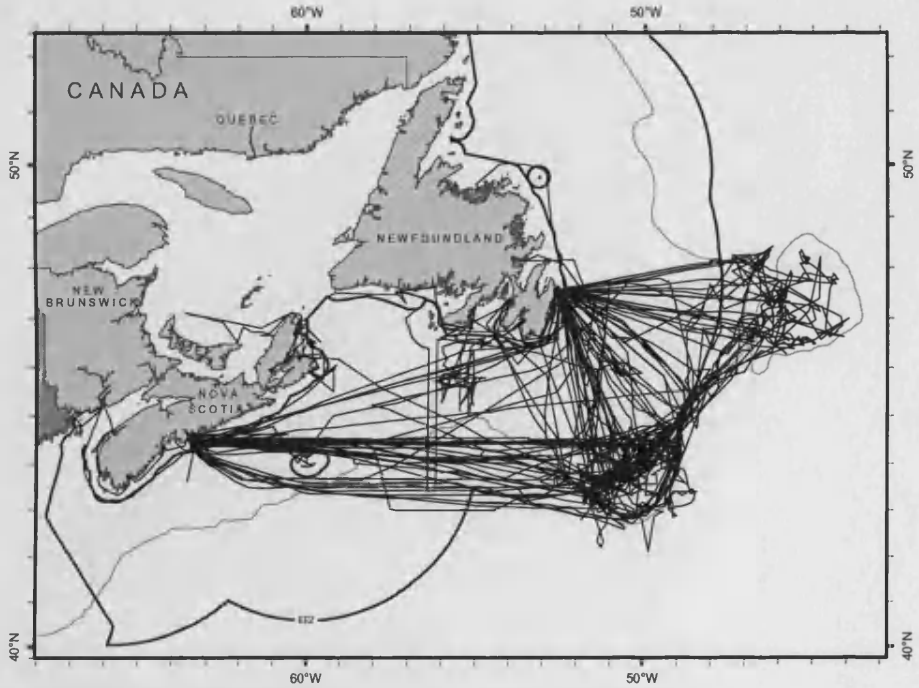


Figure F-21. Naval Fisheries Patrols 1980-2003 – Summer
Source: National Library and Archives of Canada, Ship track logs (26 vessels)

Appendix F

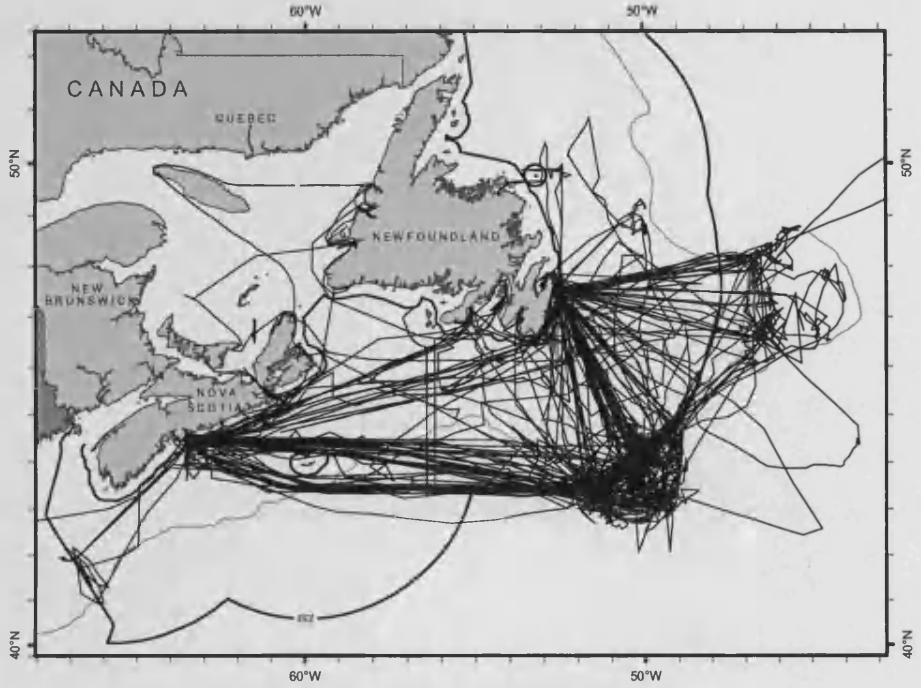


Figure F-22. Naval Fisheries Patrols 1980-2003 – Fall
Source: National Library and Archives of Canada, Ship track logs (39 vessels)

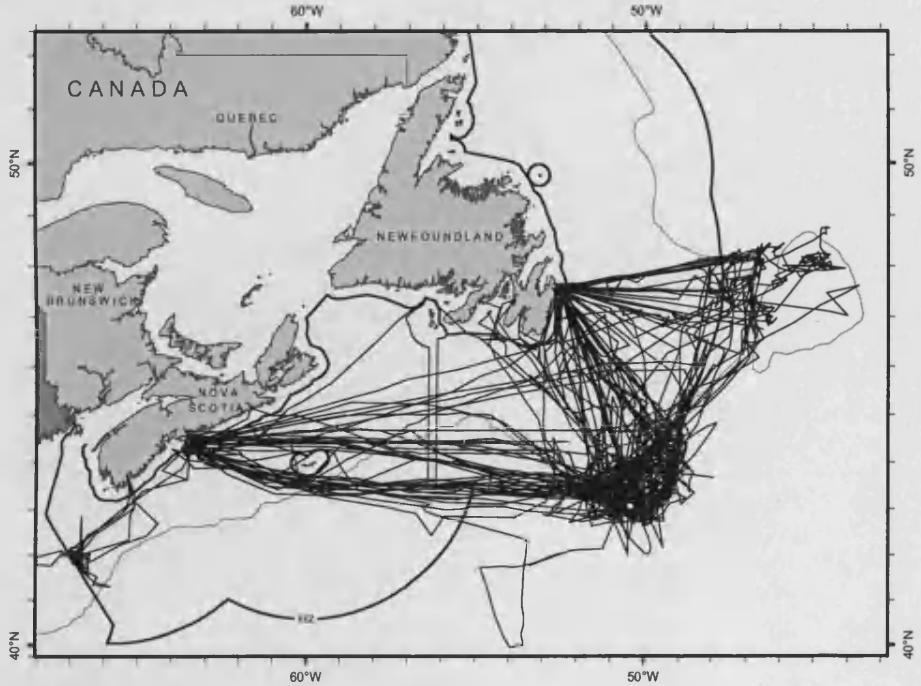


Figure F-23. Naval Fisheries Patrols 1980-2003 – Winter
Source: National Library and Archives of Canada, Ship track logs (24 vessels)

Appendix F

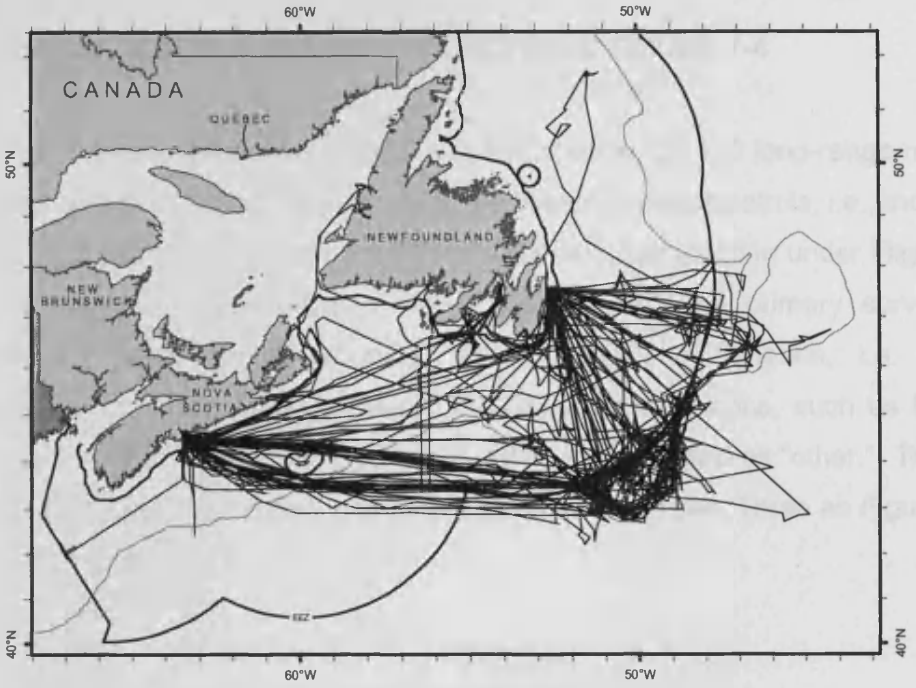


Figure F-24. Naval Fisheries Patrols 1980-2003 – Spring
Source: National Library and Archives of Canada, Ship track logs (30 vessels)

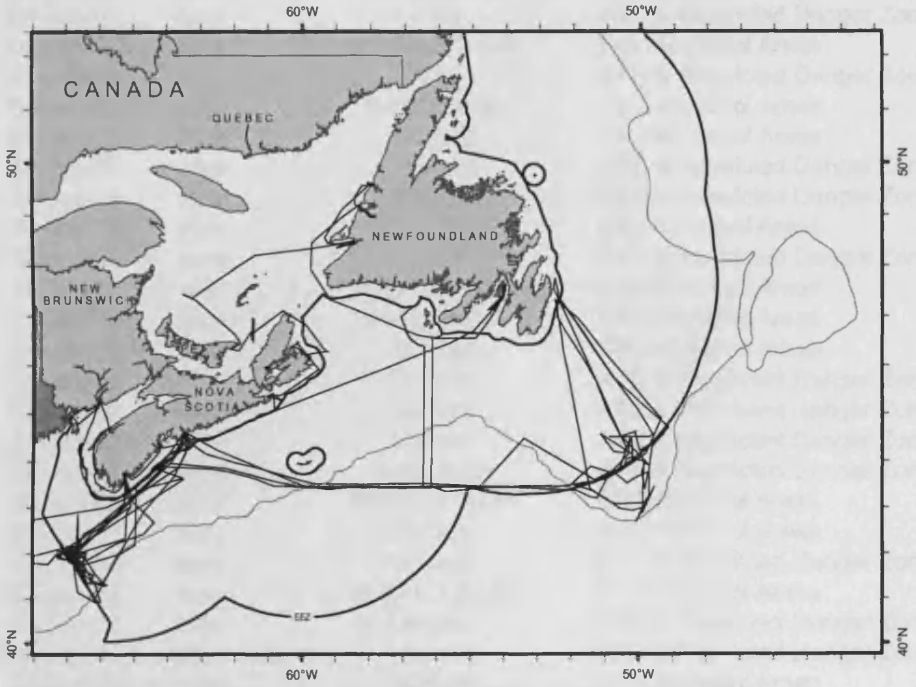


Figure F-25. Hague Line Naval Fisheries Patrols by 1980-1997
Source: National Library and Archives of Canada, (7 vessels)

Appendix G

CP-140 (AURORA) PATROLS DEPICTED IN FIGURE 7-4

Table G-1 contains the areas patrolled by CP-140 long-range maritime patrol aircraft during the year 2002. Dedicated fisheries patrols, i.e., those with a DFO fisheries enforcement officer embarked, are listed in under Flight Type as "fishpats." Surveillance flights during which the primary surveillance mission was something other than support to fisheries, i.e. military surveillance, are listed as "surv." All other flight missions, such as training, combat readiness proficiency, trials, and SAR are listed as "other." The grids used to plan the CP-140 missions are found in Chapter Three as Figures 3-6, 3-7, 3-8, and 3-12.

TABLE G-1

CP-140 AURORA AIRCRAFT PATROLS IN FIGURE 7-4

Date	Flight type	Areas of Patrol	Grid Used for Patrol
02-Jan-02	surv	94/NS South	CP-140 Patrol Areas
04-Jan-02	surv	A-63	ATC & Restricted Danger Zones
06-Jan-02	surv	95/NFLD South	CP-140 Patrol Areas
07-Jan-02	surv	A-63	ATC & Restricted Danger Zones
08-Jan-02	surv	94/NS South	CP-140 Patrol Areas
09-Jan-02	other	90/Gulf	CP-140 Patrol Areas
11-Jan-02	other	Unicorn	ATC & Restricted Danger Zones
11-Jan-02	other	Unicorn	ATC & Restricted Danger Zones
12-Jan-02	surv	94/NS South	CP-140 Patrol Areas
13-Jan-02	surv	A-62	ATC & Restricted Danger Zones
14-Jan-02	surv	95/NFLD South	CP-140 Patrol Areas
15-Jan-02	surv	94/NS South	CP-140 Patrol Areas
15-Jan-02	other	90/Gulf	CP-140 Patrol Areas
16-Jan-02	other	Unicorn	ATC & Restricted Danger Zones
17-Jan-02	other	Unicorn	ATC & Restricted Danger Zones
18-Jan-02	other	Unicorn	ATC & Restricted Danger Zones
19-Jan-02	surv	A-62, A-66	ATC & Restricted Danger Zones
20-Jan-02	surv	95/NFLD South	CP-140 Patrol Areas
21-Jan-02	surv	90/Gulf	CP-140 Patrol Areas
21-Jan-02	surv	Unicorn	ATC & Restricted Danger Zones
22-Jan-02	surv	95/NFLD South	CP-140 Patrol Areas
22-Jan-02	other	Unicorn	ATC & Restricted Danger Zones
23-Jan-02	other	Unicorn	ATC & Restricted Danger Zones
23-Jan-02	other	90/Gulf	CP-140 Patrol Areas
23-Jan-02	surv	A-63	ATC & Restricted Danger Zones
24-Jan-02	other	Unicorn	ATC & Restricted Danger Zones
24-Jan-02	other	90/Gulf	CP-140 Patrol Areas
24-Jan-02	other	Unicorn	ATC & Restricted Danger Zones
25-Jan-02	surv	95/NFLD South	CP-140 Patrol Areas

Appendix G

TABLE G-1 (continued)

CP-140 AURORA AIRCRAFT PATROLS IN FIGURE 7-4

Date	Flight type	Areas of Patrol	Grid Used for Patrol
25-Jan-02	other	90/Gulf	CP-140 Patrol Areas
28-Jan-02	other	Unicorn	ATC & Restricted Danger Zones
28-Jan-02	other	Unicorn	ATC & Restricted Danger Zones
29-Jan-02	other	90/Gulf	CP-140 Patrol Areas
30-Jan-02	other	90/Gulf	CP-140 Patrol Areas
30-Jan-02	other	G1, G2, G3, G4	MARLOAS
30-Jan-02	other	G1, G2, G3, G4	MARLOAS
30-Jan-02	other	G1, G2, G3, G4	MARLOAS
30-Jan-02	other	G1, G2, G3, G4	MARLOAS
31-Jan-02	other	G1, G2, G3, G4	MARLOAS
31-Jan-02	other	Unicorn	ATC & Restricted Danger Zones
31-Jan-02	other	G1, G2, G3, G4	MARLOAS
01-Feb-02	other	90/Gulf	CP-140 Patrol Areas
03-Feb-02	surv	95/NFLD South	CP-140 Patrol Areas
04-Feb-02	other	90/Gulf	CP-140 Patrol Areas
05-Feb-02	surv	95/NFLD South	CP-140 Patrol Areas
05-Feb-02	other	90/Gulf	CP-140 Patrol Areas
06-Feb-02	other	90/Gulf	CP-140 Patrol Areas
06-Feb-02	surv	92/NS Outer	CP-140 Patrol Areas
06-Feb-02	other	F1	MARLOAS
07-Feb-02	other	90/Gulf	CP-140 Patrol Areas
07-Feb-02	other	A-67	ATC & Restricted Danger Zones
07-Feb-02	other	90/Gulf	CP-140 Patrol Areas
09-Feb-02	surv	94/NS South	CP-140 Patrol Areas
11-Feb-02	other	Unicorn	ATC & Restricted Danger Zones
12-Feb-02	surv	A-63	ATC & Restricted Danger Zones
13-Feb-02	other	Unicorn	ATC & Restricted Danger Zones
14-Feb-02	other	Unicorn	ATC & Restricted Danger Zones
14-Feb-02	other	90/Gulf	CP-140 Patrol Areas
18-Feb-02	other	Unicorn	ATC & Restricted Danger Zones
18-Feb-02	surv	A-67	ATC & Restricted Danger Zones
19-Feb-02	surv	A-62	ATC & Restricted Danger Zones
21-Feb-02	other	Unicorn	ATC & Restricted Danger Zones
22-Feb-02	other	Unicorn	ATC & Restricted Danger Zones
22-Feb-02	other	A-67	ATC & Restricted Danger Zones
26-Feb-02	other	94/NS South	CP-140 Patrol Areas
27-Feb-02	other	Unicorn	ATC & Restricted Danger Zones
27-Feb-02	other	90/Gulf	CP-140 Patrol Areas
28-Feb-02	surv	A-63	ATC & Restricted Danger Zones
01-Mar-02	other	Unicorn	ATC & Restricted Danger Zones
01-Mar-02	other	90/Gulf	CP-140 Patrol Areas
03-Mar-02	surv	96/Grand Banks	CP-140 Patrol Areas
06-Mar-02	surv	95/NFLD South	CP-140 Patrol Areas
05-Mar-02	other	Unicorn	ATC & Restricted Danger Zones
06-Mar-02	other	92/NS Outer	CP-140 Patrol Areas
06-Mar-02	other	Unicorn	ATC & Restricted Danger Zones
07-Mar-02	other	Unicorn	ATC & Restricted Danger Zones
08-Mar-02	other	F1	MARLOAS
08-Mar-02	surv	98/Belle Strait	CP-140 Patrol Areas
08-Mar-02	other	Unicorn	ATC & Restricted Danger Zones

Appendix G

TABLE G-1 (continued)

CP-140 AURORA AIRCRAFT PATROLS IN FIGURE 7-4

Date	Flight type	Areas of Patrol	Grid Used for Patrol
09-Mar-02	other	Unicorn	ATC & Restricted Danger Zones
09-Mar-02	surv	95/NFLD South	CP-140 Patrol Areas
11-Mar-02	other	Unicorn	ATC & Restricted Danger Zones
12-Mar-02	other	Unicorn	ATC & Restricted Danger Zones
13-Mar-02	other	Unicorn	ATC & Restricted Danger Zones
13-Mar-02	other	A-62	ATC & Restricted Danger Zones
14-Mar-02	surv	95/NFLD South	CP-140 Patrol Areas
14-Mar-02	surv	94/NS South	CP-140 Patrol Areas
15-Mar-02	other	Unicorn	ATC & Restricted Danger Zones
16-Mar-02	surv	90/Gulf	CP-140 Patrol Areas
17-Mar-02	surv	94/NS South	CP-140 Patrol Areas
18-Mar-02	surv	98/Belle Strait	CP-140 Patrol Areas
18-Mar-02	surv	91	CP-140 Patrol Areas
20-Mar-02	surv	93/NFLD Inner	CP-140 Patrol Areas
19-Mar-02	surv	A-67	ATC & Restricted Danger Zones
19-Mar-02	surv	92/NS Outer	CP-140 Patrol Areas
18-Mar-02	other	A-67	ATC & Restricted Danger Zones
21-Mar-02	surv	94/NS South	CP-140 Patrol Areas
21-Mar-02	surv	95/NFLD South	CP-140 Patrol Areas
23-Mar-02	other	A-67	ATC & Restricted Danger Zones
28-Mar-02	other	Unicorn	ATC & Restricted Danger Zones
29-Mar-02	surv	95/NFLD South	CP-140 Patrol Areas
02-Apr-02	other	90/Gulf	CP-140 Patrol Areas
02-Apr-02	fishpat	3L, 3M, 3N, 3O	NAFO
03-Apr-02	other	A-63	ATC & Restricted Danger Zones
04-Apr-02	fishpat	3L, 3M, 3N, 3O	NAFO
03-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
06-Apr-02	surv	94/NS South	CP-140 Patrol Areas
05-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
05-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
05-Apr-02	surv	3L, 3M, 3N, 3O	NAFO
09-Apr-02	fishpat	3L, 3M, 3N, 3O	NAFO
11-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
11-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
12-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
13-Apr-02	surv	95/NFLD South	CP-140 Patrol Areas
14-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
15-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
15-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
17-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
19-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
19-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
20-Apr-02	other	94/NS South	CP-140 Patrol Areas
21-Apr-02	other	94/NS South	CP-140 Patrol Areas
22-Apr-02	fishpat	3L, 3M, 3N, 3O	NAFO
23-Apr-02	fishpat	3L, 3M, 3N, 3O	NAFO
24-Apr-02	other	90/Gulf	CP-140 Patrol Areas
24-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
26-Apr-02	other	90/Gulf	CP-140 Patrol Areas
26-Apr-02	surv	Unicorn	ATC & Restricted Danger Zones

Appendix G

TABLE G-1 (continued)

CP-140 AURORA AIRCRAFT PATROLS IN FIGURE 7-4

Date	Flight type	Areas of Patrol	Grid Used for Patrol
28-Apr-02	other	A-67	ATC & Restricted Danger Zones
29-Apr-02	other	A-63	ATC & Restricted Danger Zones
30-Apr-02	other	3L, 3M, 3N, 3O	NAFO
30-Apr-02	other	Unicorn	ATC & Restricted Danger Zones
01-May-02	fishpat	3L, 3M, 3N, 3O	NAFO
01-May-02	fishpat	3L, 3M, 3N, 3O	NAFO
03-May-02	other	A-67	ATC & Restricted Danger Zones
04-May-02	other	Unicorn	ATC & Restricted Danger Zones
05-May-02	other	90/Gulf	CP-140 Patrol Areas
09-May-02	fishpat	3L, 3M, 3N, 3O	NAFO
09-May-02	other	Unicorn	ATC & Restricted Danger Zones
10-May-02	other	Unicorn	ATC & Restricted Danger Zones
11-May-02	surv	94/NS South	CP-140 Patrol Areas
12-May-02	other	90/Gulf	CP-140 Patrol Areas
13-May-02	other	Zebra	ATC & Restricted Danger Zones
13-May-02	other	A-67	ATC & Restricted Danger Zones
14-May-02	fishpat	0B, 2G, 2H	NAFO
15-May-02	fishpat	3L, 3M, 3N, 3O	NAFO
17-May-02	other	A-63	ATC & Restricted Danger Zones
19-May-02	other	90/Gulf	CP-140 Patrol Areas
21-May-02	other	A-63	ATC & Restricted Danger Zones
22-May-02	fishpat	3L, 3M, 3N, 3O	NAFO
23-May-02	fishpat	3L, 3M, 3N, 3O	NAFO
23-May-02	other	A-62	ATC & Restricted Danger Zones
24-May-02	other	Unicorn	ATC & Restricted Danger Zones
26-May-02	surv	95/NFLD South	CP-140 Patrol Areas
27-May-02	fishpat	3L, 3M, 3N, 3O	NAFO
28-May-02	fishpat	3L, 3M, 3N, 3O	NAFO
25-May-02	SAR	3P, 3S	NAFO
29-May-02	other	A-63	ATC & Restricted Danger Zones
30-May-02	other	A-62	ATC & Restricted Danger Zones
31-May-02	other	Unicorn	ATC & Restricted Danger Zones
04-Jun-02	fishpat	Unicorn	ATC & Restricted Danger Zones
04-Jun-02	other	Unicorn	ATC & Restricted Danger Zones
05-Jun-02	fishpat	3L, 3M, 3N, 3O	NAFO
05-Jun-02	other	90/Gulf	CP-140 Patrol Areas
06-Jun-02	other	90/Gulf	CP-140 Patrol Areas
07-Jun-02	other	90/Gulf	CP-140 Patrol Areas
07-Jun-02	other	Unicorn	ATC & Restricted Danger Zones
07-Jun-02	other	90/Gulf	CP-140 Patrol Areas
08-Jun-02	other	A-63	ATC & Restricted Danger Zones
09-Jun-02	other	A-63	ATC & Restricted Danger Zones
10-Jun-02	other	90/Gulf	CP-140 Patrol Areas
10-Jun-02	other	Unicorn	ATC & Restricted Danger Zones
11-Jun-02	fishpat	0B, 0A	NAFO
11-Jun-02	other	90/Gulf	CP-140 Patrol Areas
12-Jun-02	other	90/Gulf	CP-140 Patrol Areas
12-Jun-02	other	2G, 2H, 2J	NAFO
11-Jun-02	other	G1, G2, G3, G4	MARLOAS
11-Jun-02	other	H1, H2, H3, H4	MARLOAS

Appendix G

TABLE G-1 (continued)

CP-140 AURORA AIRCRAFT PATROLS IN FIGURE 7-4

Date	Flight type	Areas of Patrol	Grid Used for Patrol
13-Jun-02	other	Unicorn	ATC & Restricted Danger Zones
14-Jun-02	other	Unicorn	ATC & Restricted Danger Zones
15-Jun-02	other	90/Gulf	CP-140 Patrol Areas
16-Jun-02	other	90/Gulf	CP-140 Patrol Areas
17-Jun-02	other	Unicorn	ATC & Restricted Danger Zones
18-Jun-02	other	Unicorn	ATC & Restricted Danger Zones
19-Jun-02	surv	95/NFLD South	CP-140 Patrol Areas
20-Jun-02	other	0B, 2G, 2H	NAFO
21-Jun-02	fishpat	3L, 3M, 3N, 3O	NAFO
20-Jun-02	other	A-67	ATC & Restricted Danger Zones
21-Jun-02	other	Unicorn	ATC & Restricted Danger Zones
21-Jun-02	other	A-62	ATC & Restricted Danger Zones
21-Jun-02	surv	A-62	ATC & Restricted Danger Zones
23-Jun-02	other	90/Gulf	CP-140 Patrol Areas
25-Jun-02	fishpat	0B, 2G, 1F	NAFO
25-Jun-02	other	90/Gulf	CP-140 Patrol Areas
26-Jun-02	fishpat	1F, 2H, 2G	NAFO
24-Jun-02	other	Unicorn	ATC & Restricted Danger Zones
25-Jun-02	other	G1, G2, G3, G4	MARLOAS
25-Jun-02	other	G1, G2, G3, G4	MARLOAS
26-Jun-02	other	A, B, E3	MARLOAS
26-Jun-02	other	D1, D2, D3, D4	MARLOAS
26-Jun-02	other	G1, G2, G3, G4	MARLOAS
26-Jun-02	other	H1, H2, H3, H4	MARLOAS
27-Jun-02	other	90/Gulf	CP-140 Patrol Areas
29-Jun-02	other	94/NS South	CP-140 Patrol Areas
26-Jun-02	other	A, B, E2	MARLOAS
26-Jun-02	other	D1, D2, D3, D4	MARLOAS
26-Jun-02	other	G1, G2, G3, G4	MARLOAS
26-Jun-02	other	H1, H2, H3, H4	MARLOAS
28-Jun-02	other	A-67	ATC & Restricted Danger Zones
24-Jun-02	other	90/Gulf	CP-140 Patrol Areas
30-Jun-02	other	A-63	ATC & Restricted Danger Zones
01-Jul-02	other	Unicorn	ATC & Restricted Danger Zones
02-Jul-02	fishpat	3L, 3M, 3N, 3O	NAFO
03-Jul-02	other	Unicorn	ATC & Restricted Danger Zones
03-Jul-02	fishpat	3L, 3M, 3N, 3O	NAFO
03-Jul-02	other	A-67	ATC & Restricted Danger Zones
04-Jul-02	other	90/Gulf	CP-140 Patrol Areas
04-Jul-02	surv	Unicorn	ATC & Restricted Danger Zones
07-Jul-02	surv	95/NFLD South	CP-140 Patrol Areas
07-Jul-02	other	Unicorn	ATC & Restricted Danger Zones
08-Jul-02	fishpat	3L, 3M, 3N, 3O	NAFO
09-Jul-02	fishpat	0B, 1D, 1E, 1F	NAFO
09-Jun-02	other	2H, 2J	NAFO
10-Jul-02	other	90/Gulf	CP-140 Patrol Areas
11-Jul-02	surv	95/NFLD South	CP-140 Patrol Areas
11-Jul-02	other	Unicorn	ATC & Restricted Danger Zones
16-Jul-02	fishpat	0B, 2G, 2H	NAFO
16-Jul-02	other	Unicorn	ATC & Restricted Danger Zones

Appendix G

TABLE G-1 (continued)

CP-140 AURORA AIRCRAFT PATROLS IN FIGURE 7-4

Date	Flight type	Areas of Patrol	Grid Used for Patrol
17-Jul-02	fishpat	3L, 3M, 3N, 3O	NAFO
17-Jul-02	other	Unicorn	ATC & Restricted Danger Zones
18-Jul-02	surv	90/Gulf	CP-140 Patrol Areas
18-Jul-02	surv	A-67	ATC & Restricted Danger Zones
19-Jul-02	other	Unicorn	ATC & Restricted Danger Zones
20-Jul-02	surv	92/NS Outer	CP-140 Patrol Areas
22-Jul-02	other	Unicorn	ATC & Restricted Danger Zones
23-Jul-02	surv	93/NFLD Inner	CP-140 Patrol Areas
24-Jul-02	surv	90/Gulf	CP-140 Patrol Areas
24-Jul-02	surv	A-67	ATC & Restricted Danger Zones
30-Jul-02	fishpat	0B, 2G, 2H	NAFO
31-Jul-02	fishpat	3L, 3M, 3N, 3O	NAFO
01-Aug-02	surv	0B, 2G, 2H	NAFO
02-Aug-02	surv	A-63	ATC & Restricted Danger Zones
03-Aug-02	surv	99, 100	CP-140 Patrol Areas
05-Aug-02	surv	0A, 0B	NAFO
06-Aug-02	surv	0A, 0B	NAFO
08-Aug-02	surv	0B, 2G, 2H	NAFO
09-Aug-02	surv	0B, 2G, 2H	NAFO
11-Aug-02	surv	97/NFLD East	CP-140 Patrol Areas
13-Aug-02	surv	95/NFLD South	CP-140 Patrol Areas
14-Aug-02	fishpat	1F, 2J, 2H	NAFO
15-Aug-02	fishpat	1F	NAFO
15-Aug-02	other	A-62	ATC & Restricted Danger Zones
16-Aug-02	surv	98/Belle Strait	CP-140 Patrol Areas
16-Aug-02	other	A-62	ATC & Restricted Danger Zones
18-Aug-02	surv	91/NS Inner, 93/NFLD Inner	CP-140 Patrol Areas
19-Aug-02	fishpat	1F, 2J, 2H	NAFO
20-Aug-02	fishpat	1F, 2J, 2H	NAFO
21-Aug-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
23-Aug-02	other	Unicorn	ATC & Restricted Danger Zones
25-Aug-02	surv	92/NS Outer	CP-140 Patrol Areas
27-Aug-02	other	A-67	ATC & Restricted Danger Zones
28-Aug-02	fishpat	1F, 2J, 2H	NAFO
28-Aug-02	other	Unicorn	ATC & Restricted Danger Zones
28-Aug-02	other	A-62	ATC & Restricted Danger Zones
29-Aug-02	fishpat	0B, 2G, 2H, 1F	NAFO
01-Sep-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
04-Sep-02	fishpat	1F, 2J, 2H	NAFO
05-Sep-02	fishpat	0B, 2G, 2H, 1F	NAFO
06-Sep-02	other	Unicorn	ATC & Restricted Danger Zones
06-Sep-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
07-Sep-02	other	92/NS Outer	CP-140 Patrol Areas
09-Sep-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
10-Sep-02	fishpat	0B, 2G, 2H	NAFO
11-Sep-02	fishpat	0B, 2G, 2H	NAFO
12-Sep-02	other	A-62	ATC & Restricted Danger Zones
17-Sep-02	surv	95/NFLD South	CP-140 Patrol Areas
18-Sep-02	fishpat	0B, 2F, 1F	NAFO
18-Sep-02	other	Unicorn	ATC & Restricted Danger Zones

Appendix G

TABLE G-1 (continued)

CP-140 AURORA AIRCRAFT PATROLS IN FIGURE 7-4

Date	Flight type	Areas of Patrol	Grid Used for Patrol
18-Sep-02	other	A-67	ATC & Restricted Danger Zones
19-Sep-02	fishpat	1F, 2J, 2H	NAFO
19-Sep-02	fishpat	1F, 2J, 2H, 3K	NAFO
20-Sep-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
20-Sep-02	fishpat	0B, 2G, 2H	NAFO
22-Sep-02	surv	94/NS South	CP-140 Patrol Areas
23-Sep-02	other	Unicorn	ATC & Restricted Danger Zones
24-Sep-02	other	Unicorn	ATC & Restricted Danger Zones
24-Sep-02	other	Unicorn	ATC & Restricted Danger Zones
25-Sep-02	fishpat	1F, 2J, 3K	NAFO
26-Sep-02	fishpat	0B, 2G, 2H	NAFO
28-Sep-02	other	A-67	ATC & Restricted Danger Zones
29-Sep-02	surv	94/NS South	CP-140 Patrol Areas
30-Sep-02	other	A-10, A-11	ATC & Restricted Danger Zones
01-Oct-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
01-Oct-02	other	Unicorn	ATC & Restricted Danger Zones
02-Oct-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
03-Oct-02	surv	A-63	ATC & Restricted Danger Zones
03-Oct-02	other	Unicorn	ATC & Restricted Danger Zones
03-Oct-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
06-Oct-02	other	Unicorn	ATC & Restricted Danger Zones
07-Oct-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
07-Oct-02	surv	94/NS South	CP-140 Patrol Areas
08-Oct-02	fishpat	0B, 2G, 1F	NAFO
08-Oct-02	other	A-67	ATC & Restricted Danger Zones
08-Oct-02	other	A-67	ATC & Restricted Danger Zones
09-Oct-02	fishpat	1F, 2J, 2H	NAFO
09-Oct-02	other	G1, G2, G3, G4	MARLOAS
09-Oct-02	other	H1, H2, H3, H4	MARLOAS
10-Oct-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
10-Oct-02	surv	95/NFLD South	CP-140 Patrol Areas
10-Oct-02	surv	0B, 2G, 2H	NAFO
11-Oct-02	other	Unicorn	ATC & Restricted Danger Zones
11-Oct-02	surv	0A,0B	NAFO
12-Oct-02	other	A-62	ATC & Restricted Danger Zones
15-Oct-02	other	A-62	ATC & Restricted Danger Zones
16-Oct-02	other	Unicorn	ATC & Restricted Danger Zones
16-Oct-02	other	Unicorn, Zebra	ATC & Restricted Danger Zones
18-Oct-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
18-Oct-02	other	A-63	ATC & Restricted Danger Zones
21-Oct-02	other	A-62	ATC & Restricted Danger Zones
21-Oct-02	other	1E, 2D, 2E	NAFO
23-Oct-02	other	A-62	ATC & Restricted Danger Zones
23-Oct-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
24-Oct-02	other	Unicorn	ATC & Restricted Danger Zones
24-Oct-02	other	A-67	ATC & Restricted Danger Zones
25-Oct-02	other	Unicorn	ATC & Restricted Danger Zones
26-Oct-02	other	A-10, A-11	ATC & Restricted Danger Zones

Appendix G

TABLE G-1 (continued)

CP-140 AURORA AIRCRAFT PATROLS IN FIGURE 7-4

Date	Flight type	Areas of Patrol	Grid Used for Patrol
01-Nov-02	surv	95/NFLD South	CP-140 Patrol Areas
04-Nov-02	other	A-67	ATC & Restricted Danger Zones
07-Nov-02	other	A-62	ATC & Restricted Danger Zones
08-Nov-02	other	Unicorn	ATC & Restricted Danger Zones
09-Nov-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
12-Nov-02	other	A-62	ATC & Restricted Danger Zones
15-Nov-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
16-Nov-02	other	A-67	ATC & Restricted Danger Zones
19-Nov-02	other	Unicorn	ATC & Restricted Danger Zones
19-Nov-02	surv	A-63	ATC & Restricted Danger Zones
19-Nov-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
21-Nov-02	surv	92/NS Outer	CP-140 Patrol Areas
22-Nov-02	surv	91/NS Inner	CP-140 Patrol Areas
22-Nov-02	other	Unicorn	ATC & Restricted Danger Zones
24-Nov-02	other	A-62	ATC & Restricted Danger Zones
27-Nov-02	other	Unicorn	ATC & Restricted Danger Zones
27-Nov-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
29-Nov-02	other	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
01-Dec-02	surv	Unicorn	ATC & Restricted Danger Zones
01-Dec-02	surv	A-12, A-13, A-17, A-18	ATC & Restricted Danger Zones
01-Dec-02	other	A-67	ATC & Restricted Danger Zones
07-Dec-02	surv	A-63	ATC & Restricted Danger Zones
08-Dec-02	surv	93/NFLD Inner	CP-140 Patrol Areas
08-Dec-02	surv	Unicorn	ATC & Restricted Danger Zones
09-Dec-02	other	A-63	ATC & Restricted Danger Zones
10-Dec-02	other	0B, 2G, 2H	NAFO
11-Dec-02	surv	0B, 2G, 2H	NAFO
12-Dec-02	surv	A-67	ATC & Restricted Danger Zones
13-Dec-02	other	A-62	ATC & Restricted Danger Zones
14-Dec-02	surv	A-63	ATC & Restricted Danger Zones
15-Dec-02	other	F1	MARLOAS
16-Dec-02	surv	A-63	ATC & Restricted Danger Zones
18-Dec-02	surv	F1	MARLOAS
18-Dec-02	surv	Unicorn	ATC & Restricted Danger Zones
28-Dec-02	surv	95/NFLD South	CP-140 Patrol Areas
30-Dec-02	surv	94/NS South	CP-140 Patrol Areas

Source: Maritime Air Component Commander (Atlantic) Staff, 2003.

Appendix H

PAL AIRCRAFT SURVEILLANCE PATROLS DEPICTED IN FIGURE 7-7

Table H-1 contains the mission identifiers and areas patrolled by PAL surveillance aircraft during the year 2002. Table H-2 contains the mission identifiers and areas patrolled by PAL surveillance aircraft contracted by the Canadian Coast Guard for anti-pollution patrols during the same year. The grid used to plan the PAL missions is the North Atlantic Fisheries Organization depicted in Chapter Three at Figures 3-12 and 3-13. The first four digits of the mission identifier indicate for which DFO region the aircraft was tasked:

BKGR – Gulf Region
BKNF – Newfoundland Region
BKSF – Scotia Fundy Region (now Maritimes Region)
BKQR – Quebec Region.

TABLE H - 1

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
01-Jan-02	BKNF02-001	3L-OUTER	NAFO
02-Jan-02	BKNF02-002	3N-OUTER	NAFO
02-Jan-02	BKSF02-001	4X	NAFO
03-Jan-02	BKGR02-001	4T	NAFO
03-Jan-02	BKNF02-003	3M	NAFO
03-Jan-02	BKSF02-002	4W	NAFO
04-Jan-02	BKNF02-004	3LNO-INNER	NAFO
04-Jan-02	BKSF02-003	5ZE/4X	NAFO
05-Jan-02	BKNF02-005	3L-OUTER	NAFO
05-Jan-02	BKSF02-004	4VW	NAFO
06-Jan-02	BKSF02-005	5ZE/4X/4W	NAFO
07-Jan-02	BKNF02-008	3L-OUTER	NAFO
08-Jan-02	BKSF02-006	4WX	NAFO
09-Jan-02	BKGR02-002	4T	NAFO
09-Jan-02	BKNF02-010	3NO-OUTER	NAFO
09-Jan-02	BKSF02-007	4VW	NAFO
10-Jan-02	BKSF02-008	4X	NAFO
11-Jan-02	BKNF02-011	3L	NAFO
11-Jan-02	BKNF02-012	3PS	NAFO
11-Jan-02	BKSF02-009	5ZE/4X	NAFO
12-Jan-02	BKSFO2-010	4WX	NAFO
13-Jan-02	BKNF02-013	3NO	NAFO
13-Jan-02	BKSF02-011	4VW	NAFO
14-Jan-02	BKSFO2-012	4WX	NAFO
15-Jan-02	BKGR02-003	4T/4VS	NAFO
15-Jan-02	BKNF02-014	3L-OUTER	NAFO
15-Jan-02	BKNF02-015	3K/4R	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
15-Jan-02	BKSF02-013	5ZE/4X	NAFO
16-Jan-02	BKSF02-014	4X	NAFO
17-Jan-02	BKNF01-017	3L-OUTER	NAFO
17-Jan-02	BKNF02-015	4VW	NAFO
17-Jan-02	BKNF02-016	3NO-OUTER	NAFO
17-Jan-02	BKNF02-021	4R/2J	NAFO
18-Jan-02	BKGR02-004	4T-	NAFO
18-Jan-02	BKNF02-018	3L3PS	NAFO
18-Jan-02	BKNF02-019	3NO OUTER	NAFO
18-Jan-02	BKSF02-016	4X	NAFO
19-Jan-02	BKNF02-020	3LM NORTH	NAFO
19-Jan-02	BKSF02-017	4VS	NAFO
20-Jan-02	BKNF02-022	3NO-OUTER	NAFO
20-Jan-02	BKSF02-018	4X	NAFO
21-Jan-02	BKGR02-005	4T	NAFO
21-Jan-02	BKNF02-019	4X	NAFO
21-Jan-02	BKNF02-023	3NO-OUTER	NAFO
23-Jan-02	BKSFO2-021	4X	NAFO
24-Jan-02	BKNF02-026	3LMSOUTH	NAFO
24-Jan-02	BKNF02-027	3LNO-INNER	NAFO
24-Jan-02	BKSF02-022	4VW	NAFO
25-Jan-02	BKNF02-028	3LM-NORTH	NAFO
25-Jan-02	BKNF02-029	4R	NAFO
26-Jan-02	BKNF02-031	S-AVALON	NAFO
26-Jan-02	BKNF02-032	3NO-OUTER	NAFO
26-Jan-02	BKSF02-023	4X	NAFO
27-Jan-02	BKSF02-024	4X/5ZE	NAFO
28-Jan-02	BKGR02-007	4T	NAFO
28-Jan-02	BKNF02-034	3NO-OUTER	NAFO
28-Jan-02	BKSF02-025	4V/SW	NAFO
29-Jan-02	BKNF02-035	3L-OUTER	NAFO
29-Jan-02	BKSF02-026	4X	NAFO
30-Jan-02	BKNF02-036	3LNO	NAFO
30-Jan-02	BKNF02-037	3K/2J	NAFO
31-Jan-02	BKGR02-008	4T/4VN	NAFO
31-Jan-02	BKSF02-028	5ZE/4X	NAFO
01-Feb-02	BKNF02-038	S AVALON	NAFO
01-Feb-02	BKNF02-039	3NO-OUTER	NAFO
01-Feb-02	BKSF02-029	4WX	NAFO
03-Feb-02	BKNF02-040	NO AREA	NAFO
03-Feb-02	BKSF02-031	4WX	NAFO
04-Feb-02	BKNF02-038	NO AREA	NAFO
04-Feb-02	BKNF02-042	3LOUTER	NAFO
04-Feb-02	BKSF02-032	4X/5ZE	NAFO
06-Feb-02	BKNF02-043	3 NO-OUTER	NAFO
06-Feb-02	BKNF02-044	S AV/3PS	NAFO
06-Feb-02	BKSF02-034	4W-4X	NAFO
07-Feb-02	BKGR02-009	4T	NAFO
07-Feb-02	BKNF02-045	3L-OUTER	NAFO
07-Feb-02	BKNF02-46	3LM-NORTH	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
07-Feb-02	BKSF02-036	5ZE-4X	NAFO
08-Feb-02	BKNF02-047	3L	NAFO
08-Feb-02	BKSF02-037	4X	NAFO
09-Feb-02	BKNF02-048	3NO	NAFO
09-Feb-02	BKSF02-038	4VW-	NAFO
10-Feb-02	BKNF02-052	3LNO-INNER	NAFO
11-Feb-02	BKNF02-053	3L-OUTER	NAFO
12-Feb-02	BKNF02-054	3NO-OUTER	NAFO
13-Feb-02	BKNF02-055	3LM-S	NAFO
14-Feb-02	BKGR02-008	4T/4VN	NAFO
14-Feb-02	BKGR02-009	4T	NAFO
14-Feb-02	BKNF02-056	3LOUTER	NAFO
14-Feb-02	BKNF02-057	3PS	NAFO
14-Feb-02	BKNF02-058	3M EAST	NAFO
14-Feb-02	BKQr01-046	4S/T	NAFO
15-Feb-02	BKGR02-011	4T	NAFO
15-Feb-02	BKNF02-059	4R/2J/K	NAFO
15-Feb-02	BKSF02-044	4VW	NAFO
16-Feb-02	BKNF02-060	3L-OUTER	NAFO
16-Feb-02	BKSF02-045	5ZE/4X	NAFO
17-Feb-02	BKSF02-046	4X	NAFO
18-Feb-02	BKNF02-062	3NO	NAFO
18-Feb-02	BKNF02-063	3OP-EDGE	NAFO
18-Feb-02	BKSF02-047	4VSW	NAFO
19-Feb-02	BKNF02-064	3NO-OUTER	NAFO
19-Feb-02	BKNF02-065	3PS	NAFO
19-Feb-02	BKSF02-048	4WX	NAFO
20-Feb-02	BKGR02-012	4T	NAFO
20-Feb-02	BKNF02-066	3PS	NAFO
20-Feb-02	BKNF02-067	3NO-OUTER	NAFO
20-Feb-02	BKNF02-068	4R-3K	NAFO
20-Feb-02	BKSF02-049	5ZE/4X	NAFO
21-Feb-02	BKSF02-050	4VW	NAFO
21-Feb-02	BKSF02-069	4P/2J/3K	NAFO
23-Feb-02	BKNF02-070	3L/3PS	NAFO
23-Feb-02	BKNF02-071	3NL/OUTER	NAFO
23-Feb-02	BKQR02-001	4T	NAFO
23-Feb-02	BKSF02-051	4VW	NAFO
24-Feb-02	BKNF02-072	3NO-OUTER	NAFO
24-Feb-02	BKNF02-073	3LM-NORTH	NAFO
24-Feb-02	BKSF02-053	4X	NAFO
25-Feb-02	BKNF02-075	2J/3K/4R/S	NAFO
25-Feb-02	BKNF02-076	3L OUTER	NAFO
25-Feb-02	BKSF02-054	4VSW	NAFO
26-Feb-02	BKNF02-077	3L/3PS	NAFO
26-Feb-02	BKNF02-078	3LNO	NAFO
26-Feb-02	BKSF02-055	4W	NAFO
26-Feb-02	BKSF02-057	4X	NAFO
27-Feb-02	BKSF02-059	4X	NAFO
28-Feb-02	BKSF02-060	4X	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
01-Mar-02	BKNF02-080	3L	NAFO
01-Mar-02	BKSF02-062	4W	NAFO
02-Mar-02	BKNF02-081	3M	NAFO
02-Mar-02	BKNF02-082	3L	NAFO
02-Mar-02	BKNF02-082	3L	NAFO
02-Mar-02	BKNF02-082	3L	NAFO
02-Mar-02	BKNF02-082	3L	NAFO
02-Mar-02	BKNF02-082	3L	NAFO
02-Mar-02	BKNF02-082	3N	NAFO
02-Mar-02	BKNF02-082	3L	NAFO
02-Mar-02	BKQR02-002	4T	NAFO
02-Mar-02	BKSF02-063	4WX	NAFO
03-Mar-02	BKNF02-083	3LNO INNER	NAFO
03-Mar-02	BKSF02-064	4X	NAFO
04-Mar-02	BKNF02-085	2J/3K	NAFO
04-Mar-02	BKSF02-065	5ZE-4X	NAFO
05-Mar-02	BKNF02-086	N30-OUTER	NAFO
05-Mar-02	BKNF02-087	3OP-EDGE	NAFO
05-Mar-02	BKSF02-066	4VSW	NAFO
07-Mar-02	BKGR02-015	4T	NAFO
07-Mar-02	BKNF02-090	3L-OUTER	NAFO
07-Mar-02	BKNF02-091	3PS	NAFO
07-Mar-02	BKNS02-067	4WX	NAFO
09-Mar-02	BKNF02-093	3K	NAFO
09-Mar-02	BKNF02-095	2J/3K/4R	NAFO
09-Mar-02	BKQR02-004	4T	NAFO
10-Mar-02	BKNF02-096	3L-OUTER	NAFO
10-Mar-02	BKSF02-070	4W/X	NAFO
11-Mar-02	BKNF02-097	3L	NAFO
11-Mar-02	BKNF02-097	3L	NAFO
11-Mar-02	BKNF02-097	3L	NAFO
11-Mar-02	BKNF02-097	3L	NAFO
11-Mar-02	BKNF02-097	3L	NAFO
11-Mar-02	BKNF02-097	3L	NAFO
11-Mar-02	BKNF02-097	3L	NAFO
11-Mar-02	BKNF02-097	3L	NAFO
12-Mar-02	BKNF02-098	3NO-OUTER	NAFO
12-Mar-02	BKNF02-099	3L	NAFO
12-Mar-02	BKNF02-099	3L	NAFO
12-Mar-02	BKNF02-099	3L	NAFO
12-Mar-02	BKNF02-099	3L	NAFO
12-Mar-02	BKNF02-099	4S	NAFO
12-Mar-02	BKNF02-099	4S	NAFO
12-Mar-02	BKNF02-099	4R	NAFO
12-Mar-02	BKNF02-099	2J	NAFO
12-Mar-02	BKNF02-099	2J	NAFO
12-Mar-02	BKNF02-099	2J	NAFO
12-Mar-02	BKNF02-099	4S	NAFO
12-Mar-02	BKNF02-099	4S	NAFO
12-Mar-02	BKNF02-099	3L	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

12-Mar-02	BKNF02-099	3L	NAFO
12-Mar-02	BKQR02-005	4W	NAFO
12-Mar-02	BKQR02-005	4W	NAFO
12-Mar-02	BKQR02-005	4T	NAFO
12-Mar-02	BKQR02-005	4T	NAFO
12-Mar-02	BKQR02-005	4T	NAFO
12-Mar-02	BKQR02-005	4T	NAFO
12-Mar-02	BKQR02-005	4T	NAFO
12-Mar-02	BKQR02-005	4T	NAFO
12-Mar-02	BKQR02-005	4T	NAFO
12-Mar-02	BKSF02-072	4W/X	NAFO
13-Mar-02	BKNF02-100	3LOUTER	NAFO
13-Mar-02	BKNF02-101	3L	NAFO
13-Mar-02	BKNF02-101	3L	NAFO
13-Mar-02	BKNF02-101	3L	NAFO
13-Mar-02	BKNF02-101	3L	NAFO
13-Mar-02	BKNF02-101	4R	NAFO
13-Mar-02	BKNF02-101	4R	NAFO
13-Mar-02	BKNF02-101	3K	NAFO
13-Mar-02	BKNF02-101	4R	NAFO
13-Mar-02	BKNF02-101	4R	NAFO
13-Mar-02	BKNF02-101	3L	NAFO
13-Mar-02	BKSF02-073	5ZE/4X	NAFO
14-Mar-02	BKNF02-102	3L	NAFO
15-Mar-02	BKNF02-103	3PS	NAFO
16-Mar-02	BKNF02-104	3LM-NORTH	NAFO
16-Mar-02	BKNF02-105	3LMNO/INNER	NAFO
16-Mar-02	BKSF02-074	4W/X	NAFO
16-Mar-02	BKSF02-075	4W	NAFO
16-Mar-02	BKSF02-077	4W/4VS	NAFO
16-Mar-02	BKSF02-078	4X/5ZE	NAFO
17-Mar-02	BKNF02-106	3NO-OUTER	NAFO
17-Mar-02	BKQR02-006	4T	NAFO
17-Mar-02	BKSF02-079	4W/5ZE	NAFO
18-Mar-02	BKGR-02-018	4T	NAFO
18-Mar-02	BKNF02-107	3PS	NAFO
18-Mar-02	BKSF02-080	4VW	NAFO
19-Mar-02	BKNF02-108	3K/2J	NAFO
19-Mar-02	BKSF02-081	4VW	NAFO
20-Mar-02	BKNF02-108	3LM-SOUTH	NAFO
20-Mar-02	BKSF02-082	4X/5ZE	NAFO
20-Mar-02	BKSF02-083	5ZE/4X	NAFO
21-Mar-02	BKNF02-110	3NO-OUTER	NAFO
21-Mar-02	BKNF02-111	3LM-NORTH	NAFO
22-Mar-02	BKGR02-020	4T	NAFO
22-Mar-02	BKNF02-112	3LOUTER	NAFO
22-Mar-02	BKQR02-007	4T	NAFO
23-Mar-02	BKNF02-113	3LM-SOUTH	NAFO
23-Mar-02	BKNF02-114	3LNO-INNER	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

23-Mar-02	BKSF02-085	4X	NAFO
24-Mar-02	BKNF02-115	3NO-OUTER	NAFO
24-Mar-02	BKSF02-086	4WX	NAFO
25-Mar-02	BKGR02-021	4VN/4T	NAFO
25-Mar-02	BKNF02-117	3LM-OUTER	NAFO
25-Mar-02	BKNF02-118	3K\2J	NAFO
25-Mar-02	BKNF02-119	3LOUTER	NAFO
26-Mar-02	BKNF02-120	2J/3K	NAFO
26-Mar-02	BKNF02-121	3PS	NAFO
26-Mar-02	BKQR02-008	4T	NAFO
26-Mar-02	BKSF02-088	4X	NAFO
27-Mar-02	BKNF02-122	4R-SEALS	NAFO
27-Mar-02	BKSF02-089	4X	NAFO
28-Mar-02	BKNF02-125	3L	NAFO
28-Mar-02	BKSF02-090	4W	NAFO
29-Mar-02	BKNF02-126	3L	NAFO
29-Mar-02	BKSF02-091	4W	NAFO
30-Mar-02	BKGR02-022	4W	NAFO
30-Mar-02	BKNF02-128	3L	NAFO
30-Mar-02	BKNF02-129	3L	NAFO
31-Mar-02	BKQR02-010	4ST	NAFO
31-Mar-02	BKSF02-093	4W	NAFO
01-Apr-02	BKNF02-131	3M	NAFO
02-Apr-02	BKNF02-132	3PS	NAFO
02-Apr-02	BKSF02-094	5ZE/4X	NAFO
03-Apr-02	BKSF02-095	4VW	NAFO
04-Apr-02	BKNF02-135	3LOUTER	NAFO
04-Apr-02	BKSF02-096	5Z3/4X	NAFO
05-Apr-02	BKNF02-136	3K/2J SEAL	NAFO
05-Apr-02	BKNF02-137	3PS/3O	NAFO
05-Apr-02	BKQR02-011	4T	NAFO
06-Apr-02	BKNF02-138	4R	NAFO
06-Apr-02	BKNF02-139	3LM	NAFO
06-Apr-02	BKQR02-4S	4S	NAFO
07-Apr-02	BKSF02-098	5ZE/4X	NAFO
08-Apr-02	BKNF02-140	3K/4R-SEAL	NAFO
08-Apr-02	BKNF02-141	3L	NAFO
08-Apr-02	BKQR02-013	4S	NAFO
08-Apr-02	BKQR02-014	4T	NAFO
09-Apr-02	BKNF02-142	3L	NAFO
09-Apr-02	BKNF02-143	3LNO-INNER	NAFO
10-Apr-02	BKNF02-145	3K-	NAFO
10-Apr-02	BKSF02-100	4X/5ZE	NAFO
11-Apr-02	BKNF02-146	3LM-SOUTH	NAFO
11-Apr-02	BKNF02-147	3K	NAFO
11-Apr-02	BKSF02-101	4WX	NAFO
12-Apr-02	BKNF02-150	3LM	NAFO
12-Apr-02	BKSF02-102	4VS	NAFO
15-Apr-02	BKGR02-026	4T	NAFO
15-Apr-02	BKQR02-013	4S	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

15-Apr-02	BKQR02-014	4T	NAFO
16-Apr-02	BKNF02-154	3LNO-LINE	NAFO
16-Apr-02	BKQR02-016	4S	NAFO
16-Apr-02	BKSF02-105	4VW	NAFO
17-Apr-02	BKQR02-027	4T	NAFO
17-Apr-02	BKNF02-156	3NO	NAFO
17-Apr-02	BKSF02-106	4X	NAFO
18-Apr-02	BKNF02-159	3K	NAFO
18-Apr-02	BKNF02-160	4L-OUTER	NAFO
18-Apr-02	BKQR02-017	4T	NAFO
18-Apr-02	BKSF02-107	4X/5ZE	NAFO
19-Apr-02	BKNF02-161	3NO-OUTER	NAFO
19-Apr-02	BKNF02-162	3K	NAFO
19-Apr-02	BKSF02-108	4WX	NAFO
20-Apr-02	BKSF02-109	4VW	NAFO
21-Apr-02	BKNF02-164	3L	NAFO
21-Apr-02	BKQR02-018	3L	NAFO
22-Apr-02	BKNF02-165	3L	NAFO
22-Apr-02	BKNF02-166	3L	NAFO
22-Apr-02	BKQR02-019	3L/3PS/4W	NAFO
23-Apr-02	BKGR02-028	4T	NAFO
23-Apr-02	BKQR02-020	4T	NAFO
23-Apr-02	BKSF02-110	4X	NAFO
24-Apr-02	BKNF02-166	3L	NAFO
24-Apr-02	BKQR02-022	4W	NAFO
24-Apr-02	BKSF02-111	4X	NAFO
25-Apr-02	BKNF02-167	3NO/K	NAFO
25-Apr-02	BKNF02-168	3L	NAFO
25-Apr-02	BKNF02-169	3LNO	NAFO
25-Apr-02	BKSF02-112	4X	NAFO
26-Apr-02	BKNF02-170	3LM	NAFO
26-Apr-02	BKSF02-113	4W/4VS	NAFO
27-Apr-02	BKNF02-171	3M-EAST	NAFO
27-Apr-02	BKSF02-114	5ZE/4X	NAFO
28-Apr-02	BKGR02-028	4T	NAFO
28-Apr-02	BKNF02-173	3NO-OUTER	NAFO
28-Apr-02	BKNF02-174	3PS/3L	NAFO
29-Apr-02	BKGR02-030	4T	NAFO
29-Apr-02	BKNF02-115	4WX	NAFO
29-Apr-02	BKNF02-175	3K	NAFO
29-Apr-02	BKNF02-176	3LOUTER	NAFO
30-Apr-02	BKNF02-177	3K	NAFO
01-May-02	BKNF02-178	3L -CRABS	NAFO
01-May-02	BKNF02-179	3K	NAFO
01-May-02	BKNF02-180	3LNO	NAFO
01-May-02	BKQR02-024	4T	NAFO
01-May-02	BKQR02-025	4T	NAFO
01-May-02	BKSF02-116	5ZE/4X	NAFO
02-May-02	BKNF02-181	4S-4R	NAFO
02-May-02	BKNF02-183	3PS	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
02-May-02	BKQR02-026	4SY-4SZ	NAFO
03-May-02	BKSF02-118	4W	NAFO
04-May-02	BKNF02-184	3L	NAFO
05-May-02	BKNF02-185	3LM-NORTH	NAFO
05-May-02	BKSF02-119	4W	NAFO
06-May-02	BKGR02-031	4X	NAFO
06-May-02	BKNF02-186	3L	NAFO
07-May-02	BKNF02-187	3LM-SOUTH	NAFO
07-May-02	BKNF02-188	3K/4R	NAFO
07-May-02	BKSF02-121	5ZE/4X	NAFO
08-May-02	BKNF02-189	3K-CRAB	NAFO
08-May-02	BKSF02-122	4X	NAFO
09-May-02	BKNF02-191	3L/N	NAFO
09-May-02	BKQR02-026	4SY/4SZ	NAFO
09-May-02	BKSF02-123	4W/4VS	NAFO
10-May-02	BKNF02-193	3M	NAFO
10-May-02	BKNF02-194	3L-INSIDE	NAFO
10-May-02	BKSF02-124	4X/5ZE	NAFO
11-May-02	BKNF02-195	3LOUTER	NAFO
11-May-02	BKNF02-196	3PN/S	NAFO
11-May-02	BKSF02-126	5ZE/4X	NAFO
12-May-02	BKNF02-197	4N	NAFO
12-May-02	BKQR02-028	4S	NAFO
13-May-02	BKGR02-033	4T	NAFO
13-May-02	BKNF02-196	3PN/S	NAFO
13-May-02	BKNF02-198	3L-OUTER	NAFO
13-May-02	BKNF02-199	3PN/4R	NAFO
13-May-02	BKQR02-029	4SZ/4SY	NAFO
13-May-02	BKQR02-030	4T	NAFO
13-May-02	BKSF02-127	4VW	NAFO
14-May-02	BKNF02-200	3L-OUTER	NAFO
14-May-02	BKNF02-201	3K	NAFO
14-May-02	BKQR02-031	4S	NAFO
15-May-02	BKGR02-034	4T	NAFO
15-May-02	BKSF02-129	4X	NAFO
16-May-02	BKNF02-202	3L	NAFO
16-May-02	BKSF02-130	4W	NAFO
17-May-02	BKNF02-203	3NO-OUTER	NAFO
17-May-02	BKNF02-204	3PS/PN-4R	NAFO
17-May-02	BKNF02-205	3L/PS	NAFO
17-May-02	BKQR02-032	12B/E/F	NAFO
17-May-02	BKSF02-131	5ZE/4X	NAFO
18-May-02	BKNF02-206	3NO-OUTER	NAFO
18-May-02	BKSF02-132	4VW	NAFO
20-May-02	BKGR02-035	4T	NAFO
20-May-02	BKNF02-208	3NO-LINE	NAFO
21-May-02	BKNF02-209	3LM-SOUTH	NAFO
21-May-02	BKNF02-210	3L	NAFO
21-May-02	BKQR02-033	4SZ	NAFO
22-May-02	BKNF02-211	3LM-NORTH	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
22-May-02	BKQR02-034	4R/S	NAFO
23-May-02	BKNFO2-213	3PS	NAFO
23-May-02	BKNFO2-214	3LNO	NAFO
23-May-02	BKNSF2-135	4VW	NAFO
24-May-02	BKNF02-214	3LNO	NAFO
24-May-02	BKNFO2-215	3NO-OUTER	NAFO
24-May-02	BKNFO2-216	3K/3D	NAFO
24-May-02	BKSFO2-136	4X	NAFO
25-May-02	BKNF02-217	3LM NORTH	NAFO
25-May-02	BKNF02-218	3PS/PN	NAFO
25-May-02	BKSF02-137	4WX	NAFO
26-May-02	BKNF02-219	3L OUTER	NAFO
26-May-02	BKNF02-220	3LNO	NAFO
26-May-02	BKSFO2-138	4VSW	NAFO
27-May-02	BKGR02-037	4T	NAFO
27-May-02	BKSF02-139	4VSW	NAFO
04-Jun-02	BKSFO2-145	4X/5ZE	NAFO
05-Jun-02	BKNFO2-228	3L-OUTER	NAFO
05-Jun-02	BKSFO2-146	4WX	NAFO
06-Jun-02	BKGR02-040	4T	NAFO
06-Jun-02	BKNF02-229	3PS	NAFO
06-Jun-02	BKNF02-230	3L	NAFO
06-Jun-02	BKNFO2-231	3L-INNER	NAFO
06-Jun-02	BKQR02-038	4S	NAFO
06-Jun-02	BKSF02-147	4VSW	NAFO
07-Jun-02	BKGR02-041	4T	NAFO
07-Jun-02	BKNF02-232	4R	NAFO
07-Jun-02	BKNF02-233	3PS	NAFO
07-Jun-02	BKSF02-148	4X	NAFO
08-Jun-02	BKNF02-234	3L	NAFO
08-Jun-02	BKNF02-235	3K	NAFO
08-Jun-02	BKNS02-149	4W	NAFO
09-Jun-02	BKNF02-236	3OP	NAFO
09-Jun-02	BKNF02-237	3PS	NAFO
10-Jun-02	BKQR02-039	4T/4S	NAFO
10-Jun-02	BKSF02-150	4WX	NAFO
11-Jun-02	BKNF02-239	2J/3K	NAFO
11-Jun-02	BKNF02-241	3L	NAFO
11-Jun-02	BKSF02-151	4VSNW	NAFO
14-Jun-02	BKGR02-243	4T	NAFO
14-Jun-02	BKNF02-246	3NO-OUTER	NAFO
14-Jun-02	BKSF02-153	4X	NAFO
15-Jun-02	BKNF02-247	3LM-NORTH	NAFO
15-Jun-02	BKQR02-041	4T	NAFO
15-Jun-02	BKSF02-154	5ZE/4X	NAFO
17-Jun-02	BKSF02-155	4X5ZE	NAFO
18-Jun-02	BKNF02-248	3LM	NAFO
18-Jun-02	BKSF02-156	4X5ZE	NAFO
19-Jun-02	BKGR02-044	4T	NAFO
19-Jun-02	BKNF02-249	3LM	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
19-Jun-02	BKNF02-250	3LCRAB	NAFO
20-Jun-02	BKNF02-251	3L	NAFO
20-Jun-02	BKSF02-157	4VN	NAFO
21-Jun-02	BKNF02-252	3L	NAFO
21-Jun-02	BKSF02-159	4X	NAFO
22-Jun-02	BKNF02-253	3M-NORTH	NAFO
22-Jun-02	BKNF02-254	3PS/OP	NAFO
22-Jun-02	BKQR02-041	4T	NAFO
22-Jun-02	BKQR02-042	4T	NAFO
23-Jun-02	BKSF02-160	5ZE/4X	NAFO
24-Jun-02	BKGR02-045	4T	NAFO
24-Jun-02	BKNF02-256	3K-CRAB	NAFO
24-Jun-02	BKNF02-257	3L-OUTER	NAFO
25-Jun-02	BKSF02-161	4VW	NAFO
26-Jun-02	BKNF02-259	3NO-OUTER	NAFO
26-Jun-02	BKSF02-162	5ZE/4X	NAFO
27-Jun-02	BKNF02-261	3LM-NORTH	NAFO
27-Jun-02	BKQR02-043	4T	NAFO
28-Jun-02	BKNF02-262	3K	NAFO
29-Jun-02	BKSF02-164	5ZE/4X	NAFO
01-Jul-02	BKNF02-263	3NO-OUTER	NAFO
01-Jul-02	BKSF02-165	4VSW	NAFO
02-Jul-02	BKNF02-264	4R/3PN	NAFO
02-Jul-02	BKSF02-265	3LNO	NAFO
03-Jul-02	BKGR02-047	4T	NAFO
03-Jul-02	BKNF02-266	3L-OUTER	NAFO
03-Jul-02	BKSF02-166	4X/5ZE	NAFO
04-Jul-02	BKNF02-268	3L3PS	NAFO
04-Jul-02	BKQR02-044	4T	NAFO
04-Jul-02	BKSF02-167	4X	NAFO
04-Jul-02	BKSF02-267	3LINNER	NAFO
05-Jul-02	BKNFO2-269	4R	NAFO
05-Jul-02	BKSF01-168	5ZE/4X	NAFO
06-Jul-02	BKNF02-270	3LM	NAFO
06-Jul-02	BKNF02-271	3LNO	NAFO
06-Jul-02	BKSF02-169	4VW	NAFO
08-Jul-02	BKSF02-170	5ZE/4X	NAFO
09-Jul-02	BKNF02-272	GRANITE-LK	NAFO
10-Jul-02	BKGR02-048	4T	NAFO
10-Jul-02	BKNF02-273	3LM NORTH	NAFO
10-Jul-02	BKSF02-171	4X5ZE	NAFO
11-Jul-02	BKNF02-274	3PS	NAFO
11-Jul-02	BKSF02-172	4WX	NAFO
12-Jul-02	BKNF02-275	4R-CRAB	NAFO
12-Jul-02	BKNF02-276	3LMNO	NAFO
13-Jul-02	BKNF02-277	3NO	NAFO
13-Jul-02	BKSF02-173	4VSW	NAFO
14-Jul-02	BKNF02-279	3LNO	NAFO
14-Jul-02	BKNF02-280	3LNO	NAFO
15-Jul-02	BKNF02-280	3PS	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
15-Jul-02	BKNF02-281	3L-OUTER	NAFO
15-Jul-02	BKSF02-174	4X	NAFO
16-Jul-02	BKNF02-282	3M-EAST	NAFO
16-Jul-02	BKQR02-045	4T	NAFO
16-Jul-02	BKSF02-175	4VW	NAFO
17-Jul-02	BKSF02-176	5ZE/4X	NAFO
18-Jul-02	BKNFO2-283	3NO-OUTER	NAFO
18-Jul-02	BKQR02-046	4T	NAFO
19-Jul-02	BKSF02-177	4X	NAFO
19-Jul-02	BKSF02-178	4VSW	NAFO
20-Jul-02	BKNF02-284	3NO-OUTER	NAFO
20-Jul-02	BKNF02-285	4R	NAFO
20-Jul-02	BKNF02-286	3LN-OUTER	NAFO
21-Jul-02	BKNF02-287	2J/3K/4R	NAFO
21-Jul-02	BKSF02-179	4W/4X	NAFO
22-Jul-02	BKNF02-288	3PS	NAFO
22-Jul-02	BKNF02-289	3M	NAFO
23-Jul-02	BKNF02-290	3LN OUTER	NAFO
23-Jul-02	BKSF02-180	5ZE/4X	NAFO
24-Jul-02	BKNF02-291	3LM NORTH	NAFO
24-Jul-02	BKSF02-181	4VSW	NAFO
25-Jul-02	BKNF02-292	3LM (SOUTH)	NAFO
25-Jul-02	BKNF02-293	3PS	NAFO
25-Jul-02	BKQR02-047	4S	NAFO
25-Jul-02	BKSF02-182	4X	NAFO
26-Jul-02	BKNF02-294	3L-OUTER	NAFO
27-Jul-02	BKGR02-051	4T	NAFO
27-Jul-02	BKNF02-295	3NO OUTER	NAFO
27-Jul-02	BKNF02-296	3K	NAFO
27-Jul-02	BKQR02-048	4S	NAFO
29-Jul-02	BKNF02-299	3L	NAFO
29-Jul-02	BKNF02-300	3PN/3PS	NAFO
29-Jul-02	BKSF02-185	4X	NAFO
30-Jul-02	BKNF02-301	3LM NORTH	NAFO
31-Jul-02	BKNF02-302	3 PS	NAFO
31-Jul-02	BKNF02-303	3LM SOUTH	NAFO
31-Jul-02	BKQR02-049	4T/4S	NAFO
31-Jul-02	BKSF02-186	4WX	NAFO
01-Aug-02	BKQR02-050	AREA 16	NAFO
01-Aug-02	BKSF02-187	4X/5ZE	NAFO
02-Aug-02	BKNF02-304	3M	NAFO
02-Aug-02	BKNF02-305	3NO	NAFO
02-Aug-02	BKSF02-188	4VW	NAFO
03-Aug-02	BKNF02-306	3-L-INNER	NAFO
03-Aug-02	BKSF02-189	4X/5ZE	NAFO
04-Aug-02	BKNF02-307	3P	NAFO
04-Aug-02	BKNF02-308	3K	NAFO
04-Aug-02	BKNF02-309	4R	NAFO
04-Aug-02	BKQR02-051	4S	NAFO
05-Aug-02	BKNF02-310	3L-OUTER	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
05-Aug-02	BKNF02-311	3M-EAST	NAFO
05-Aug-02	BKSF02-190	4VSW	NAFO
06-Aug-02	BKNF02-312	3M	NAFO
06-Aug-02	BKNF02-313	3PS	NAFO
06-Aug-02	BKSF02-191	4X/5ZE	NAFO
07-Aug-02	BKGR02-052	4T	NAFO
07-Aug-02	BKGR02-052	4T	NAFO
07-Aug-02	BKNF02-314	3L	NAFO
07-Aug-02	BKNF02-315	3L	NAFO
07-Aug-02	BKSF02-192	4X	NAFO
08-Aug-02	BKNF02-316	3L	NAFO
08-Aug-02	BKSF02-193	4VW	NAFO
09-Aug-02	BKSF02-194	5ZE/4X	NAFO
10-Aug-02	BKQR02-051	4S	NAFO
11-Aug-02	BKNF02-318	3NO OUTER	NAFO
11-Aug-02	BKSF02-195	4WX-5ZE	NAFO
12-Aug-02	BKNF02-320	4R	NAFO
12-Aug-02	BKNF02-321	3LN	NAFO
12-Aug-02	BKNF02-322	3L-OUTER	NAFO
12-Aug-02	BKQR02-052	4S	NAFO
13-Aug-02	BKSF02-196	4W	NAFO
14-Aug-02	BKNF02-323	3NO WEST	NAFO
14-Aug-02	BKNF02-324	3PS	NAFO
14-Aug-02	BKSF02-197	5XE/4X	NAFO
15-Aug-02	BKNF02-325	3K	NAFO
15-Aug-02	BKNF02-326	3-PS	NAFO
15-Aug-02	BKSF02-198	4X	NAFO
16-Aug-02	BKNF02-327	3NO WEST	NAFO
17-Aug-02	BKNF02-328	3M-EAST	NAFO
18-Aug-02	BKNF02-329	3LNO LINE	NAFO
18-Aug-02	BKSF02-200	44X/5ZE	NAFO
19-Aug-02	BKSF02-201	4VW/4X	NAFO
20-Aug-02	BKGR02-053	4T	NAFO
20-Aug-02	BKNF02-330	3L-OUTER	NAFO
20-Aug-02	BKNF02-331	3BC	NAFO
20-Aug-02	BKSF02-202	4X	NAFO
21-Aug-02	BKNF02-332	3M	NAFO
21-Aug-02	BKSF02-203	4X	NAFO
22-Aug-02	BKNF02-334	3PS	NAFO
22-Aug-02	BKNF02-335	3LPS	NAFO
23-Aug-02	BKNF02-336	3LM OUTER	NAFO
24-Aug-02	BKGR02-054	4T	NAFO
24-Aug-02	BKNF02-337	3LM	NAFO
24-Aug-02	BKSF02-204	4VW	NAFO
25-Aug-02	BKNF02-338	3NO	NAFO
25-Aug-02	BKQR02-053	4S/R	NAFO
25-Aug-02	BKSF02-205	5ZE/4X	NAFO
26-Aug-02	BKNF02-339	2J/2H	NAFO
26-Aug-02	BKSF02-206	4X	NAFO
27-Aug-02	BKNF02-340	3L-OUTER	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
27-Aug-02	BKSF02-207	4XW	NAFO
28-Aug-02	BKGR02-055	4T	NAFO
29-Aug-02	BKNF02-342	3NO-OUTER	NAFO
29-Aug-02	BKNF02-343	3PS	NAFO
29-Aug-02	BKSF02-208	4VW	NAFO
30-Aug-02	BKNF02-344	3NO	NAFO
30-Aug-02	BKNF02-345	3KL	NAFO
30-Aug-02	BKSF-02-209	5ZE/4X	NAFO
31-Aug-02	BKNF02-346	3L	NAFO
31-Aug-02	BKQR02-054	4S	NAFO
01-Sep-02	BKNF02-347	3L	NAFO
02-Sep-02	BKNF02-348	3KL	NAFO
02-Sep-02	BKSF02-210	5ZE/4X	NAFO
03-Sep-02	BKNF02-349	3M-EAST	NAFO
04-Sep-02	BKNF02-350	3LM-OUTER	NAFO
04-Sep-02	BKNF02-351	3PS	NAFO
04-Sep-02	BKSF02-212	5ZE/4X	NAFO
05-Sep-02	BKGR02-056	4T	NAFO
05-Sep-02	BKNF02-352	4R	NAFO
05-Sep-02	BKSF02-213	4WX	NAFO
06-Sep-02	BKNF02-353	3L OUTER	NAFO
06-Sep-02	BKSF02-214	5ZE/4X	NAFO
07-Sep-02	BKNF02-354	3NO	NAFO
07-Sep-02	BKSF02-215	4X	NAFO
08-Sep-02	BKNF02-355	3L	NAFO
09-Sep-02	BKNF02-356	3L-OUTER	NAFO
10-Sep-02	BKNF02-357	3L-OUTER	NAFO
10-Sep-02	BKSF02-216	4X	NAFO
11-Sep-02	BKNF02-358	3M EAST	NAFO
11-Sep-02	BKNF02-359	3L0	NAFO
11-Sep-02	BKSF02-217	5ZE/4X	NAFO
12-Sep-02	BKSF02-218	4W	NAFO
13-Sep-02	BKGR02-057	4T	NAFO
14-Sep-02	BFNF02-361	3LOUTER	NAFO
14-Sep-02	BKNF02-360	3L	NAFO
14-Sep-02	BKNF02-362	3L	NAFO
14-Sep-02	BKSF02-219	4W	NAFO
15-Sep-02	BKNF02-363	3L	NAFO
16-Sep-02	BKNF02-364	3NO-WEST	NAFO
16-Sep-02	BKSF02-221	4VSW	NAFO
17-Sep-02	BKNF02-365	3PS	NAFO
17-Sep-02	BKSF02-222	5ZE/4X	NAFO
18-Sep-02	BKGR02-058	4T	NAFO
18-Sep-02	BKNF02-366	3PN-4R	NAFO
18-Sep-02	BKSF02-223	4WX	NAFO
19-Sep-02	BKNF02-367	3LM	NAFO
19-Sep-02	BKSF02-224	4X	NAFO
20-Sep-02	BKGR02-059	4T	NAFO
20-Sep-02	BKNF02-368	3NO-OUTER	NAFO
20-Sep-02	BKNF02-368	3PS	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
20-Sep-02	BKSF02-225	4X	NAFO
21-Sep-02	BKNF02-370	3NO-OUTER	NAFO
21-Sep-02	BKNF02-371	3NO-OUTER	NAFO
21-Sep-02	BKSF02-226	4VWX	NAFO
22-Sep-02	BKNF02-372	3LN-OUTER	NAFO
23-Sep-02	BKNF02-374	3NO	NAFO
23-Sep-02	BKNF02-375	2HJ	NAFO
23-Sep-02	BKNF02-376	3LM	NAFO
24-Sep-02	BKNF02-377	3L	NAFO
24-Sep-02	BKNF02-378	3NO-OUTER/3PS	NAFO
25-Sep-02	BKGR02-060	4T	NAFO
25-Sep-02	BKNF02-379	3L	NAFO
25-Sep-02	BKSF02-228	4W/4X	NAFO
26-Sep-02	BKNF02-380	3L	NAFO
26-Sep-02	BKNF02-381	3N OUTER	NAFO
26-Sep-02	BKSF02-229	4W	NAFO
27-Sep-02	BKSF02-230	4X/5ZE	NAFO
28-Sep-02	BKGR02-061	4T	NAFO
28-Sep-02	BKNF02-382	3LM	NAFO
29-Sep-02	BKNF02-383	4L OUTER	NAFO
29-Sep-02	BKNF02-384	3NO OUTER	NAFO
29-Sep-02	BKSF02-231	4W/4X/5ZE	NAFO
30-Sep-02	BKSF02-232	4W/4X	NAFO
01-Oct-02	BKSF02-233	4W/5ZE	NAFO
02-Oct-02	BKGR02-062	4T	NAFO
02-Oct-02	BKNF02-388	3N0 OUTER	NAFO
02-Oct-02	BKNF02-389	3PS	NAFO
03-Oct-02	BKGR02-063	4T	NAFO
04-Oct-02	BKNF02-391	3L	NAFO
04-Oct-02	BKNF02-392	3NO OUTER	NAFO
04-Oct-02	BKSF02-236	4X	NAFO
05-Oct-02	BKNF02-393	3L	NAFO
06-Oct-02	BKGR02-064	4T	NAFO
06-Oct-02	BKNF02-394	3NO-WEST	NAFO
06-Oct-02	BKSF02-237	4V/W	NAFO
08-Oct-02	BKNF02-395	3NO-WEST	NAFO
08-Oct-02	BKSF02-238	4W/4Y/5ZE	NAFO
09-Oct-02	BKNF02-396	3LM-NORTH	NAFO
09-Oct-02	BKNF02-397	3O/PS	NAFO
09-Oct-02	BKSF02-239	4W/4X	NAFO
10-Oct-02	BKGR02-066	4T/4VN	NAFO
10-Oct-02	BKNF02-398	3NO	NAFO
10-Oct-02	BKSF02-240	4X/5ZE	NAFO
11-Oct-02	BKNF02-399	3M EAST	NAFO
11-Oct-02	BKQR02-055	4T	NAFO
12-Oct-02	BKNF02-400	3L	NAFO
12-Oct-02	BKSF02-241	4WX	NAFO
13-Oct-02	BKNF02-401	3M-SOUTH	NAFO
14-Oct-02	BKNF02-402	3L	NAFO
14-Oct-02	BKNF02-403	3L	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
14-Oct-02	BKSF02-242	4W	NAFO
15-Oct-02	BKNF02-404	3L	NAFO
15-Oct-02	BSFK02-243	5ZE/4X	NAFO
16-Oct-02	BKNF02-405	3M	NAFO
16-Oct-02	BKSF02-244	4WX	NAFO
17-Oct-02	BKNF02-406	3PN/S	NAFO
17-Oct-02	BKSR02-245	4VW	NAFO
18-Oct-02	BKSF02-246	4X-5ZE	NAFO
19-Oct-02	BKNF02-407	3L	NAFO
19-Oct-02	BKQR02-056	4S/4T	NAFO
20-Oct-02	BKNF02-408	3PS	NAFO
20-Oct-02	BKSF02-247	4W/4X	NAFO
21-Oct-02	BKNF02-409	3LN	NAFO
21-Oct-02	BKQR02-057	4S	NAFO
22-Oct-02	BKNF02-410	3NO-OUTER	NAFO
22-Oct-02	BKSF02-248	5ZE/4X	NAFO
23-Oct-02	BKNF02-411	3LM-SOUTH	NAFO
23-Oct-02	BKNF02-412	3PS	NAFO
23-Oct-02	BKSF02-249	4VW	NAFO
24-Oct-02	BKGR02-067	4T	NAFO
24-Oct-02	BKNF02-413	3PS	NAFO
24-Oct-02	BKSF02-250	4W/4X	NAFO
25-Oct-02	BKSF02-251	4W/X	NAFO
26-Oct-02	BKNF02-415	NORTHERN P	NAFO
26-Oct-02	BKNF02-416	3LNO	NAFO
27-Oct-02	BKNF02-418	3-L-OUTER	NAFO
27-Oct-02	BKSF02-252	5ZE/4X	NAFO
28-Oct-02	BKNF02-419	3PS	NAFO
28-Oct-02	BKNF02-420	TRANSIT	NAFO
29-Oct-02	BKNF02-421	3M	NAFO
29-Oct-02	BKSF02-254	4W/X	NAFO
30-Oct-02	BKNF02-422	3L	NAFO
30-Oct-02	BKNF02-423	3PS	NAFO
30-Oct-02	BKSF02-255	5ZE/4X	NAFO
31-Oct-02	BKNF02-424	3K	NAFO
31-Oct-02	BKNF02-425	3NO	NAFO
31-Oct-02	BKQR02-058	3S	NAFO
31-Oct-02	BKSF02-256	4W/X	NAFO
01-Nov-02	BKGR02-069	4T	NAFO
01-Nov-02	BKNF02-426	3M OUTER	NAFO
01-Nov-02	BKSF02-257	4W/X	NAFO
01-Nov-02	BKSF02-258	4X	NAFO
02-Nov-02	BKNF02-427	3LM NORTH	NAFO
04-Nov-02	BKNF02-428	3PS	NAFO
04-Nov-02	BKNF02-429	3NO-OUTER	NAFO
04-Nov-02	BKSF02-259	4VW	NAFO
05-Nov-02	BKNF02-430	5ZE/4X	NAFO
05-Nov-02	BKSF02-260	3LM-SOUTH	NAFO
06-Nov-02	BKNF02-431	3NO-OUTER	NAFO
06-Nov-02	BKNF02-432	3PS	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
06-Nov-02	BKRG02-072	4T	NAFO
06-Nov-02	BKSF02-261	4X	NAFO
09-Nov-02	BKNF02-435	3LM NORTH	NAFO
09-Nov-02	BKSF02-264	4X	NAFO
10-Nov-02	BKNF02-436	3NO OUTER	NAFO
11-Nov-02	BKNF02-437	3K	NAFO
11-Nov-02	BKSF02-265	4X	NAFO
12-Nov-02	BKNF02-438	3LM-SOUTH	NAFO
12-Nov-02	BKNF02-439	3K	NAFO
12-Nov-02	BKNF02-440	3PS	NAFO
12-Nov-02	BKSF02-266	5ZE/4X	NAFO
13-Nov-02	BKNF02-441	3LM	NAFO
13-Nov-02	BKSF02-267	4W/4VN/4VS	NAFO
14-Nov-02	BKGR02-073	4T	NAFO
15-Nov-02	BKNF02-443	3LM NORTH	NAFO
15-Nov-02	BKQR02-059	4S	NAFO
16-Nov-02	BKNF02-444	2NO	NAFO
16-Nov-02	BKSF02-270	4W 4X 5ZE	NAFO
17-Nov-02	BKNF02-445	3PS/N	NAFO
19-Nov-02	BKNF02-446	3LM NORTH	NAFO
19-Nov-02	BKSF02-271	4VW	NAFO
02-Dec-02	BKBF02-463	3LM	NAFO
02-Dec-02	BKSF02-289	4X/5ZE	NAFO
03-Dec-02	BKGR02-076	4T	NAFO
03-Dec-02	BKSF02-290	4X	NAFO
04-Dec-02	BKNF02-465	4R	NAFO
04-Dec-02	BKNF02-466	3NO	NAFO
04-Dec-02	BKSF02-291	4W/X	NAFO
05-Dec-02	BKNF02-467	3-L-OUTER	NAFO
05-Dec-02	BKNF02-468	4R/2J/3K	NAFO
05-Dec-02	BKNF02-469	3PS	NAFO
05-Dec-02	BKSF02-292	4X5ZE	NAFO
06-Dec-02	BKNF02-470	3M NORTH	NAFO
06-Dec-02	BKSF02-293	4VW	NAFO
07-Dec-02	BKNF02-472	3NO OUTER	NAFO
07-Dec-02	BKSF02-294	4W/4X/5ZE	NAFO
08-Dec-02	BKNF02-473	3N OUTER	NAFO
08-Dec-02	BKSF02-295	4X/5Z	NAFO
09-Dec-02	BKGR02-078	4T	NAFO
09-Dec-02	BKNF02-474	3LM SOUTH	NAFO
09-Dec-02	BKSF02-296	4X	NAFO
10-Dec-02	BKFN02-475	3NO OUTER	NAFO
10-Dec-02	BKNF02-476	3-PS	NAFO
10-Dec-02	BKSF02-297	4X, 5ZE	NAFO
11-Dec-02	BKNF02-477	4R	NAFO
11-Dec-02	BKNF02-478	3L INSIDE	NAFO
11-Dec-02	BKSF02-298	4VW	NAFO
12-Dec-02	BKNF02-479	3LNO	NAFO
12-Dec-02	BKNF02-480	3NO	NAFO
12-Dec-02	BKNF02-481	4R	NAFO

Appendix H

TABLE H – 1 (continued)

PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
12-Dec-02	BKNF02-482	3PS	NAFO
12-Dec-02	BKSF02-299	4X/5ZE	NAFO
13-Dec-02	BKNF02-483	3L	NAFO
13-Dec-02	BKNF02-484	3K	NAFO
13-Dec-02	BKNF02-485	3PS	NAFO
13-Dec-02	BKSF02-300	4WX	NAFO
14-Dec-02	BKGR02-079	4T	NAFO
14-Dec-02	BKNF02-486	3NO	NAFO
14-Dec-02	BKSF02-301	4X5ZE	NAFO
15-Dec-02	BKSF02-302	4X	NAFO
16-Dec-02	BKGR02-078	4T	NAFO
16-Dec-02	BKNF02-487	3LOUTER	NAFO
16-Dec-02	BKSF02-303	4X	NAFO
17-Dec-02	BKSF02-304	4X/5ZE	NAFO
18-Dec-02	BKGR02-080	4T	NAFO
18-Dec-02	BKNF02-488	3K	NAFO
18-Dec-02	BKNF02-490	4R	NAFO
19-Dec-02	BKNF02-491	3NO-OUTER	NAFO
20-Dec-02	BKNF02-492	3PS	NAFO
20-Dec-02	BKNF02-493	3LM-NORTH	NAFO
21-Dec-02	BKNF02-305	4X/5ZE	NAFO
21-Dec-02	BKNF02-494	3NO	NAFO
21-Dec-02	BKSF02-306	4WX	NAFO
23-Dec-02	BKNF02-496	3LM SOUTH	NAFO
23-Dec-02	BKSF02-307	4X/5ZE	NAFO
23-Dec-02	BKSF02-308	4X/5ZE	NAFO
24-Dec-02	BKNF02-497	3NO OUTER	NAFO
24-Dec-02	BKSF02-309	5ZE/4X	NAFO
25-Dec-02	BKNF02-498	3M	NAFO
27-Dec-02	BKNF02-310	4W/4X	NAFO
28-Dec-02	BKNF02-499	3NO-OUTER	NAFO
28-Dec-02	BKSF02-311	4WX	NAFO
29-Dec-02	BKNF02-500	3L OUTER	NAFO
30-Dec-02	BKNF02-501	3NO OUTER	NAFO
30-Dec-02	BKNF02-502	3PS	NAFO
30-Dec-02	BKSF02-312	5ZE/4X	NAFO
31-Dec-02	BKNF02-503	3NO	NAFO
31-Dec-02	BKSF02-313	4X	NAFO

Source: Maritime Operations Centre, Halifax, 2003.

Appendix H

Table H-2 contains the mission identifiers and areas patrolled by PAL surveillance aircraft contracted by the Canadian Coast Guard for anti-pollution patrols during the year 2002. Except where no grid area is indicated, the grid used to plan the PAL missions is the North Atlantic Fisheries Organization depicted in Chapter Three at Figures 3-12 and 3-13. Where no grid area is indicated, the researcher used the NAFO area in which are located the features such as Hibernia, Virgin Rocks, Placentia Bay, and Conception Bay for creating Figure 7-7. The first three digits of the mission identifier indicates that the aircraft was tasked in support of the Canadian Coast Guard.

TABLE H - 2

CCG PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
02-Jan-02	CCG02-001	HIBERNIA	Nil
03-Jan-02	CCG02-002	VIRGIN ROCKS	Nil
07-Jan-02	CCG02-004	S. COAST	Nil
09-Jan-02	CCG02-005	HIBERNIA	Nil
10-Jan-02	CCG02-006	S. COAST	Nil
15-Jan-02	CCG02-008	HIBERNIA	Nil
21-Jan-02	CCG02-009	S. COAST	Nil
24-Jan-02	CCG02-010	HIBERNIA	Nil
28-Jan-02	CCG02-012	SE. COAST	Nil
29-Jan-02	CCG02-013	S. COAST	Nil
30-Jan-02	CCG02-014	unknown	Nil
31-Jan-02	CCG02-015	VIRGIN ROCKS	Nil
04-Feb-02	CCG02-017	S. COAST	Nil
07-Feb-02	CCG02-018	S. COAST	Nil
11-Feb-02	CCG02-019	S. COAST	Nil
12-Feb-02	CCG02-020	S. COAST	Nil
13-Feb-02	CCG02-021	S. COAST	Nil
14-Feb-02	CCG02-022	SOUTH	Nil
15-Feb-02	CCG02-023	SW. COAST	Nil
16-Feb-02	CCG02-024	SOUTH	Nil
26-Feb-02	CCG02-026	VIRGIN ROCKS	Nil
01-Mar-02	CCG02-027	HIBERNIA	Nil
05-Mar-02	CCG02-028	S. COAST	Nil
11-Mar-02	CCG02-031	3L	NAFO
11-Mar-02	CCG02-031	3L	NAFO
11-Mar-02	CCG02-031	3L	NAFO
11-Mar-02	CCG02-031	3L	NAFO
11-Mar-02	CCG02-031	3L	NAFO
11-Mar-02	CCG02-031	3L	NAFO
17-Mar-02	CCG02-032	unknown	Nil
18-Mar-02	CCG02-033	S. COAST	Nil
19-Mar-02	CCG02-034	3K/2J	NAFO

Appendix H

TABLE H – 2 (continued)

CCG PAL AIRCRAFT PATROLS IN FIGURE 7-7

Date	Mission ID	Areas of Patrol	Grid Used for Patrol
20-Mar-02	CCG02-035	3K	NAFO
21-Mar-02	CCG02-036	3K	NAFO
22-Mar-02	CCG02-037	3KPS	NAFO
23-Mar-02	CCG02-038	3K	NAFO
26-Mar-02	CCG02-039	PLACENTIA BAY	Nil
31-Mar-02	CCG02-040	3L	NAFO
01-Apr-02	CCG02-041	CONCEPTION BAY	Nil
01-Apr-02	CCG02-042	CONCEPTION BAY	Nil
02-Apr-02	CCG02-043	CONCEPTION BAY	Nil
02-Apr-02	CCG02-044	CONCEPTION BAY	Nil
03-Apr-02	CCG02-043	CONCEPTION BAY	Nil
03-Apr-02	CCG02-044	CONCEPTION BAY	Nil
19-Apr-02	CCG02-046	HIBERNIA	Nil
22-Apr-02	CCG02-047	3L	NAFO
26-Apr-02	CCG02-048	SE. COAST	Nil
27-Apr-02	CCG02-049	S. COAST	Nil
11-May-02	CCG02-049	S. COAST	Nil
17-May-02	CCG02-050	HIBERNIA	Nil
22-May-02	CCG02-051	PLACENTIA BAY	Nil
20-Jun-02	CCG02-054	3LO	NAFO
11-Jul-02	CCG02-999	PLACENTIA BAY	Nil
23-Jul-02	CCG02-057	SW. COAST	Nil
24-Jul-02	CCG02-058	S. COAST	Nil
26-Jul-02	CCG02-059	HIBERNIA	Nil
16-Aug-02	CCG02-060	PLACENTIA BAY	Nil
27-Aug-02	CCG02-061	PLACENTIA BAY	Nil
28-Aug-02	CCG02-062	HIBERNIA	Nil
06-Sep-02	CCG02-063	PLACENTIA BAY	Nil
08-Sep-02	CCG02-064	3PS	NAFO
09-Sep-02	CCG02-065	EAST COAST	Nil
14-Sep-02	CCG02-066	S. COAST	Nil
15-Sep-02	CCG02-067	3L	NAFO
16-Sep-02	CCG02-068A	3L	NAFO
19-Sep-02	CCG02-069	S. COAST	Nil
27-Sep-02	CCG02-070	3L	NAFO
30-Sep-02	CCG02-071	VIRGIN ROCKS	Nil
10-Oct-02	CCG02-072	PLACENTIA BAY	Nil
11-Oct-02	CCG02-073	SE. COAST	Nil
15-Oct-02	CCG02-074	PLACENTIA BAY	Nil
23-Oct-02	CCG02-075	SW COAST	Nil
28-Oct-02	CCG02-076	PLACENTIA BAY	Nil
19-Nov-02	CCG02-077	PLACENTIA BAY	Nil
02-Dec-02	CCG02-081	PLACENTIA BAY	Nil
09-Dec-02	CCG02-083	PLACENTIA BAY	Nil
10-Dec-02	CCG02-084	S. COAST	Nil
19-Dec-02	CCG02-086	S. COAST	Nil
30-Dec-02	CCG02-089	PLACENTIA BAY	Nil
31-Dec-02	CCG02-090	PLACENTIA BAY	Nil

Source: Maritime Operations Centre, Halifax, 2003.

Appendix J

NAVAL FISHERY AND PREVENTATIVE PATROLS 1980 –2003

This appendix provides in various tables the names and dates during the period 1980 to 2003 of naval vessels employed in fisheries patrols in support of Fisheries and Oceans Canada, and preventative patrols in support of the Royal Canadian Mounted Police. Only patrols undertaken in the Atlantic Ocean were used in this study.

Tables J-1 and J-2 were constructed from primary source data at the National Library and Archives of Canada, Maritime Forces Atlantic, Director General Operational Research, and Fisheries and Oceans Conservation and Protection Branch Newfoundland Region. The maps and tables presented in this thesis were derived from each of these patrols, except where data unavailable is indicated in the column "Data source." A variety of data were extracted from each patrol, such as patrol ship geographic positions, marine traffic geographic positions, and the locations of boardings for inspection.

Given the nature of the different sources of data, not all data sets were captured for each patrol. The primary data sources are listed in the tables as follows:

Ship's Log -	Held at the National Library and Archives of Canada at Ottawa.
DFO CFINS -	Data extracted from Fisheries and Oceans CFIN System (Canadian Fisheries Information Network.)
Patrol Report -	Report sent post-patrol by individual units either by message (ships) or by letter (submarines). Retained by Maritime Forces Atlantic Headquarters in Halifax.
Template -	Electronic templates in Microsoft Excel and Access supplied by researcher to naval vessels prior to patrol commencement. Templates facilitated electronic recording of positional information concerning own ship and other contacts.
MOC CHDB -	Data extracted from the Contact History Data Base (CHDB) maintained by the Maritime Operations Centre at Maritime Forces Atlantic Headquarters in Halifax. This data base contains positional information of military units that provide geographic co-ordinates to the US military Global Command and Control System (GCCS).

Appendix J

The numbers appearing in the column "Ship Type" correspond to the different classes of ships.

Type 1 -	DDE	Destroyer escort. Improved *Restigouche* and *Mackenzie* classes
Type 2 -	DDH	Destroyer with helicopter. *Annapolis* and Improved *St Laurent* classes
Type 3 -	FFH	Frigate with helicopter. *Halifax* class.
Type 4 -	DDH	Destroyer with helicopter. Command and control platform. *Iroquois* class.
Type 5 -	AOR	Auxiliary oil replenishment vessel. *Protecteur* and *Preserver* classes.
Type 6 -	MSA	Minesweeping auxiliary. HMCS *Anticosti* and HMCS *Moresby*.
Type 7 -	MCDV	Maritime Coastal Defence Vessel. *Kingston* class.
Type 8 -	ASXL	Diving auxiliary. HMCS *Cormorant*.
Type 9 -	SSK	Conventional-powered submarine. *Oberon* and *Victoria* classes.
Type 10 -	CFAV	Canadian Forces Auxiliary Vessel. Non-warship support vessels crewed by civilians.

TABLE J-1

NAVAL FISHERIES PATROLS 1980 - 2003

Ship Name	Ship Type	Start Date	Stop Date	Data Sources
Nipigon	2	22-Apr-80	09-May-80	Ship's Log
Assiniboine	2	12-Nov-80	28-Nov-80	Ship's Log
Algonquin	4	25-Nov-80	12-Dec-80	Ship's Log
Skeena	2	08-Jan-81	23-Jan-81	Ship's Log
Fraser	2	19-May-81	04-Jun-81	Ship's Log
Cormorant	8	14-Oct-81	28-Oct-81	Ship's Log
Margaree	2	22-Oct-81	05-Nov-81	Ship's Log
Huron	4	21-Jan-82	05-Feb-82	Ship's Log
Nipigon	2	15-Feb-82	05-Mar-82	Ship's Log
Assiniboine	2	18-Jan-83	03-Feb-83	Ship's Log
Nipigon	2	15-Mar-83	28-Mar-83	Ship's Log
Iroquois	4	24-Nov-83	10-Dec-83	Ship's Log
Cormorant	8	09-Jan-84	01-Feb-84	Ship's Log
Skeena	2	13-Feb-84	29-Feb-84	Ship's Log
Saguenay	2	12-Mar-84	29-Mar-84	Ship's Log
Assiniboine	2	02-May-84	09-May-84	Ship's Log
Cormorant	8	28-May-84	23-Jun-84	Ship's Log
Skeena	2	15-Jan-85	07-Feb-85	Ship's Log
Saguenay	2	26-Feb-85	15-Mar-85	Ship's Log
Algonquin	4	07-May-85	24-May-85	Ship's Log
Athabaskan	4	26-Jun-85	02-Jul-85	Ship's Log
Iroquois	4	28-Jun-85	11-Jul-85	Ship's Log
Athabaskan	4	15-Jul-85	26-Jul-85	Ship's Log
Skeena	2	29-Oct-85	15-Nov-85	Ship's Log
Cormorant	8	14-Jan-86	21-Feb-86	Ship's Log
Algonquin	4	01-Mar-86	05-Mar-86	Ship's Log
Nipigon	2	30-Sep-86	17-Oct-86	Ship's Log

Appendix J

TABLE J-1 (continued)

NAVAL FISHERIES PATROLS 1980 - 2003

Ship Name	Ship Type	Start Date	Stop Date	Data Sources
Assiniboine	2	28-Oct-86	14-Nov-86	Ship's Log
Margaree	2	28-Jan-87	08-Feb-87	Ship's Log
Saguenay	2	24-Feb-87	04-Mar-87	Ship's Log
Cormorant	8	23-Mar-87	10-Apr-87	Ship's Log
Margaree	2	16-Jun-87	03-Jul-87	Ship's Log
Fraser	2	06-Aug-87	20-Aug-87	Ship's Log
Annapolis	2	19-Jan-88	03-Feb-88	Ship's Log
Gatineau	1	03-May-88	20-May-88	Ship's Log
Assiniboine	2	24-Oct-88	12-Nov-88	Ship's Log
Skeena	2	18-Jan-89	10-Feb-89	Ship's Log
Gatineau	1	15-Nov-89	20-Nov-89	Ship's Log
Cormorant	8	17-Nov-89	16-Dec-89	Ship's Log
Saguenay	2	04-Dec-89	18-Dec-89	Ship's Log
Terra Nova	1	14-May-90	unknown	DFO CFINS
Margaree	2	22-Oct-90	09-Nov-90	Ship's Log, DFO CFINS
Cormorant	8	03-Dec-90	14-Dec-90	Ship's Log, DFO CFINS
Gatineau	1	28-Jan-91	unknown	DFO CFINS
Skeena	2	18-Feb-91	unknown	DFO CFINS
Nipigon	2	29-Apr-91	unknown	DFO CFINS
Margaree	2	10-Jun-91	21-Jun-91	Ship's Log
CFAV St Charles	10	-- Jun-91	unknown	DFO CFINS
Margaree	2	23-Jul-91	16-Aug-91	Ship's Log, DFO CFINS
CFAV St Charles	10	-- Aug 91	unknown	DFO CFINS
Cormorant	8	20-Aug-91	unknown	Data unavailable
Ottawa	2	23-Sep-91	04-Oct-91	Ship's Log, DFO CFINS
Margaree	2	30-Sep-91	17-Oct-91	Ship's Log, DFO CFINS
CFAV Riverton	10	-- Nov-91	unknown	DFO CFINS
Cormorant	8	-- Dec-91	-- Dec-91	DFO CFINS
CFAV Riverton	10	-- Jan-92	unknown	DFO CFINS
Nipigon	2	10-Feb-92	28-Feb-92	Ship's Log, DFO CFINS
Nipigon	2	17-Mar-92	31-Mar-92	Ship's Log, DFO CFINS
Margaree	2	06-Apr-92	16-Apr-92	Ship's Log, DFO CFINS
Fraser	2	04-May-92	15-May-92	Ship's Log, DFO CFINS
Fraser	2	13-Jul-92	31-Jul-92	Ship's Log, DFO CFINS
Nipigon	2	10-Aug-92	unknown	DFO CFINS
Skeena	2	05-Oct-92	30-Oct-92	Ship's Log, DFO CFINS
Ojibwa	9	05-Mar-93	12-Mar-93	Patrol Report
Anticosti	6	19-Apr-93	30-Apr-93	Ship's Log, DFO CFINS
Moresby	6	19-Apr-93	30-Apr-93	Ship's Log, DFO CFINS
Gatineau	1	03-May-93	27-May-93	Ship's Log, DFO CFINS
Skeena	2	25-May-93	04-Jun-93	Ship's Log, DFO CFINS
Nipigon	2	09-Jun-93	18-Jun-93	Ship's Log, DFO CFINS
Moresby	6	03-Aug-93	11-Aug-93	Ship's Log, DFO CFINS
Skeena	2	23-Aug-93	17-Sep-93	Ship's Log, DFO CFINS
Anticosti	6	20-Sep-93	08-Oct-93	Ship's Log, DFO CFINS
Moresby	6	21-Feb-94	02-Mar-94	Ship's Log, DFO CFINS
Anticosti	6	06-Apr-94	22-Apr-94	Ship's Log, DFO CFINS
Moresby	6	04-May-94	unknown	Data unavailable
Fraser	2	10-May-94	21-May-94	Ship's Log, DFO CFINS
Fraser	2	04-Jul-94	29-Jul-94	Ship's Log, DFO CFINS
Anticosti	6	25-Jul-94	14-Aug-94	Ship's Log, DFO CFINS
Gatineau	1	08-Aug-94	26-Aug-94	Ship's Log, DFO CFINS
Fraser	2	12-Sep-94	30-Sep-94	Ship's Log, DFO CFINS

Appendix J

TABLE J-1 (continued)

NAVAL FISHERIES PATROLS 1980 - 2003

Ship Name	Ship Type	Start Date	Stop Date	Data Sources
Okanagan	9	26-Sep-94	10-Oct-94	Patrol Report
Cormorant	8	14-Nov-94	unknown	Data unavailable
Cormorant	8	20-Mar-95	08-Apr-95	Ship's Log, DFO CFINS
Toronto	3	27-Mar-95	10-Apr-95	Ship's Log, DFO CFINS
Cormorant	8	18-Apr-95	08-May-95	Ship's Log, DFO CFINS
Onondaga	9	23-May-95	unknown	Data unavailable
Nipigon	2	-- Jun-95	unknown	DFO CFINS
Anticosti	6	04-Jul-95	14-Jul-95	Ship's Log, DFO CFINS
Moresby	6	17-Jul-95	unknown	DFO CFINS
Halifax	3	19-Aug-95	unknown	DFO CFINS
Gatineau	1	11-Sep-95	06-Oct-95	Ship's Log, DFO CFINS
Cormorant	8	10-Oct-95	08-Nov-95	Ship's Log, DFO CFINS
Cormorant	8	20-Nov-95	14-Dec-95	Ship's Log, DFO CFINS
Terra Nova	1	05-Feb-96	unknown	DFO CFINS
Toronto	3	27-Feb-96	17-Mar-96	Ship's Log, DFO CFINS
Terra Nova	2	09-Apr-96	unknown	DFO CFINS
Moresby	6	02-Jul-96	19-Jul-96	Ship's Log, DFO CFINS
Anticosti	6	29-Jul-96	unknown	DFO CFINS
Toronto	3	16-Sep-96	11-Oct-96	Ship's Log, DFO CFINS
Cormorant	8	28-Sep-96	unknown	Data unavailable
Terra Nova	1	27-Jan-97	unknown	DFO CFINS
Terra Nova	2	07-Apr-97	unknown	DFO CFINS
Anticosti	6	05-May-97	21-May-97	Ship's Log, DFO CFINS
Montreal	3	26-May-97	06-Jun-97	Ship's Log, DFO CFINS
Glace Bay	7	02-Sep-97	18-Sep-97	Ship's Log, DFO CFINS
Kingston	7	29-Sep-97	17-Oct-97	Ship's Log, DFO CFINS
Ville de Quebec	3	06-Oct-97	24-Oct-97	Ship's Log, DFO CFINS
Fredericton	3	03-Dec-97	19-Dec-97	Ship's Log, DFO CFINS
Glace Bay	7	20-Oct-97	13-Nov-97	Ship's Log, DFO CFINS
Nipigon	1	25-Apr-98	30-May-98	Data unavailable
Anticosti	6	01-May-98	19-May-98	DFO CFINS
Kingston	7	17-Aug-98	23-May-98	DFO CFINS
Charlottetown	3	21-Oct-98	11-Nov-98	DFO CFINS
Halifax	3	01-Dec-98	17-Dec-98	Patrol Report, DFO CFINS
Charlottetown	3	08-Jan-99	25-Jan-99	Patrol Report, DFO CFINS
Montreal	3	22-Feb-99	12-Mar-99	Template, DFO CFINS
St John's	3	14-Jun-99	29-Jun-99	Template, DFO CFINS
Fredericton	3	28-Jul-99	17-Aug-99	Template, DFO CFINS
Kingston	7	08-Aug-99	31-Aug-99	Template, DFO CFINS
Ville de Quebec	3	08-Sep-99	29-Sep-99	Template, DFO CFINS
Moncton	7	12-Oct-99	22-Oct-99	Template, DFO CFINS
Glace Bay	7	12-Oct-99	22-Oct-99	Template, DFO CFINS
Montreal	3	24-Nov-99	14-Dec-99	Template, DFO CFINS
St John's	3	17-Jan-00	04-Feb-00	Template, DFO CFINS
Ville de Quebec	3	20-Mar-00	04-Apr-00	Template, DFO CFINS
Goose Bay	7	25-Apr-00	19-May-00	Template, DFO CFINS
Moncton	7	08-May-00	13-May-00	Template, DFO CFINS
Toronto	3	02-Jun-00	19-Jun-00	Template, DFO CFINS
Athabaskan	4	25-Jul-00	29-Jul-00	DFO CFINS
Glace Bay	7	10-Aug-00	24-Aug-00	Data unavailable
Montreal	3	14-Sep-00	29-Sep-00	Patrol Report, DFO CFINS
Athabaskan	4	20-Nov-00	01-Dec-00	Template, DFO CFINS
Ville de Quebec	3	05-Dec-00	13-Dec-00	Patrol Report, DFO CFINS

Appendix J

TABLE J-1 (continued)

NAVAL FISHERIES PATROLS 1980 - 2003

Ship Name	Ship Type	Start Date	Stop Date	Data Sources
Montreal	3	24-Jan-01	18-Feb-01	Template, DFO CFINS
Ville de Quebec	3	19-Mar-01	02-Apr-01	Patrol Report, DFO CFINS
Montreal	3	04-Apr-01	12-Apr-01	Template, DFO CFINS
Summerside	7	23-May-01	08-Jun-01	Patrol Report, DFO CFINS
Goose Bay	7	13-Jun-01	28-Jun-01	DFO CFINS
Ville de Quebec	3	03-Jul-01	20-Jul-01	Template, DFO CFINS
Ville de Quebec	3	26-Nov-01	14-Dec-01	Template, DFO CFINS
Fredericton	3	18-Feb-02	08-Mar-02	Template, DFO CFINS
Summerside	7	15-Apr-02	28-Apr-02	Template, DFO CFINS
Moncton	7	24-Jul-02	03-Aug-02	Data unavailable
Kingston	7	24-Jul-02	03-Aug-02	Template, DFO CFINS
Glace Bay	7	06-Sep-02	23-Sep-02	Template, DFO CFINS
Moncton	7	23-Sep-02	11-Oct-02	Template, DFO CFINS
Glace Bay	7	15-Oct-02	29-Oct-02	DFO CFINS
Goose Bay	7	31-Oct-02	06-Nov-02	Template, DFO CFINS
Halifax	3	25-Nov-02	12-Dec-02	Template, DFO CFINS
Charlottetown	3	03-Feb-03	21-Feb-03	Template
Halifax	3	19-Feb-03	01-Mar-03	Patrol Report

TABLE J-2

NAVAL PREVENTATIVE PATROLS 1997 - 2003

Ship Name	Ship Type	Start Date	Stop Date	Data Sources
Terra Nova	1	unknown	22-Jun-97	Data unavailable
Anticosti	6	14-Jul-97	25-Jul-97	Data unavailable
Fredericton	3	02-Jul-98	17-Jul-98	Data unavailable
Anticosti	6	16-Aug-99	27-Aug-99	Template
Anticosti	6	09-Sep-99	28-Sep-99	Template
Moncton	7	12-Jun-00	19-Jun-00	Data unavailable
Shawinigan	7	31-Jul-00	14-Aug-00	Data unavailable
Summerside	7	31-Jul-00	14-Aug-00	Data unavailable
Kingston	7	12-Jun-03	16-Jun-03	MOC CHDB
Glace Bay	7	12-Jun-03	16-Jun-03	MOC CHDB
Summerside	7	16-Jun-03	20-Jun-03	MOC CHDB
Kingston	7	03-Nov-03	07-Nov-03	MOC CHDB
Moncton	7	03-Nov-03	07-Nov-03	MOC CHDB

Appendix J

TABLE J-3

NAVAL FISHERIES PATROL TOTALS – MAJOR WARSHIP 1980 TO 1997

Ship	Year	Patrol Days	Distance (nm)	Boardings	SAR	Helicopter Hours	Arrests
Nipigon	1980	13	2210	2	-	-	-
Assiniboine	1980	14	2844	4	1	19.33	-
Algonquin	1980	16	3076	4	-	-	-
Skeena	1981	15	2816	6	-	-	-
Fraser	1981	15	3127	3	-	33.58	-
Margaree	1981	14	2873	4	1	3.98	-
Huron	1982	13	3289	4	2	54.17	-
Nipigon	1982	16	2854	-	-	28.07	-
Assiniboine	1983	15	3406	3	-	-	-
Nipigon	1983	14	3797	7	-	-	-
Iroquois	1983	14	3107	4	1	35.65	-
Skeena	1984	16	3529	10	-	-	-
Saguenay	1984	17	4451	10	1	19.87	-
Assiniboine	1984	8	2018	3	-	37.33	-
Skeena	1985	23	3333	8	-	28.95	-
Saguenay	1985	19	3896	10	-	46.57	-
Algonquin	1985	17	3520	9	1	91.10	-
Athabaskan	1985	7	1453	2	-	8.15	2
Iroquois	1985	14	3237	5	-	25.70	-
Athabaskan	1985	12	2574	7	-	49.10	-
Skeena	1985	17	3230	7	1	84.42	-
Algonquin	1986	4	942	0	-	16.38	-
Nipigon	1986	17	3354	9	1	57.87	-
Assiniboine	1986	17	3162	10	1	29.57	-
Margaree	1987	12	2665	4	-	-	-
Saguenay	1987	9	2057	1	-	2.35	-
Margaree	1987	14	3286	8	-	-	2
Fraser	1987	14	2826	11	-	-	-
Annapolis	1988	13	2908	1	-	-	-
Gatineau	1988	17	3418	3	-	-	-
Assiniboine	1988	18	3799	6	-	-	-
Skeena	1989	21	4424	6	-	23.05	-
Gatineau	1989	6	1344	-	-	-	-
Saguenay	1989	15	2786	-	-	-	-
Margaree	1990	16	3289	3	1	38.65	-
Margaree	1991	11	2194	8	1	19.97	-
Margaree	1991	22	4519	5	-	59.00	-
Ottawa	1991	11	2226	4	1	19.42	-
Margaree	1991	15	3244	3	-	35.22	-
Nipigon	1992	16	3250	4	1	30.25	-
Nipigon	1992	13	2964	3	1	36.38	-
Margaree	1992	11	2250	2	-	38.57	-
Fraser	1992	11	2016	5	-	21.30	-
Fraser	1992	18	3376	9	-	52.43	-
Skeena	1992	24	4817	5	-	54.67	-
Gatineau	1993	20	4362	7	-	-	-
Skeena	1993	11	2354	4	-	5.08	-
Nipigon	1993	10	1831	2	-	22.30	-
Skeena	1993	24	4801	17	-	65.13	-

Appendix J

TABLE J-3 (continued)

NAVAL FISHERIES PATROL TOTALS – MAJOR WARSHIP 1980 TO 1997

Ship	Year	Patrol Days	Distance (nm)	Boardings	SAR	Helicopter Hours	Arrests
Fraser	1994	11	2669	7	1	20.98	-
Fraser	1994	25	5136	20	-	53.18	-
Gatineau	1994	16	3578	11	-	-	1
Fraser	1994	16	3158	6	3	27.85	-
Toronto	1995	15	2111	-	-	26.30	-
Gatineau	1995	24	4483	12	1	-	-
Toronto	1996	15	3506	13	-	-	-
Toronto	1996	20	4038	13	1	-	-
Montreal	1997	12	2886	4	-	-	-
Ville de Quebec	1997	16	2854	3	-	-	-
Fredericton	1997	14	3242	2	-	-	-

Source: Ships' Logs, National Library and Archives.

TABLE J-4

NAVAL FISHERIES PATROL TOTALS – MINOR WARSHIP 1980 TO 1997

Ship	Year	Patrol Days	Distance (nm)	Boardings	SAR	Helicopter Hours	Arrests
Cormorant	1981	13	2467	7	-	-	-
Cormorant	1984	21	2950	13	-	-	-
Cormorant	1984	25	4298	3	-	-	-
Cormorant	1986	35	5217	17	-	-	-
Cormorant	1987	18	2657	6	-	-	-
Cormorant	1989	26	3867	-	1	-	-
Cormorant	1990	12	2136	7	-	-	-
Anticosti	1993	12	2223	5	-	-	-
Moresby	1993	12	1826	6	-	-	-
Moresby	1993	9	1427	1	-	-	-
Anticosti	1993	18	3068	5	-	-	-
Moresby	1994	10	1678	-	-	-	-
Anticosti	1994	16	3228	6	-	-	-
Anticosti	1994	17	3231	2	-	-	-
Cormorant	1995	16	2234	-	-	-	-
Anticosti	1995	11	2058	3	-	-	-
Cormorant	1995	19	2181	-	-	-	-
Cormorant	1995	23	3003	4	-	-	-
Cormorant	1995	28	3557	-	-	-	-
Moresby	1996	13	2545	-	-	-	-
Anticosti	1997	17	2514	2	-	-	-
Glace Bay	1997	15	2773	9	-	-	-
Kingston	1997	15	2974	-	-	-	-
Glace Bay	1997	22	3421	8	-	-	-

Source: Ships' Logs, National Library and Archives.

Appendix J

TABLE J-5

NAVAL FISHERIES PATROL BOARDINGS BY SHIP – 1990 TO 2002

Ship	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Anticosti	-	-	-	11	16	3	4	1	6	-	-	-	-
Athabaskan	-	-	-	-	-	-	-	-	-	-	5	-	-
Charlottetown	-	-	-	-	-	-	-	-	15	5	-	-	-
Cormorant	7	10	-	-	-	8	-	-	-	-	-	-	-
Fredericton	-	-	-	-	-	-	-	2	-	9	-	-	7
Gatineau	-	5	-	13	13	20	-	-	-	-	-	-	-
Glace Bay	-	-	-	-	-	-	-	22	-	-	1	-	2
Goose Bay	-	-	-	-	-	-	-	-	-	-	13	10	-
Halifax	-	-	-	-	-	12	-	-	2	-	-	-	3
Kingston	-	-	-	-	-	-	-	6	2	8	-	-	2
Margaree	-	3	-	-	-	-	-	-	-	-	-	-	-
Moncton	-	-	-	-	-	-	-	-	-	2	1	-	-
Montreal	-	-	-	-	-	-	-	6	-	15	8	9	-
Moresby	-	-	-	7	-	9	4	-	-	-	-	-	-
Nipigon	-	6	10	5	-	12	-	-	-	-	-	-	-
Ottawa	-	9	-	-	-	-	-	-	-	-	-	-	-
Riverton	-	3	8	-	-	-	-	-	-	-	-	-	-
Skeena	-	5	5	22	-	-	-	-	-	-	-	-	-
St. Charles	-	21	-	-	-	-	-	-	-	-	-	-	-
St. John's	-	-	-	-	-	-	-	-	-	11	4	-	-
Summerside	-	-	-	-	-	-	-	-	-	-	-	25	4
Terra Nova	3	-	-	-	-	-	15	14	-	-	-	-	-
Toronto	-	-	-	-	-	-	30	-	-	-	18	-	-
Ville de Quebec	-	-	-	-	-	-	-	6	-	10	3	24	-

Source: Fisheries and Oceans Canada, Newfoundland Region, 2002.

Appendix J

TABLE J-6

FISHERIES AND OCEANS CANADA BOARDINGS BY SHIP – 1990 TO 2002

Ship	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Alert	-	-	-	96	-	22	-	-	-	-	-	-	-
Alexander	-	-	-	-	-	-	10	-	-	-	-	-	-
Alfred Needler	-	-	-	-	-	24	2	-	-	-	-	-	-
Bernier	-	-	-	-	-	7	8	-	-	8	-	-	6
Cape Roger	135	178	171	154	208	23	35	103	112	71	7	58	48
Chebucto	41	82	71	130	159	184	109	-	-	-	-	-	-
CG 285	-	-	-	-	-	-	-	-	-	1	-	-	-
CSS Matthew	-	9	1	-	-	-	2	-	-	-	-	-	-
Cygnus	27	120	159	191	153	127	103	-	-	-	-	-	-
L.J. Cowley	190	231	229	215	186	128	158	124	187	152	115	153	150
Louisbourg	136	213	28	-	-	-	-	-	-	-	-	-	-
Marinus	9	27	2	-	-	-	-	-	-	-	-	-	-
Mary Hichens	-	50	15	-	11	90	57	-	-	-	-	-	-
Parizeau	-	-	-	-	4	2	7	-	-	-	-	-	-
Provost Wallis	-	-	-	-	-	24	-	-	-	-	-	-	-
S.J. Franklin	-	-	13	-	33	-	-	-	-	-	-	-	-
S.W. Grenfell	13	99	44	23	34	1	11	22	10	22	5	23	-
S.W. Templeton	-	-	5	-	-	-	-	-	-	-	-	-	-
Humphrey Gilbert	-	-	-	-	-	-	24	-	-	-	-	6	-
Tupper	-	-	-	-	-	4	-	-	-	-	-	-	-
Observer	-	5	-	-	-	-	-	-	-	-	-	-	-
Other DFO	-	-	-	-	-	-	29	-	-	-	-	-	-
Not recorded	-	2	-	74	-	-	-	-	-	-	-	-	-

Source: Fisheries and Oceans Canada, Newfoundland Region, 2002.

Appendix J

TABLE J - 7

NAVAL FISHERIES PATROL SURVEILLANCE COVERAGE BY SHIP – 1999 TO 2003

Ship Name	Start Date	Stop Date	Avg Radar Detection (nm)	Avg Area Covered by Radar (km^2)
		Major Warship		
Montreal	22-Feb-99	12-Mar-99	15.8	217,594
St John's	14-Jun-99	29-Jun-99	18.8	224,160
Fredericton	28-Jul-99	17-Aug-99	13.8	306,626
Montreal	24-Nov-99	14-Dec-99	15.8	216,958
St John's	17-Jan-00	04-Feb-00	13.4	214,225
Ville de Quebec	20-Mar-00	04-Apr-00	16.9	251,529
Toronto	02-Jun-00	19-Jun-00	18.6	275,610
Montreal	24-Jan-01	18-Feb-01	17.1	332,161
Ville de Quebec	19-Mar-01	02-Apr-01	6.5	72,109
Montreal	04-Apr-01	12-Apr-01	18.1	116,428
Ville de Quebec	03-Jul-01	20-Jul-01	9.6	151,324
Halifax	25-Nov-02	12-Dec-02	11.9	237,536
Average Major Warship			14.7	218,022
		Minor Warship		
Moncton	12-Oct-99	22-Oct-99	14.2	106,132
Glace Bay	12-Oct-99	22-Oct-99	14.1	105,999
Goose Bay	25-Apr-00	19-May-00	8.5	45,667
Moncton	08-May-00	13-May-00	13.5	160,097
Kingston	24-Jul-02	03-Aug-02	6.9	43,660
Glace Bay	06-Sep-02	23-Sep-02	6.7	20,303
Moncton	23-Sep-02	11-Oct-02	9.2	61,333
Goose Bay	31-Oct-02	06-Nov-02	9.9	43,425
Average Minor Warship			10.4	73,327

Source: Track and contact data logs kept by ships; calculations carried out in ArcGIS.

Appendix K

NAVAL FISHERIES PATROLS DEPICTED IN VARIOUS FIGURES

Table K-1 contains the warship vessel names and patrol dates for fisheries patrols conducted during the period 1980 to 2003. The final column in the table lists the figures in which the naval vessels' tracks were used. The key for the type of vessel listed is as follows:

Type 1 - Destroyer (*Mackenzie* and Improved *Restigouche* classes)
Type 2 - Destroyer (Improved *St Laurent* and *Annapolis* classes)
Type 3 - Frigate (*Halifax* class)
Type 4 - Destroyer (*Iroquois* class)
Type 5 - Auxiliary Oil Replenishment vessel (*Preserver* class)
Type 6 - Minesweeping Auxiliary (*HMCS Anticosti, HMCS Moresby*)
Type 7 - Maritime Coastal Defence Vessel (*Kingston* class)
Type 8 - Diving Auxiliary (*HMCS Cormorant*)
Type 9 - Submarine (*Oberon* class).

TABLE K-1

NAVAL FISHERIES PATROLS USED IN FIGURES

Unit	Type	Start	Stop	Used for Figures
Nipigon	2	22-Apr-80	09-May-80	8-24, 8-25, F-1, F-2, F-12, F-24, F-4
Assiniboine	2	12-Nov-80	28-Nov-80	8-24, 8-25, F-1, F-2, F-19, F-22, F-4
Algonquin	4	25-Nov-80	12-Dec-80	8-24, 8-25, F-1, F-2, F-19, F-22, F-4
Skeena	2	08-Jan-81	23-Jan-81	8-24, 8-25, F-1, F-2, F-9, F-23, F-4
Fraser	2	19-May-81	04-Jun-81	8-24, 8-25, F-1, F-2, F-13, F-24, F-4
Cormorant	8	14-Oct-81	28-Oct-81	8-24, 8-25, F-1, F-2, F-18, F-22, F-4
Margaree	2	22-Oct-81	05-Nov-81	8-24, 8-25, F-1, F-2, F-18, F-22, F-4
Huron	4	21-Jan-82	05-Feb-82	8-24, 8-25, F-1, F-2, F-9, F-23, F-4
Nipigon	2	15-Feb-82	05-Mar-82	8-24, 8-25, F-1, F-2, F-10, F-23, F-4
Assiniboine	2	18-Jan-83	03-Feb-83	8-24, 8-25, F-1, F-2, F-9, F-23, F-4
Nipigon	2	15-Mar-83	28-Mar-83	8-24, 8-25, F-1, F-2, F-11, F-24, F-4
Iroquois	4	24-Nov-83	10-Dec-83	8-24, 8-25, F-1, F-2, F-19, F-22, F-4
Cormorant	8	09-Jan-84	01-Feb-84	8-24, 8-25, F-1, F-2, F-9, F-23, F-4
Skeena	2	13-Feb-84	29-Feb-84	8-24, 8-25, F-1, F-2, F-10, F-23, F-4
Saguenay	2	12-Mar-84	29-Mar-84	8-24, 8-25, F-1, F-2, F-11, F-24, F-4
Assiniboine	2	02-May-84	09-May-84	8-24, 8-25, F-1, F-2, F-13, F-24, F-4
Cormorant	8	28-May-84	23-Jun-84	8-24, 8-25, F-1, F-2, F-13, F-24, F-4
Skeena	2	15-Jan-85	07-Feb-85	8-24, 8-25, F-1, F-2, F-9, F-23, F-5
Saguenay	2	26-Feb-85	15-Mar-85	8-24, 8-25, F-1, F-2, F-10, F-23, F-5
Algonquin	4	07-May-85	24-May-85	8-24, 8-25, F-1, F-2, F-13, F-24, F-5
Athabaskan	4	26-Jun-85	02-Jul-85	8-24, 8-25, F-1, F-2, F-14, F-21, F-5
Iroquois	4	28-Jun-85	11-Jul-85	8-24, 8-25, F-1, F-2, F-14, F-21, F-5
Athabaskan	4	15-Jul-85	26-Jul-85	8-24, 8-25, F-1, F-2, F-15, F-21, F-5
Skeena	2	29-Oct-85	15-Nov-85	8-24, 8-25, F-1, F-2, F-18, F-22, F-5
Cormorant	8	14-Jan-86	21-Feb-86	8-24, 8-25, F-1, F-2, F-9, F-23, F-5
Algonquin	4	01-Mar-86	05-Mar-86	8-24, 8-25, F-1, F-2, F-11, F-24, F-5
Nipigon	2	30-Sep-86	17-Oct-86	8-24, 8-25, F-1, F-2, F-17, F-22, F-5
Assiniboine	2	28-Oct-86	14-Nov-86	8-24, 8-25, F-1, F-2, F-18, F-22, F-5
Margaree	2	28-Jan-87	08-Feb-87	8-24, 8-25, -1, F-2, F-9, F-23, F-5
Saguenay	2	24-Feb-87	04-Mar-87	8-24, 8-25, F-1, F-2, F-10, F-23, F-5

Appendix K

TABLE K-1 (continued)

NAVAL FISHERIES PATROLS USED IN FIGURES

Unit	Type	Start	Stop	Used for Figures
Cormorant	8	23-Mar-87	10-Apr-87	8-24, 8-25, F-1, F-2, F-11, F-24, F-5
Margaree	2	16-Jun-87	03-Jul-87	8-24, 8-25, F-1, F-2, F-14, F-21, F-5
Fraser	2	06-Aug-87	20-Aug-87	8-24, 8-25, F-1, F-2, F-16, F-21, F-5
Annapolis	2	19-Jan-88	03-Feb-88	8-24, 8-25, F-1, F-2, F-9, F-23, F-5
Gatineau	1	03-May-88	20-May-88	8-24, 8-25, F-1, F-2, F-13, F-24, F-5
Assiniboine	2	24-Oct-88	12-Nov-88	8-24, 8-25, 8-27, F-1, F-2, F-18, F-22, F-5, F-25
Skeena	2	18-Jan-89	10-Feb-89	8-24, 8-25, F-1, F-2, F-9, F-23, F-5
Gatineau	1	15-Nov-89	20-Nov-89	8-24, 8-25, 8-27, F-1, F-2, F-19, F-22, F-5, F-25
Cormorant	8	17-Nov-89	16-Dec-89	8-24, 8-25, F-1, F-2, F-19, F-22, F-5
Saguenay	2	04-Dec-89	18-Dec-89	8-24, 8-25, 8-27, F-1, F-2, F-20, F-23, F-5, F-25
Margaree	2	22-Oct-90	09-Nov-90	8-24, 8-25, F-1, F-2, F-18, F-22, F-6
Cormorant	8	03-Dec-90	14-Dec-90	8-24, 8-25, F-1, F-2, F-20, F-23, F-6
Margaree	2	10-Jun-91	21-Jun-91	8-24, 8-25, F-1, F-2, F-14, F-21, F-6
Margaree	2	23-Jul-91	16-Aug-91	8-24, 8-25, F-1, F-2, F-16, F-21, F-6
Ottawa	2	23-Sep-91	04-Oct-91	8-24, 8-25, 8-27, F-1, F-2, F-17, F-22, F-6, F-25
Margaree	2	30-Sep-91	17-Oct-91	8-24, 8-25, F-1, F-2, F-17, F-22, F-6
Nipigon	2	10-Feb-92	28-Feb-92	8-24, 8-25, F-1, F-2, F-10, F-23, F-6
Nipigon	2	17-Mar-92	31-Mar-92	8-24, 8-25, F-1, F-2, F-11, F-24, F-6
Margaree	2	06-Apr-92	16-Apr-92	8-24, 8-25, F-1, F-2, F-12, F-24, F-6
Fraser	2	04-May-92	15-May-92	8-24, 8-25, F-1, F-2, F-13, F-24, F-6
Fraser	2	13-Jul-92	31-Jul-92	8-24, 8-25, F-1, F-2, F-15, F-21, F-6
Skeena	2	05-Oct-92	30-Oct-92	8-24, 8-25, F-1, F-2, F-18, F-22, F-6
Ojibwa	9	05-Mar-93	12-Mar-93	8-24, 8-25, 8-27, F-1, F-2, F-11, F-24, F-6, F-25
Anticosti	6	19-Apr-93	30-Apr-93	8-24, 8-25, F-1, F-2, F-12, F-24, F-6
Moresby	6	19-Apr-93	30-Apr-93	8-24, 8-25, F-1, F-2, F-12, F-24, F-6
Gatineau	1	03-May-93	27-May-93	8-24, 8-25, F-1, F-2, F-13, F-24, F-6
Skeena	2	25-May-93	04-Jun-93	8-24, 8-25, F-1, F-2, F-13, F-24, F-6
Nipigon	2	09-Jun-93	18-Jun-93	8-24, 8-25, F-1, F-2, F-14, F-21, F-6
Moresby	6	03-Aug-93	11-Aug-93	8-24, 8-25, F-1, F-2, F-16, F-21, F-6
Skeena	2	23-Aug-93	17-Sep-93	8-24, 8-25, F-1, F-2, F-16, F-21, F-6
Anticosti	6	20-Sep-93	08-Oct-93	8-24, 8-25, F-1, F-2, F-17, F-22, F-6
Moresby	6	21-Feb-94	02-Mar-94	8-24, 8-25, F-1, F-2, F-10, F-23, F-6
Anticosti	6	06-Apr-94	22-Apr-94	8-24, 8-25, F-1, F-2, F-12, F-24, F-6
Fraser	2	10-May-94	21-May-94	8-24, 8-25, F-1, F-2, F-13, F-24, F-6
Fraser	2	04-Jul-94	29-Jul-94	8-24, 8-25, F-1, F-2, F-15, F-21, F-6
Anticosti	6	25-Jul-94	14-Aug-94	8-24, 8-25, F-1, F-2, F-15, F-21, F-6
Gatineau	1	08-Aug-94	26-Aug-94	8-24, 8-25, F-1, F-2, F-16, F-21, F-6
Fraser	2	12-Sep-94	30-Sep-94	8-24, 8-25, F-1, F-2, F-17, F-22, F-6
Okanagan	9	26-Sep-94	10-Oct-94	8-24, 8-25, F-1, F-2, F-17, F-22, F-6
Cormorant	8	20-Mar-95	08-Apr-95	8-24, 8-25, F-1, F-2, F-11, F-24, F-7
Toronto	3	27-Mar-95	10-Apr-95	8-24, 8-25, F-1, F-2, F-11, F-24, F-7
Cormorant	8	18-Apr-95	08-May-95	8-24, 8-25, F-1, F-2, F-12, F-24, F-7
Anticosti	6	04-Jul-95	14-Jul-95	8-24, 8-25, F-1, F-2, F-15, F-21, F-7
Gatineau	1	11-Sep-95	06-Oct-95	8-24, 8-25, F-1, F-2, F-17, F-22, F-7
Cormorant	8	10-Oct-95	08-Nov-95	8-24, 8-25, 8-27, F-1, F-2, F-18, F-22, F-7, F-25
Cormorant	8	20-Nov-95	14-Dec-95	8-24, 8-25, F-1, F-2, F-19, F-22, F-7
Toronto	3	27-Feb-96	17-Mar-96	8-24, 8-25, F-1, F-2, F-10, F-23, F-7
Moresby	6	02-Jul-96	19-Jul-96	8-24, 8-25, F-1, F-2, F-15, F-21, F-7
Toronto	3	16-Sep-96	11-Oct-96	8-24, 8-25, F-1, F-2, F-17, F-22, F-7

Appendix K

TABLE K-1 (continued)

NAVAL FISHERIES PATROLS USED IN FIGURES

Unit	Type	Start	Stop	Used for Figures
Anticosti	6	05-May-97	21-May-97	8-24, 8-25, F-1, F-2, F-13, F-24, F-7
Montréal	3	26-May-97	06-Jun-97	8-24, 8-25, F-1, F-2, F-13, F-24, F-7
Glace Bay	7	02-Sep-97	18-Sep-97	8-24, 8-25, F-1, F-2, F-17, F-22, F-7
Kingston	7	29-Sep-97	17-Oct-97	8-24, 8-25, F-1, F-2, F-17, F-22, F-7
Ville de Québec	3	06-Oct-97	24-Oct-97	8-24, 8-25, F-1, F-2, F-18, F-22, F-7
Fredericton	3	03-Dec-97	19-Dec-97	8-24, 8-25, F-1, F-2, F-20, F-23, F-7
Glace Bay	7	20-Oct-97	13-Nov-97	8-24, 8-25, F-1, F-2, F-18, F-22, F-7
Montréal	3	22-Feb-99	12-Mar-99	8-24, 8-26, F-1, F-3, F-10, F-23, F-7
St John's	3	14-Jun-99	29-Jun-99	8-24, 8-26, F-1, F-3, F-14, F-21, F-7
Fredericton	3	28-Jul-99	17-Aug-99	8-24, 8-26, F-1, F-3, F-15, F-21, F-7
Kingston	7	08-Aug-99	31-Aug-99	8-24, 8-26, F-1, F-3, F-16, F-21, F-7
Anticosti	6	16-Aug-99	27-Aug-99	8-24, 8-26, 8-27, F-1, F-3, F-16, F-21, F-7, F-25
Ville de Québec	3	08-Sep-99	29-Sep-99	8-24, 8-26, F-1, F-3, F-17, F-22, F-7
Anticosti	6	09-Sep-99	28-Sep-99	8-24, 8-26, F-1, F-3, F-17, F-22, F-7
Moncton	7	12-Oct-99	22-Oct-99	8-24, 8-26, F-1, F-3, F-18, F-22, F-7
Glace Bay	7	12-Oct-99	22-Oct-99	8-24, 8-26, F-1, F-3, F-18, F-22, F-7
Montréal	3	24-Nov-99	14-Dec-99	8-24, 8-26, F-1, F-3, F-19, F-22, F-7
St John's	3	17-Jan-00	04-Feb-00	8-24, 8-26, F-1, F-3, F-9, F-23, F-8
Ville de Québec	3	20-Mar-00	04-Apr-00	8-24, 8-26, F-1, F-3, F-11, F-24, F-8
Goose Bay	7	25-Apr-00	19-May-00	8-24, 8-26, F-1, F-3, F-12, F-24, F-8
Moncton	7	08-May-00	13-May-00	8-24, 8-26, F-1, F-3, F-13, F-24, F-8
Toronto	3	02-Jun-00	19-Jun-00	8-22, 8-24, 8-26, F-1, F-3, F-14, F-21, F-8
Athabaskan	4	20-Nov-00	01-Dec-00	8-24, 8-26, F-1, F-3, F-19, F-22, F-8
Montréal	3	24-Jan-01	18-Feb-01	8-24, 8-26, F-1, F-3, F-9, F-23, F-8
Ville de Québec	3	19-Mar-01	02-Apr-01	8-24, 8-26, F-1, F-3, F-11, F-24, F-8
Montréal	3	04-Apr-01	12-Apr-01	8-24, 8-65, F-1, F-3, F-12, F-24, F-8
Ville de Québec	3	03-Jul-01	20-Jul-01	8-24, 8-26, F-1, F-3, F-15, F-21, F-8
Ville de Québec	3	26-Nov-01	14-Dec-01	8-24, 8-26, F-1, F-3, F-19, F-22, F-8
Fredericton	3	18-Feb-02	08-Mar-02	8-24, 8-26, F-1, F-3, F-10, F-23, F-8
Kingston	7	24-Jul-02	03-Aug-02	8-24, 8-26, F-1, F-3, F-15, F-21, F-8
Glace Bay	7	06-Sep-02	23-Sep-02	8-24, 8-26, F-1, F-3, F-17, F-22, F-8
Moncton	7	23-Sep-02	11-Oct-02	8-24, 8-26, F-1, F-3, F-17, F-22, F-8
Goose Bay	7	31-Oct-02	06-Nov-02	8-24, 8-26, F-1, F-3, F-18, F-22, F-8
Halifax	3	25-Nov-02	12-Dec-02	8-24, 8-26, F-1, F-3, F-19, F-22, F-8
Charlottetown	3	03-Feb-03	21-Feb-03	8-24, 8-26, F-1, F-3, F-10, F-23, F-8
Kingston	7	12-Jun-03	16-Jun-03	8-24, 8-26, F-1, F-3, F-14, F-21, F-8
Glace Bay	7	12-Jun-03	16-Jun-03	8-24, 8-26, F-1, F-3, F-14, F-21, F-8
Summerside	7	16-Jun-03	20-Jun-03	8-24, 8-26, F-1, F-3, F-14, F-21, F-8
Kingston	7	03-Nov-03	07-Nov-03	8-24, 8-26, F-1, F-3, F-19, F-22, F-8
Moncton	7	03-Nov-03	07-Nov-03	8-24, 8-26, F-1, F-3, F-19, F-22, F-8

Appendix L

NAVAL FISHERIES PATROL – HMCS HALIFAX

DATA RECORDING

Comd MARLANT has been tasked by CMS to evaluate the benefit to the Navy of operations in support of OGD. The overall aim of this record keeping is to provide accurate data for geographical and financial analysis in support of this evaluation. This particular analysis seeks to measure the effectiveness of a naval asset, in this case a frigate, to carry out surveillance and enforcement activities over a large maritime area.

The following data is needed to determine the actual level of effort expended in surveillance activities. Previous units that have gathered this data state that there is little extra effort required of the ship's company to gather this data, save for some time spent in collation. Templates in the form of MS Access databases have been provided for ease of data input. Please deliver the completed floppy disk and a hard copy of the data to LN 31-3 Lt(N) Ian Anderson, ext. 3203, or LN3 Capt(N) Larry Hickey.

Data required:

Own ship position hourly (on the even hour) **Template:** hal0702trk.mdb
Weather log (data entry every six hours) **Template:** hal07020wx.mdb
Contact log **Template:** hal0702cont.mdb

Notes: Enter position of contacts when initially detected
Record total number of contacts detected (all types of ships and aircraft)
Indicate vessels boarded with a "B" in appropriate column
If at anchor, continue to record positions
If alongside in port, indicate arrival/departure in remarks column
If detached on SAR, continue to record positions. Indicate start/stop in remarks

Data summary sheet **Template:** hal07-02 summary.doc

Notes: Normally, patrols will start/stop at Chebucto Head
Fuel figures are important. They provide the constant for measuring expenses
Record individual CRRs completed during fishpat

It is important to capture the perceived value of fisheries patrols. In addition to CRRs, Commanding Officers are encouraged to record their thoughts vis-à-vis training, maintenance, morale, etc. It is vital that care is taken when entering positional data to ensure accuracy.

Comd MARLANT appreciates your support of this new performance measurement activity.

Appendix L

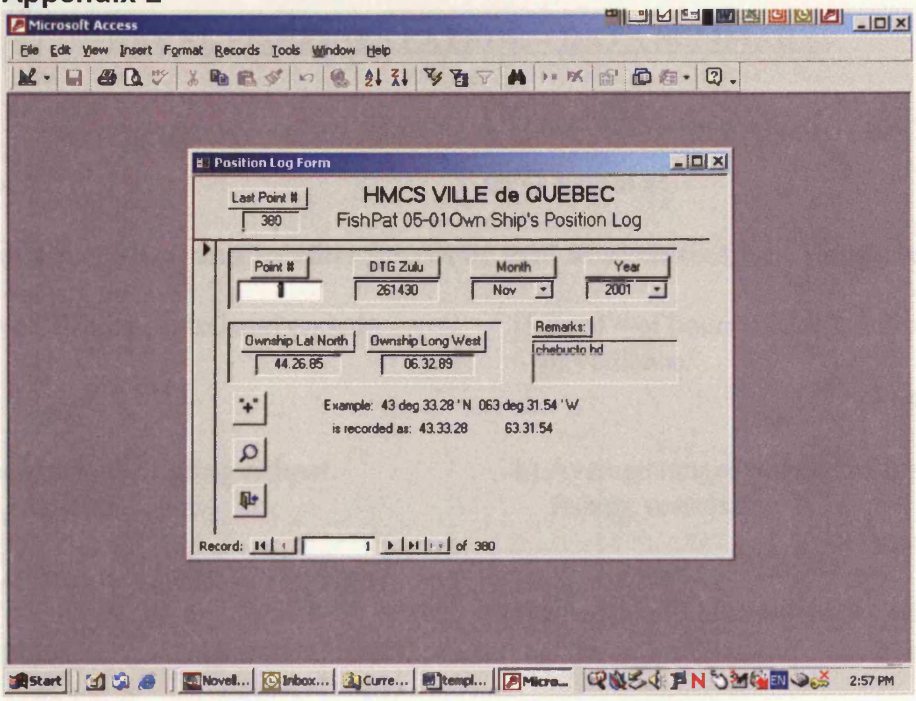


Figure L-1. Microsoft Access Template for Own Ship's Position Log

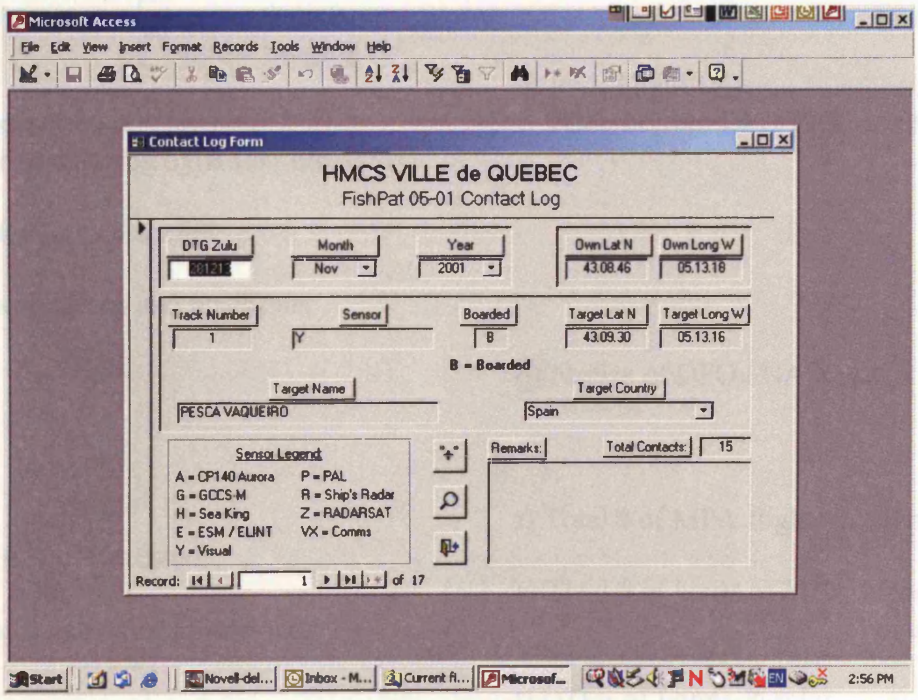


Figure L-2. Microsoft Access Template for Vessel Contact Log (Vessels Detected)

Appendix M

NAVAL FISHERIES PATROL – DATA SUMMARY

HMCS **Patrol Dates:**

DND Patrol # : **DFO Patrol #:**

Hourly position, contact, and weather logs to be kept as separate files. Template provided.

a) Points at which fishpat started and ended:

b) Total distance travelled during fishpat:
nautical miles

c) Avg ranges of sensors against F/Vs:

Kelvin Hughes **nautical miles**
SG 150 **nautical miles**
Other **nautical miles**

d) Avg difference from predicted ranges:
percent ☐ over ranging
☐ under ranging

e)Total # of fishing vessels boarded:
(indicated in contact log by **B** for "boarded")

f) Total # of violations detected:

g) Violator vessel names and positions:

h) Total # of violators arrested:

i) Arrested vessel names and positions:

j) Total # of hours of ship's helicopter surveillance:
hours

k) Average ranges of helicopter sensors against fishing vessels:
nautical miles

l) How far did helo extend surveillance range:
nautical miles

n) Total # of PAL flights in support:

o) Total # of hours of PAL support:
hours

p) PAL Flight Mission Numbers:
(Obtain from DFO/PAL faxes)

q) Names of DFO / NAFO ships in support:

r) Total # of MPA flights in support:

s) Total # of hours of MPA support:
hours

t) DTGs of Forms Purple:

Note: Expense Data on next page

Appendix M

Expense Data

u) Ship's fuel expended on patrol:

cums

v) Helo fuel expended on patrol:

cums

v) Fuel expended in transit to patrol start point, f not Halifax or St John's:

cums

x) Fuel expended in transit from patrol end oint to next tasking if not into Halifax or St ohn's:

cums

y) Cost of own ship fuel expended on patrol:

dollars Cdn

z) Cost of helicopter fuel expended on patrol:

dollars Cdn

aa) Fuel price per bbl during patrol:

dollars Cdn

bb) Names of Fisheries Protection Officers:

cc) Name of Commanding Officer:

Value of Patrol for Crew Training

dd) List CRRs (by number) completed during patrol:

ee) Seamanship requirements completed during patrol:

ff) Any other useful training carried out during patrol:

Appendix N

PARTICIPATION OF FISHERIES ASSOCIATIONS

The table in this appendix lists by province the fisheries associations that were active in 2003, the year that the Deterrence Survey was conducted. The columns to the right of the table indicate the number of questionnaires sent to each association.

TABLE N - 1

PARTICIPATION OF ATLANTIC CANADA FISHERIES ASSOCIATIONS

Province	Name of Fisheries Association	No. of Members	Copies sent
NS	45' Shelburne Co. Fixed Gear Quota Group	unk	-
NS	Area 19 Crab Fishermen's Association	unk	6
NS	Area 30 Fishermen's Association	unk	-
NS	Atlantic Canadian Mobile Shrimp Association	unk	-
NS	Atlantic Coast Scallop Fishermen's Association	unk	-
NS	Atlantic Herring Co-op Ltd.	unk	5
NS	Bay of Fundy Inshore Fishermen's Association	unk	-
NS	Canso Trawlermen's Co-op	unk	5
NS	Cape Breton East Fishers Association	unk	-
NS	Cheticamp & Area Inshore Fishermen's Association	unk	-
NS	Cumberland North Fishermen's Association	50	10
NS	East Cape Breton Fishermen's Association	unk	-
NS	Eastern Nova Scotia Mobile Gear Association	unk	-
NS	Eastern Shelburne Fishermen's Association	unk	-
NS	Eastern Shore Fishermen's Protective Association	260	20
NS	Federation of Gulf Nova Scotia Groundfishermen	unk	-
NS	Full Bay Scallop Association	unk	-
NS	Fundy East Fishermen's Association	unk	-
NS	Glace Bay Inshore Fishermen's Association	unk	-
NS	Groundfish Generalists Fishermen's Association	unk	-
NS	Gulf-Nova Scotia Bonafide Fishermen's Association	unk	-
NS	Gulf-Nova Scotia Tuna Association	unk	-
NS	Guysborough County Inshore Fishermen's Association	unk	-
NS	Halifax West Fishermen's Association	unk	-
NS	Inverness North Fishermen's Association	unk	30
NS	Inverness South Fishermen's Association	unk	-
NS	Jonah Crab Association	unk	-
NS	LFA District 34 Lobster Committee	unk	-
NS	Margaree Harbour Inshore Fishermen's Association	unk	-
NS	Maritime Fishermen's Union (Local 4)	unk	-
NS	Maritime Fishermen's Union (Local 6)	100	15
NS	Maritime Fishermen's Union (Local 9)	unk	10
NS	North of Smokey Fishermen's Association	unk	-

Appendix N

TABLE N – 1 (continued)

PARTICIPATION OF ATLANTIC CANADA FISHERIES ASSOCIATIONS

Province	Name of Fisheries Association	No. of Members	Copies sent
NS	Northern Cape Breton Fishing Vessels Association	unk	-
NS	Northside Fishermen's Association	unk	-
NS	Northumberland Fishermen's Association	unk	-
NS	Nova Scotia Fishermen's Association (Scallop Sector)	unk	-
NS	Nova Scotia Fixed Gear 45'-65'	unk	-
NS	Nova Scotia Mackeral Association	unk	-
NS	Nova Scotia Swordfishermen's Association	unk	-
NS	Nova Scotia Women's Fish Net	unk	-
NS	Prospect Area Full Time Fishermen's Association	unk	10
NS	Richmond County Inshore Fishermen's Association	unk	-
NS	Scotia Fundy Inshore Fishermen's Association	unk	-
NS	Scotia Fundy Mobile Gear Fishermen's Association	unk	-
NS	Shelburne County Competitive Fishermen's Association	unk	-
NS	Shelburne County Gillnet Fishermen's Association	unk	-
NS	South Shore Gillnet Fishermen's Association	unk	-
NS	South Shore Independent Fishermen's Association	unk	-
NS	Southwest Fishermen's Quota Group	unk	-
NS	Southwest Nova Fixed Gear Association	unk	-
NS	Southwest Nova Tuna Association	35	1
NS	Upper Bay of Fundy Fish Draggers Association	5	5
NS	West Nova Scotia Fishermen's Coalition	unk	-
PE	Central Northumberland Fishermen's Association	unk	-
PE	Eastern Kings Fishermen's Association	unk	5
PE	North Shore Fishermen's Association	unk	-
PE	P.E.I. Fishermen's Association	unk	-
PE	P.E.I. Groundfish Association	unk	-
PE	P.E.I. Shellfish Association	unk	-
PE	Prince County Fishermen's Association	unk	-
PE	Prince County Shellfish Association	unk	-
PE	Queens County Shellfish Association	unk	-
PE	Snow Crab Fishermen Inc	unk	-
PE	Southern Kings & Queens Fishermen's Association	unk	-
PE	Western Gulf Fishermen's Association	unk	10
NB	Alma Fishermen's Association	unk	-
NB	Area 18 Crab Fishermen's Association	unk	-
NB	Association des crabiers acadiens	unk	-
NB	Association des crabiers du Nord-Est inc.	unk	-
NB	Association des crevettiers acadiens du Golfe inc.	unk	-
NB	Association des seineurs du Golfe, inc.	unk	-
NB	Assoc des pêcheurs professionnels membres d'équipage	unk	-
NB	Botsford Professional Fishermen's Association	unk	-
NB	Campobello Fishermen's Association	unk	-
NB	Eastern Fishermen's Federation	unk	-
NB	Fédération régionale acadienne des pêcheurs professionnels	unk	-
NB	Fundy North Fishermen's Association	unk	-
NB	Grand Manan Fishermen's Association	unk	-
NB	Island Fishermen Association	unk	-
NB	Southern New Brunswick Scallop Draggers Association	unk	-
NF	Barry Group Inc Ltd	unk	-
NF	Beothuk Fish Processors Ltd	unk	-

Appendix N

TABLE N – 1 (continued)

PARTICIPATION OF ATLANTIC CANADA FISHERIES ASSOCIATIONS

Province	Name of Fisheries Association	No. of Members	Copies sent
NF	Davis Strait Management Ltd	unk	-
NF	Fisheries Association of Newfoundland & Labrador	unk	-
NF	Fishery Products International Ltd	unk	-
NF	Grand Banks Seafoods Ltd	unk	12
NF	Quin-Sea Fisheries Ltd	unk	-

Note: Column "Copies sent" records the number of copies of the questionnaire that were despatched to the fisheries associations once contact had been made and agreement to participate was obtained.

Table N –2 lists by province the number of licensed fishers that were represented by the fisheries associations in the Maritime provinces during the period that the Deterrence Survey was being carried out.

TABLE N - 2

NUMBER OF LICENCED FISHERS BY PROVINCE AND REGION - 2002

Province	Region	Licences		Total
		Core	Non-core	
Nova Scotia	Scotia-Fundy	2,895	9,222	12,117
Nova Scotia	Gulf	651	1,790	2,441
Prince Edward Island	Gulf	1,315	3,446	4,761
New Brunswick	Scotia-Fundy	353	1,487	1,840
New Brunswick	Gulf	1,303	3,816	5,119
Newfoundland	Newfoundland	4,154	11,161	15,315
Total		10,671	30,922	41,593

Source: Department of Fisheries and Oceans, *Commercial - Licences: Fishers Information,* 9 December 2005, <http://www.dfo-mpo.gc.ca/communic/statistics/commercial/licensing/fishers_info/fishers02_e.htm> (29 November 2007).

Appendix P

Survey of Fishers' Views on the Effectiveness of Maritime Patrol Activities in Canadian Waters

Cardiff University Maritime Studies Project
P.O. Box 48051
Bedford, Nova Scotia
B4A 3Z2

September 2003

Appendix P

Survey of Fishers' Views on the Effectiveness of Maritime Patrol Activities in Canadian Waters

Purpose: In cooperation with local fisheries associations, this survey is being conducted for scholarly purposes by a Canadian graduate student at Cardiff University of Wales, forming part of his PhD project relating to aspects of oceans management in Canada.

The Questionnaire: This questionnaire was designed to record opinions concerning the perceived effectiveness of various maritime patrol activities in Canadian coastal zones. It consists of 19 short questions, and should take only about 15 minutes of your time.

Why You ? As a person employed in the fisheries, you spend long periods at sea and observe first-hand the patrol activities of various government departments.

The Importance of Your Participation: As a person whose livelihood is tied to the sea, your views are important to understanding what is really happening on the water. Your participation in completing the questionnaire, or any specific question, is entirely **voluntary**; however, the participation of everyone who receives a questionnaire is very important to help the researcher better understand the true picture.

Guarantee of Confidentiality: **This is an anonymous survey.** All information provided by you will be kept strictly confidential. The researcher is guided by, and must adhere to, ethical principles concerning research that involves people. **At no time, under any circumstance, will individual responses be made known. All responses will be pooled for analysis.**

Questions ? If you have questions about the questionnaire, or the survey in general, please contact Mr. Larry Hickey (902) 832-6268 or by email at: larry.hickey@ns.sympatico.ca

Completed questionnaires should be returned to the individual who distributed them, or sent to:

Mr. L.M. Hickey
Cardiff University Maritime Studies Project
P.O. Box 48051
Bedford, Nova Scotia
B4A 3Z2

Abbreviations used in this questionnaire:

CCG	Canadian Coast Guard
DFO	Fisheries and Oceans Canada
DND	Department of National Defence
EC	Environment Canada
NAFO	North Atlantic Fisheries Organization
RCMP	Royal Canadian Mounted Police

Your participation in this study is very much appreciated.

Appendix P

Instructions for Completing the Questionnaire:

Please take the time to read each question carefully. Some questions contain multiple parts.

The majority of the questions are arranged so that you simply put a mark in the box ☐ to indicate your response. A few questions request that you fill in the blanks with short one or two word responses, or circle a number on a scale from 0 to 6.

There are no wrong answers to any of these questions. You may not think that you have enough information upon which to base a response. However, you probably have a "gut feel" and this is what you should use to answer the question. The purpose of this survey is to determine what are your perceptions of an issue, irrespective of what other individuals or agencies might say about it.

This survey is strictly voluntary. If you do not wish to answer a particular question, please write "No answer" in the margin beside the question number to indicate that you considered the question and did not inadvertently skip over it.

Background Information:

1) How many years have you been going to sea (fishing or otherwise) ?

☐ Less than 2
☐ 2 to 5 years
☐ 6 to 10 years
☐ 11 to 15 years
☐ 16 to 20 years
☐ 21 to 25 years
☐ More than 25

2) How many weeks per year do you fish?

☐ Less than 8
☐ 8 to16 weeks
☐ 17 to 24 weeks
☐ 25 to 32 weeks
☐ 33 to 40 weeks
☐ 41 to 48 weeks
☐ 49 to 52 weeks

3) From what size of boat do you normally fish for the majority of your weeks at sea?

☐ Less than 45 ft
☐ 45 to 65 ft
☐ 66 to 100 ft
☐ More than 100 ft

4) What average distance from the coast do you fish the majority of your weeks at sea?

Between _____ to _____ nautical miles.

5) The majority of the time, you fish the:

☐ Inshore ☐ Offshore

6) Fishing is your:

☐ Sole source of income (100%)
☐ Major source of income (50 to 99%)
☐ Minor source of income (less than 50%)

7) What type of gear do you use? *Please select all types.*

☐ Otter Trawls
☐ Drags or Rakes
☐ Seines
☐ Gillnets
☐ Traps
☐ Longlines
☐ Handlines
☐ Other _____

8) For which two (2) types of licence or species do you spend the most time fishing, and for how many weeks each?

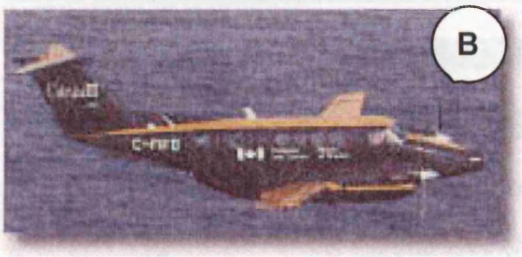
Example: *Groundfish Weeks 20*
Lobster Weeks 8

Primary _____ Weeks _____

Second _____ Weeks _____

Appendix P

Common Canadian Atlantic Maritime Patrol Platforms



Appendix P

Presence of Maritime Patrol Assets and Nature of Fisheries Violations:

9) How many times per week that you are fishing or travelling to and from your fishing area do you see each of the patrol vessels or aircraft pictured on the opposite page?
Please indicate your response by circling the appropriate number of sightings.

Photo	Dept	Type of Platform	*least*	Sightings per Week				*most*
A	CCG	Beechcraft Aircraft	0	1-2	3-4	5-6	7 or more	
B	DFO	Beechcraft Aircraft	0	1-2	3-4	5-6	7 or more	
C	DND	Air Force Aurora Aircraft	0	1-2	3-4	5-6	7 or more	
D	DND	Navy Sea King Helicopter	0	1-2	3-4	5-6	7 or more	
E	RCMP	Small multi-task Patrol Boat	0	1-2	3-4	5-6	7 or more	
F	DFO	Offshore multi-task Patrol Cutter	0	1-2	3-4	5-6	7 or more	
G	DND	Navy Patrol Frigate	0	1-2	3-4	5-6	7 or more	
H	DFO	Small multi-task Patrol Cutter	0	1-2	3-4	5-6	7 or more	
I	DND	Navy Minor War Vessel	0	1-2	3-4	5-6	7 or more	
J	DFO	Inshore multi-task Patrol Vessel	0	1-2	3-4	5-6	7 or more	

10) What are the two most common types of fisheries violations in your fishing areas?

Examples : registration number not displayed properly on boat, fishing without a licence, using illegal mesh sizes or illegal traps, fishing in a prohibited or closed area, etc.

Most common _____ Next most common _____

The aim of Question11 is to get a feel for whether or not spending resources on vessel and aircraft patrols has any value in preventing people at sea from breaking laws. Please indicate your response by circling a number from 0 to 6 for each type of vessel or aircraft. High numbers mean that you feel that the presence of that vessel or aircraft is likely to prevent a violation. Low numbers mean that there is less deterrent value; a 0 means there is no deterrent value at all.

11) In your opinion, would the visual or radar presence of a maritime patrol vessel or aircraft deter a person from committing a serious fisheries violation in your fishing area?
Photos of common maritime patrol vessels and aircraft are on the opposite page.

Examples:
Serious violation: no licence, illegal traps or meshes, fishing in a prohibited or closed area
Minor violation: registration number not displayed properly on boat

Photo	Dept	Type of Platform	*least*	Deterrent Value						*most*
A	CCG	Beechcraft Aircraft	0	1	2	3	4	5	6	
B	DFO	Beechcraft Aircraft	0	1	2	3	4	5	6	
C	DND	Air Force Aurora Aircraft	0	1	2	3	4	5	6	
D	DND	Navy Sea King Helicopter	0	1	2	3	4	5	6	
E	RCMP	Small multi-task Patrol Boat	0	1	2	3	4	5	6	
F	DFO	Offshore multi-task Patrol Cutter	0	1	2	3	4	5	6	
G	DND	Navy Patrol Frigate	0	1	2	3	4	5	6	
H	DFO	Small multi-task Patrol Cutter	0	1	2	3	4	5	6	
I	DND	Navy Minor War Vessel	0	1	2	3	4	5	6	
J	DFO	Inshore multi-task Patrol Vessel	0	1	2	3	4	5	6	

Appendix P

12) Please indicate whether or not you agree or disagree with the following statements.

				Patrols required	
a)	The surveillance effort by patrol vessels and aircraft in my fishing areas is adequate to ensure compliance with **fisheries** regulations.	Agree	Disagree	More	Fewer
b)	The surveillance effort by patrol vessels and aircraft in my fishing areas is adequate to ensure compliance with **environmental** regulations.	Agree	Disagree	More	Fewer
c)	The surveillance effort by patrol vessels and aircraft in my fishing areas is adequate to prevent violations of **other laws**, such as illegal immigration, drug smuggling, etc.	Agree	Disagree	More	Fewer
d)	Frequency of onboard inspections at sea is adequate to ensure compliance with fishing regulations.	Agree	Disagree	More	Fewer
e)	Fisheries and Oceans Canada conducts the right number of patrols in my fishing areas.	Agree	Disagree	More	Fewer
f)	The Canadian Coast Guard conducts the right number of patrols in my fishing areas.	Agree	Disagree	More	Fewer
g)	The Department of National Defence conducts the right number of patrols in my fishing areas.	Agree	Disagree	More	Fewer
h)	The RCMP conducts the right number of patrols in my fishing areas.	Agree	Disagree	More	Fewer

13) What percentage of the time do you believe that either DFO Fisheries Protection Officers or RCMP officers are embarked aboard Navy ships for enforcement purposes? *Please circle the number that is closest to your estimate of the percentage.*

DFO 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

RCMP 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

14) What percentage of the time do you believe that either DFO Fisheries Protection Officers or RCMP officers fly aboard Air Force aircraft for enforcement purposes?

DFO 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

RCMP 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

15) In your opinion, which of the following federal departments is the most effective at deterring illegal activities the Canadian coastal zone? *Select only one.*

☐ CCG ☐ DFO ☐ DND ☐ EC ☐ RCMP

Appendix P

16) In your opinion, how often do FISHERMEN / FISHERS violate regulations in the Canadian coastal zone? *Please read across for each type of regulation.*

Fishing Regs	☐ Never	☐ Seldom	☐ Sometimes	☐ Frequently	☐ Always
Environmental Regs	☐ Never	☐ Seldom	☐ Sometimes	☐ Frequently	☐ Always
Other Regs / Laws	☐ Never	☐ Seldom	☐ Sometimes	☐ Frequently	☐ Always

17) In your opinion, how often do other MARINERS / BOATERS in general violate regulations in the Canadian coastal zone? *Please read across for each type.*

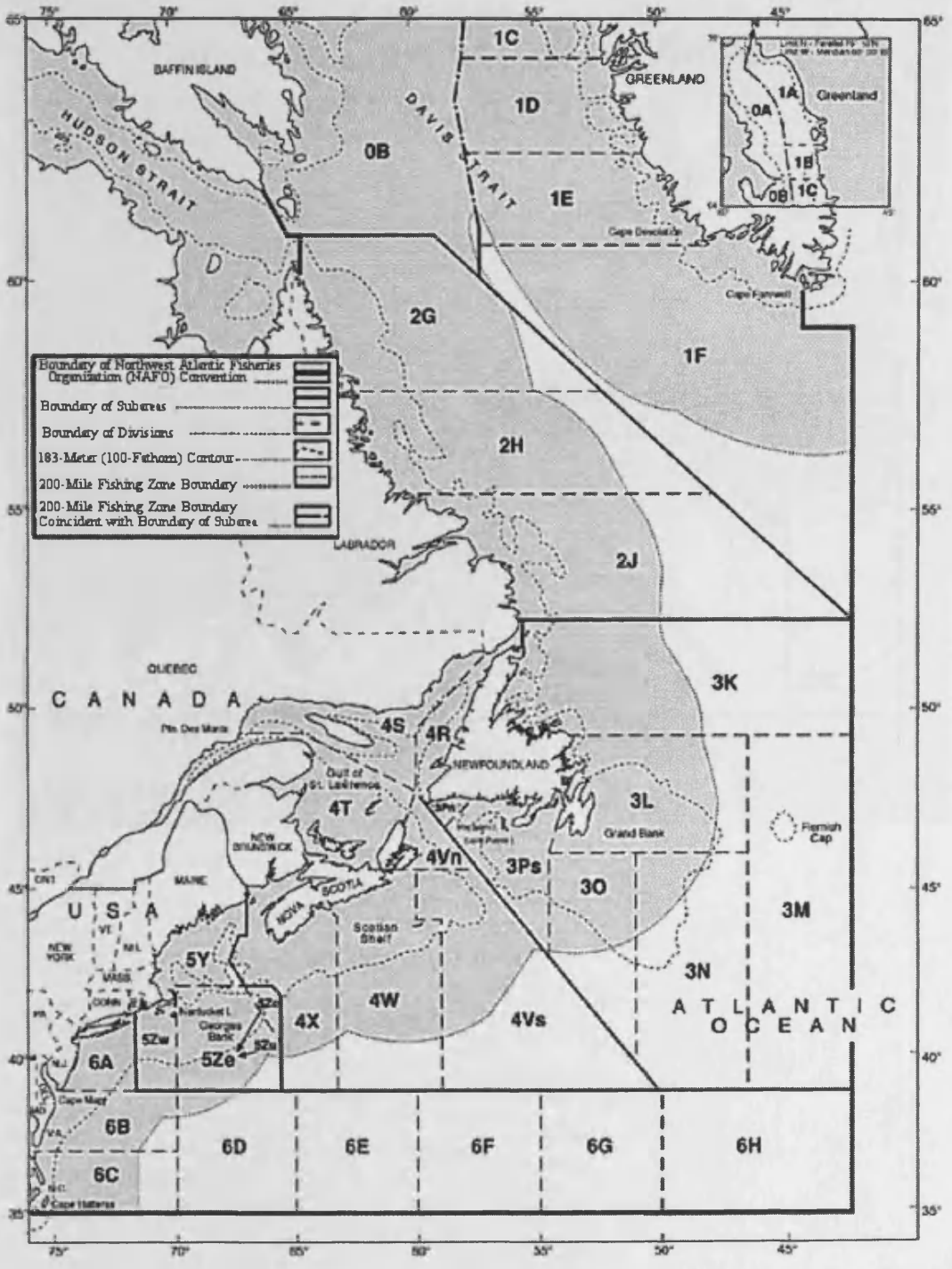
Fishing Regs	☐ Never	☐ Seldom	☐ Sometimes	☐ Frequently	☐ Always
Environmental Regs	☐ Never	☐ Seldom	☐ Sometimes	☐ Frequently	☐ Always
Other Regs / Laws	☐ Never	☐ Seldom	☐ Sometimes	☐ Frequently	☐ Always

18) Please indicate how much you agree or disagree with the following statements.

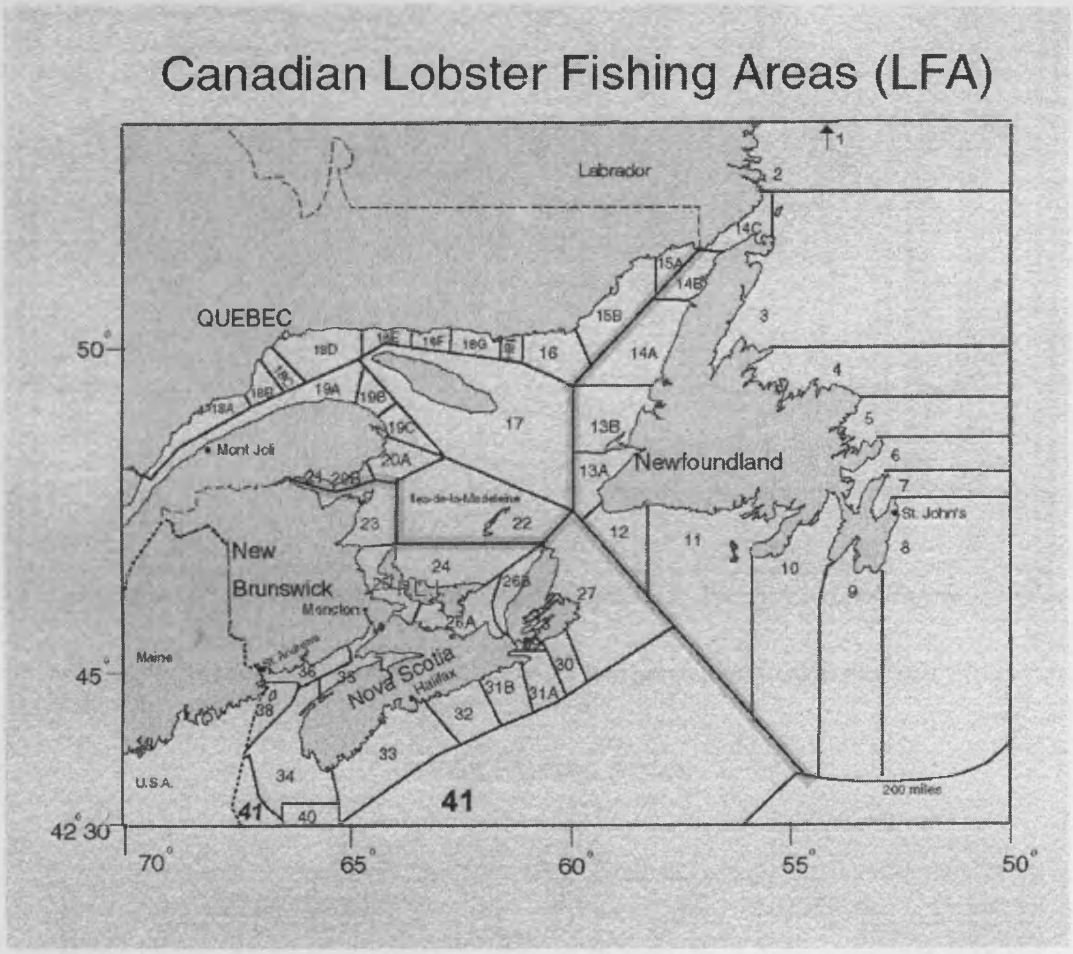
		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a)	Over-regulation by government is having an adverse effect on the fishery.	☐	☐	☐	☐	☐
b)	Competition with other boats in my fishing area is causing depletion of the resource.	☐	☐	☐	☐	☐
c)	Conserving fisheries resources is the responsibility of each person who fishes as well as the agencies involved in fisheries management.	☐	☐	☐	☐	☐
d)	The Canadian Coast Guard should be given a greater role in conservation and protection activities than it has at present.	☐	☐	☐	☐	☐
e)	The Dept of National Defence should be given a greater role in conservation and protection activities than it has at present.	☐	☐	☐	☐	☐
f)	The Royal Canadian Mounted Police should be given a greater role in conservation and protection activities than it has at present.	☐	☐	☐	☐	☐
g)	The following additional surveillance technologies should be employed in the Canadian coastal zone:					
	• Onboard automatic identity and location reporting systems such as AIS and INNAV	☐	☐	☐	☐	☐
	• Satellite technology	☐	☐	☐	☐	☐
	• Naval submarines	☐	☐	☐	☐	☐
	• High frequency surface wave radar	☐	☐	☐	☐	☐

Appendix P

NAFO Fishing Areas

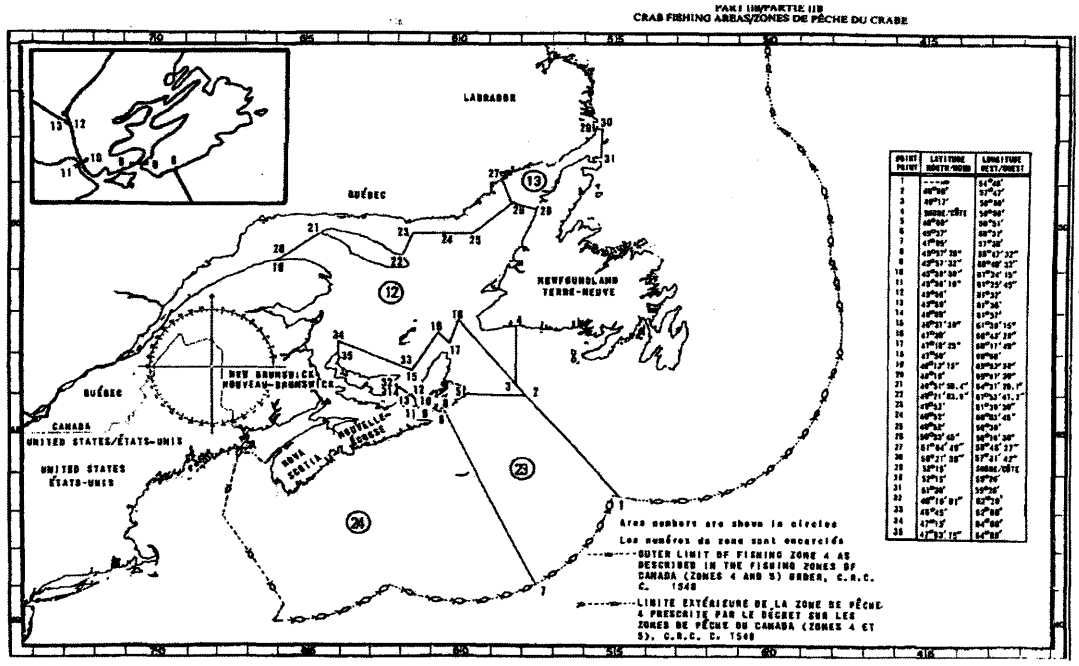


Appendix P


Canadian Lobster Fishing Areas (LFA)
Labrador
QUEBEC
Mont Joli
New
Brunswick
Moncton
Maine
Nova Scotia
Halifax
U.S.A.
Newfoundland
St. John's
200 miles
50°
45°
42° 30'
70°
65°
60°
55°
50°
41
41

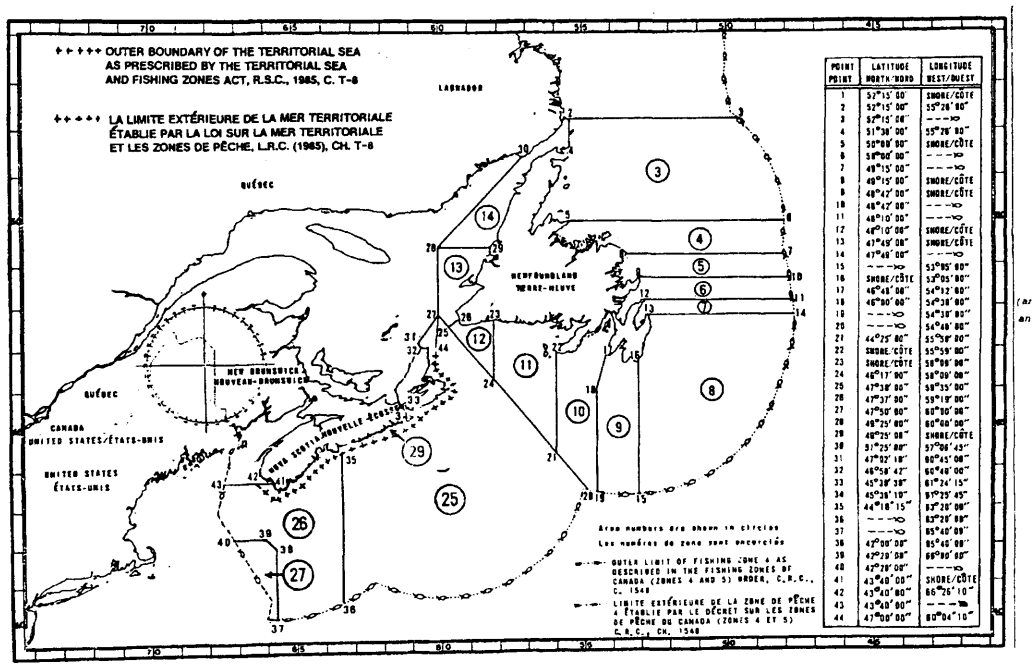
Appendix P

Crab Fishing Areas



There have been changes to the Crab Fishing Areas that are not reflected in this map. The purpose of this page is simply to stimulate your memory.

Scallop Fishing Areas



Appendix Q

TOOLS FOR MEDIA CONTENT ANALYSIS

The military's Director General Public Affairs (DGPA) subscribes to a service that captures electronic newspaper stories published in over 30 Canadian newspapers. Table Q-1 contains the list of key words or text strings that DGPA uses to categorise electronic news articles as "naval" stories.

TABLE Q-1

KEY WORDS FOR NAVAL STORY CATEGORIZATION

Key Word	Key Word	Key Word
Canad% & Navy	HMCS & Yellowknife	HMCS & Scotian
Maritime Command	HMCS & Goose Bay	HMCS & Cabot
marin & canad%	HMCS & Brunswicker	HMCS & Queen
canad% & sailor%	HMCS & Nonsuch	HMCS & Nanoose
commandement maritime	HMCS & Huron	HMCS & Provider
Canadian Forces base	HMCS & Summerside	HMCS & Protecteur
Canadian Forces station	HMCS & Frontenac	HMCS & Preserver
course du canon	HMCS & Brandon	HMCS & Vancouver
Canadian patrol frigate	HMCS & Edmonton	HMCS & Shawinigan
Canadian submarin%	HMCS & Nanaimo	HMCS & Toronto
Upholder & submarin%	HMCS & Whitehorse	HMCS & Regina
Oberon & submarin%	HMCS & Fredricton	HMCS & Calgary
fregate canadienne	HMCS & Winnipeg	HMCS & Montreal
Navire canadien de sa majeste	HMCS & Charlottetown	HMCS & Ottawa
Her Majesty%s Canadian Ship	HMCS & Athabaskan	HMCS & Glace Bay
afloat logistic%	HMCS & Saskatoon	HMCS & Ojibwa
sealift capability	HMCS & Tecumseh	HMCS & Kingston
MARCOM	HMCS & Cataraqui	HMCS & Moncton
MARLANT	HMCS & Stadacona	HMCS & Algonquin
MARPAC	HMCS & Assiniboine	HMCS & Iroquois
base de	HMCS & Stettler	HMCS & Onondaga
station de	HMCS & Malahat	HMCS & Okanagan
Gun Run	HMCS & Griffon	HMCS & Ville de Quebec
frigate	HMCS & Gatineau	HMCS & Discovery
destroyer	HMCS & Cornwalli	HMCS & Donnacona
minesweeper	HMCS & Victoria	HMCS & Glace Bay
Sea King%	HMCS & Corner Brook	HMCS & Moresby
Kingston Class	HMCS & Chicoutimi	HMCS & Bonaventure
CFS	HMCS & Fredericton	HMCS & Nipigon
CFB	HMCS & Restigouche	HMCS & Grandby
BFC	HMCS & Chippewa	HMCS & Fraser
HMCS	HMCS & Carleton	HMCS & Terra Nova
NCSM	HMCS & Windsor	HMCS & Oriole
Halifax	HMCS & York	HMCS & Montcalm
Esquimalt	Masset	HMCS & Star

Source: DND Director General Public Affairs, 2002.

Appendix Q

Figure Q-1 below is a screen shot of the MS Access template provided to the research assistant who reviewed the electronic "naval" stories captured on the DGPA web-site.

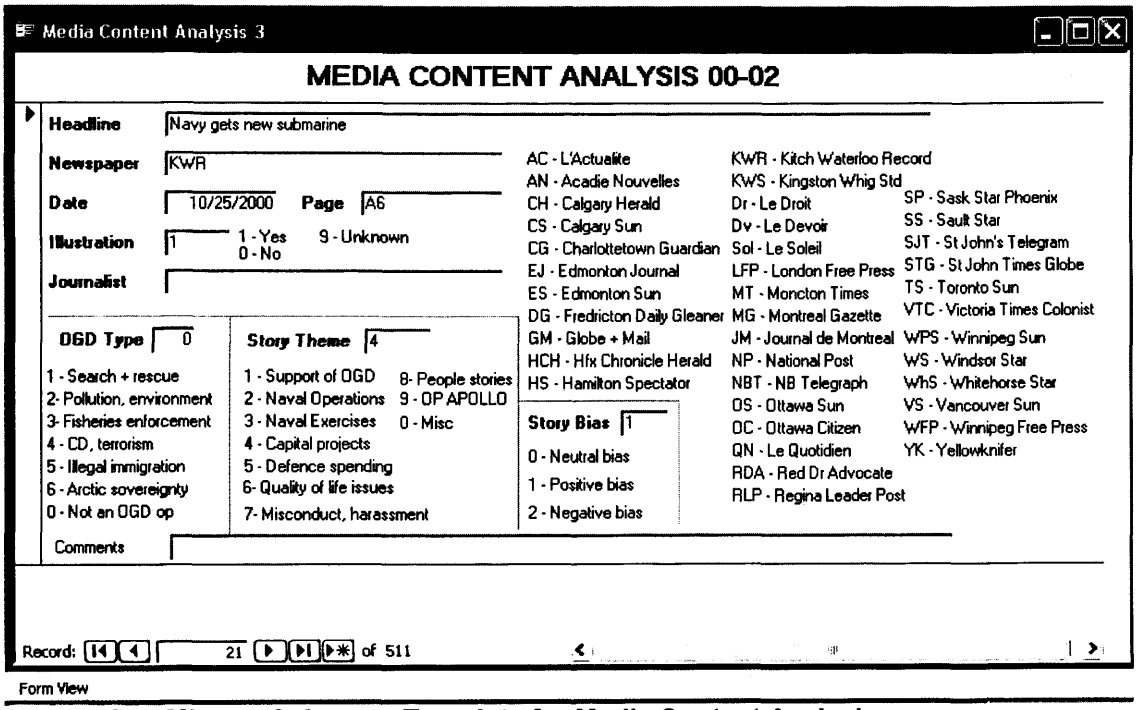


Figure Q-1. Microsoft Access Template for Media Content Analysis

Appendix R

VARIOUS TABLES AND CO-ORDINATES

This appendix contains tables and figures that were not appropriate for inclusion in other appendices.

TABLE R-1

AUTHORITY FOR RELEASE OF MILITARY DATA

Year	Name	Authority
1999	Rear-Admiral Duncan Miller	Commander, Maritime Forces Atlantic
2000	Rear-Admiral Bruce MacLean	Commander, Maritime Forces Atlantic
2002	Rear-Admiral Glenn Davidson	Commander, Maritime Forces Atlantic
2004	Rear-Admiral Dan McNeil	Commander, Maritime Forces Atlantic
2006	Rear-Admiral Dean McFadden	Commander, Maritime Forces Atlantic

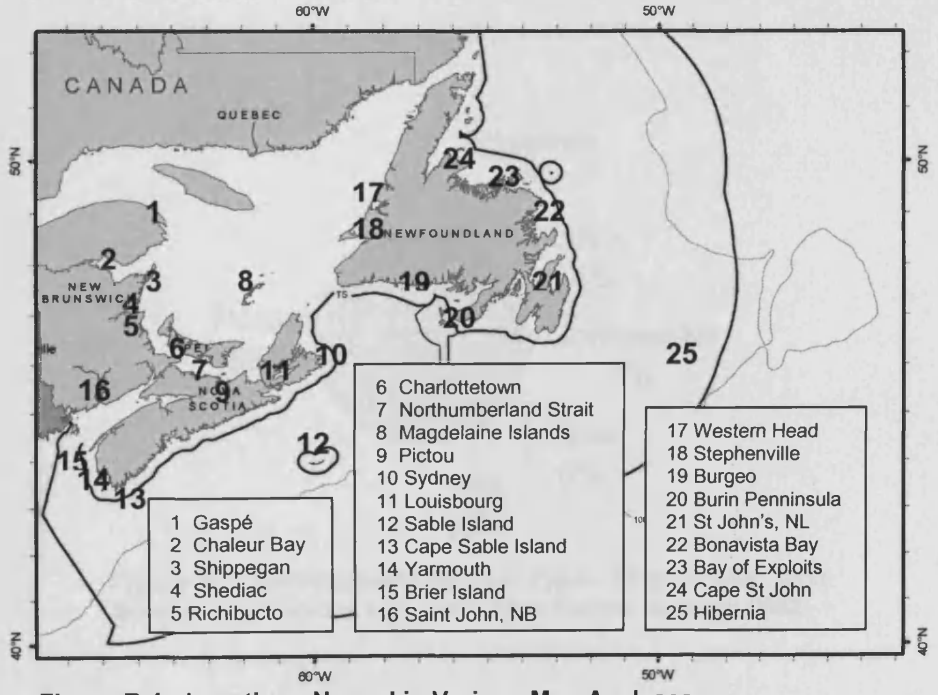


Figure R-1. Locations Named in Various Map Analyses

Appendix R

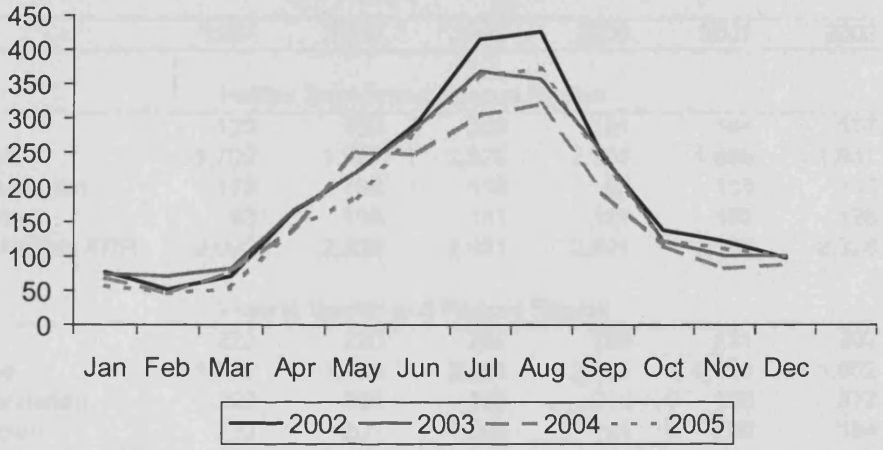


Figure R-2. Monthly SAR Caseload in Halifax SRR – 2002 to 2005
Source: Joint Rescue Co-ordination Centre, Halifax, 2002.

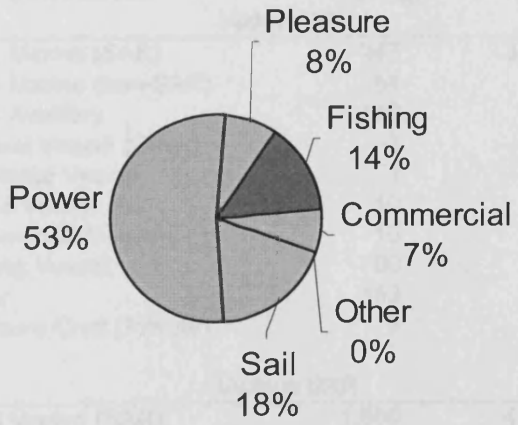


Figure R-3. SAR Incidents by User Type – Victoria SRR 2002
Source: Joint Rescue Co-ordination Centre, Victoria, 2002.

Appendix R

TABLE R-2

SAR INCIDENTS BY TYPE – 1997 TO 2002

	1997	1998	1999	2000	2001	2002
Halifax Search and Rescue Region						
Air	125	150	206	191	164	152
Marine	1,702	1,927	2,325	2,191	1,995	1,947
Humanitarian	172	158	119	98	115	103
Unknown	93	103	181	121	102	126
Total Halifax SRR	2,092	2,338	2,831	2,601	2,376	2,328
Victoria Search and Rescue Region						
Air	223	220	232	289	221	202
Marine	1,579	1,623	2,255	2,325	2,229	1,952
Humanitarian	329	365	305	319	298	372
Unknown	233	201	202	181	200	184
Total Victoria SRR	2,364	2,409	2,994	3,114	2,948	2,710

Sources: Joint Rescue Co-ordination Centre, Halifax, 2002; Joint Rescue Co-ordination Centre, Victoria, 2002.

TABLE R-3

MARINE RESPONDERS IN SAR CASES - 2002

Marine Resources	Taskings	Hours
Halifax SRR		
CCG Marine (SAR)	947	3,418
CCG Marine (non-SAR)	164	855
CCG Auxiliary	146	397
Federal Vessel (Other)	1	1
Provincial Vessel	1	1
Police Vessel	10	9
Commercial Vessel	16	266
Fishing Vessel	90	278
Other	163	446
Pleasure Craft (Private)	9	24
Victoria SRR		
CCG Marine (SAR)	1,800	4,444
CCG Auxiliary	993	2,242
Naval Vessel	33	48
Federal Vessel (Other)	46	44
Provincial Vessel	41	27
Police Vessel	78	104
United States Coast Guard	6	5
Fire Boat	11	6
Commercial Vessel	179	236
Fishing Vessel	96	224
Other	78	104
Pleasure Craft (Private)	365	462

Source: Joint Rescue Co-ordination Centre, Halifax, 2002; Joint Rescue Co-ordination Centre, Victoria, 2002

Appendix R

TABLE R-4

LOCATION OF CCG LIFEBOAT BASES – ATLANTIC REGION

Home Port	CCG Vessel	Length(m)	Latitude	Longitude
Saint John, NB	*Courtney Bay*	16.3	45.271388889	-66.071388889
Westport, NS	*Westport*	16.3	44.264166667	-66.348888889
Clarks Harbour, NS	*Clarks Harbour*	16.3	43.459444444	-65.653333333
Sambro, NS	*Sambro*	16.3	44.468055556	-63.599444444
Port Bickerton, NS	*Bickerton*	16.3	45.100555556	-61.722500000
Louisbourg, NS	*Spindrift*	16.3	45.917222222	-59.970833333
Iles de la Madeleine, QC	*Cap aux Meules*	16.3	47.380555556	-61.856111111
Burgeo, NL	*W.G. George*	16.3	47.614722222	-57.607777778
Burin, NL	*W. Jackman*	16.3	47.036111111	-55.163611111
Souris, PE	*Cape Spry*	14.6	46.344722222	-62.248888889
Summerside, PE	*Cap Nord*	14.6	46.383611111	-63.787777778
Shippegan, NB	*Cap Breton*	14.6	47.744444444	-64.698055556
Riviere au Renard,QC	*Cap Rozier*	14.6	48.995277778	-64.386944444
Tadoussac, QC	*Cap D'Espoir*	14.6	48.138055556	-69.714722222
Havre Saint Pierre,QC	*Cap De Rabast*	14.6	50.236944444	-63.603611111
Port aux Choix, NL	*Cape Norman*	14.6	50.705277778	-57.350555556
Lark Harbour, NL	*Cape Fox*	14.6	49.095555556	-58.378888889

Source: Joint Rescue Co-ordination Centre, Halifax, 2007.

TABLE R-5

LOCATION OF GOVERNMENT PATROL BASES – ATLANTIC REGION

Name of Base	Dept	Type	Latitude	Longitude
Halifax	DND	Port	44.655556	-63.575556
Shearwater	DND	Airport	44.639444	-63.503056
Greenwood	DND	Airport	44.991667	-64.900000
Gander	DND	Airport	48.937222	-54.567778
Goose Bay	DFO	Airport	53.318056	-60.422222
Dartmouth	DFO	Port	44.660000	-63.556944
Yarmouth	DFO	Port	43.830000	-66.121944
Sydney	DFO	Port	46.138333	-60.200000
St John's	DFO	Port	47.558056	-52.706667

DND photo

HMCS Kingston Maritime coastal defence vessel.

ENHANCING THE NAVAL MANDATE FOR LAW ENFORCEMENT: HOT PURSUIT OR HOT POTATO?

by Captain (N) Laurence M. Hickey

Introduction

Days after the 1995 apprehension of the fishing vessel *Estai* on the Grand Banks, the *Toronto Sun* carried a provocative front-page periscope photograph of a Spanish stern trawler at close range. This so-called 'Turbot Crisis' brought fisheries and sovereignty issues into focus for Canadians. Moreover, the reporting of this unusual employment of a submarine was, for many, the first indication that their navy played an active role in the enforcement of domestic and international law in Canada's maritime zones.

While Canada's navy has always been active in the nation's maritime affairs, there is a case to be made for expanding the naval role with respect to domestic maritime enforcement in support of safeguarding national security and the exercise of Canadian sovereignty. The intent of this article is to suggest why a more comprehensive role is both practical and necessary. The Canadian Navy maintains a significant presence in Canada's maritime zones, and it should have all the legal tools required to enforce Canadian law in those regions. This is not to suggest that the navy would shift its primary emphasis from preparing for combat at sea to coast guard duties. Rather, it is an appeal for powers that would enable the navy to act upon violations detected while carrying out its fundamental military role. Other government departments have become increasingly reliant on the navy during a decade of government-wide retrenchment. The issues that shape attitudes towards the employment of armed forces for law enforcement tasks also need to be identified and challenged. Finally, a simple model for executing this new role will be proposed. But first, it is necessary to examine what the navy's enforcement role is at present.

Naval Contribution to Maritime Enforcement

For the past several years, all federal departments and agencies have suffered the consequences of reduced budgets. Department of Fisheries and Oceans Canada (DFO) and the Canadian Coast Guard (CCG) have experienced significant pressures with respect to operating aging fleets in

Captain Hickey *is both Commander Fifth Maritime Operations Group and Deputy Commander Canadian Fleet Atlantic.*

Appendix S

PUBLISHED ARTICLES

the face of increased demand for post-9/11 patrol activities. Indeed, Senator Colin Kenny complained in 2004 that the CCG, the navy, and by extension, the Royal Canadian Mounted Police (RCMP), were not defending Canada's coasts in "any meaningful way".[1] While this may be an overstatement, in reality no single government department or agency on its own can assure the safety, security or sovereignty of Canada. Thus, any additional contribution the navy can make – either by itself or in partnership with other government departments – could enhance significantly Canada's ability to exercise national sovereignty.

At present, the navy's contribution to domestic maritime enforcement is maintaining a comprehensive surveillance and domain awareness capability, providing routine support to departments with enforcement mandates, and being prepared to apply coercive force in emergent crises. Over the past decade, on the Atlantic coast, Canadian naval vessels spent between 150 and 250 days at sea per year, many of them on overseas deployments, but the majority of them within the nation's Exclusive Economic Zone (EEZ). While many of these sea-days were devoted to training and exercises, they provided many 'eyes on the water', and constituted a distinct federal presence in Canada's maritime approaches.[2] In recent years, the navy has spent fewer and fewer days at sea, due to reductions in fleet size and annual budgetary constraints.

In addition to its at-sea presence, the navy is already an active participant in fisheries enforcement through a Memorandum of Understanding (MOU) negotiated between the Department of National Defence (DND) and DFO. This MOU defines the terms and procedures for the provision of support by the navy and the air force, and it sets the number of sea-days (Figure 1) and flying-hours allocated to surveillance and fisheries enforcement. Naval vessels and military maritime patrol aircraft, with DFO officers embarked, conduct fishery patrols in the inshore and offshore maritime zones. Essentially, they provide the means to transport fisheries officers into areas of fishing activity so that the appropriate authorities can monitor, inspect, and, if necessary, arrest anyone violating domestic and/or international law.

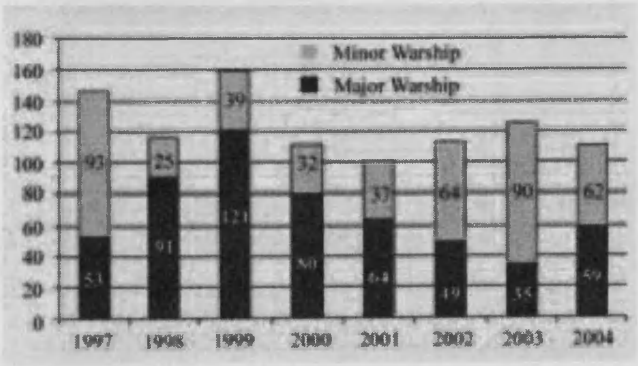


Figure 1 – Naval Fisheries Patrol Sea Days – Atlantic. (Maritime Forces Atlantic Sea Operations staff, 2004)

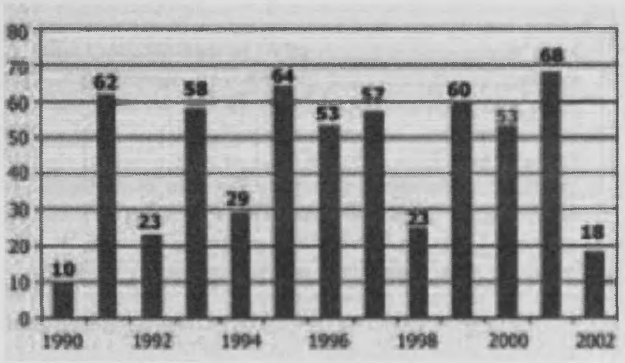


Figure 2 – Boardings by Fisheries Officers Embarked aboard Naval Ships – Atlantic. (Fisheries and Oceans Canada, 2002)

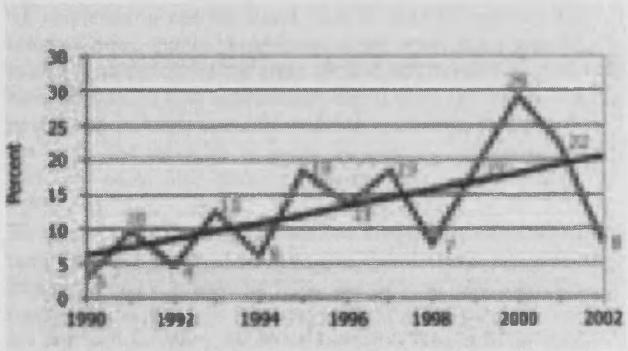


Figure 3 – Navy's Percentage of Total DFO Boardings for Newfoundland Region. (Fisheries and Oceans Canada, 2002)

Over the past several years, DFO has, in fact, begun to rely increasingly on the navy for support, particularly since DFO reduced its offshore enforcement fleet. While the number of boardings carried out by DFO officers embarked aboard naval vessels remains relatively constant (Figure 2), the overall percentage of boardings instigated by fisheries officers embarked in naval vessels is increasing (Figure 3).

Historically, the navy has focused its fisheries patrols upon the Grand Banks, resulting in the emergence of distinct patterns of naval presence. Figure 4 shows a concentration of patrol effort on the Tail of the Grand Banks, with increased presence on the routes to and from Halifax and St. John's.[3] The focus on the Tail was due in large measure to the plethora of foreign vessels attracted to this particularly abundant fishing ground, and then later in the 1990s, to the requirement to enforce the moratorium imposed on the Tail as a result of plummeting ground fish stocks. Figure 5 captures the shift in concentration away from the Tail where, by 1999, only a small total allowable catch had been allocated. The new direction was towards the Flemish Cap, where other species such as shrimp were, and still are, commercially viable. Figure 6 depicts the coverage and, by extension, the presence of military maritime patrol aircraft during a routine 30-day period.

Appendix S

PUBLISHED ARTICLES

As demonstrated by the preceding figures, the Canadian Navy is fully engaged in safeguarding both national security and the exercise of Canadian sovereignty. In a period when patrol activities by other government departments has been waning, the navy continues to maintain a not insignificant 'on-the-water' presence in Canada's maritime zones. The navy's tendency to revisit areas of high activity and traffic density – coupled with its sophisticated modern sensor capability – predisposes its vessels to detect breaches of domestic and international law. However, at present, unless a peace officer from another government department is embarked, there is little recourse open to a naval vessel other than to report the situation to the appropriate law enforcement authority, and to wait for action to be taken by others. Why then has Canada been so reticent to take the next step, as have many other nations, to employ the navy for enforcement of federal statutes in all Canadian maritime zones in a more primary manner than relegating it to its present supporting role?

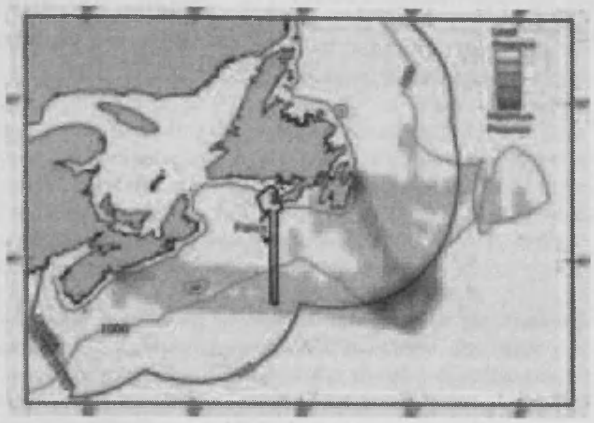


Figure 4 – Enforcement Presence by Naval Ships on Fisheries Patrol: 1980 – 1996. (National Library and Archives data from 59 ship's logs)

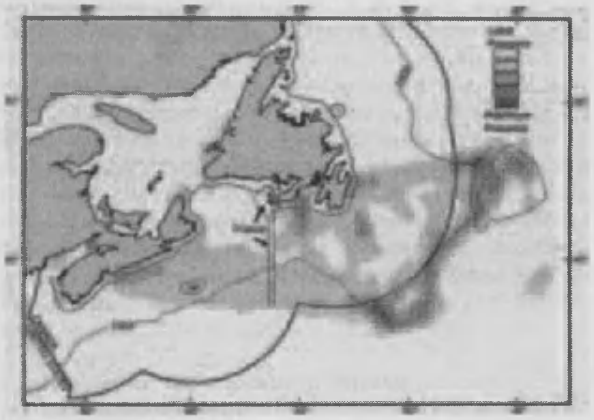


Figure 5 – Enforcement Presence by Naval Ships on Fisheries Patrol: 1999 – 2000. (Data from 13 naval fisheries patrols)

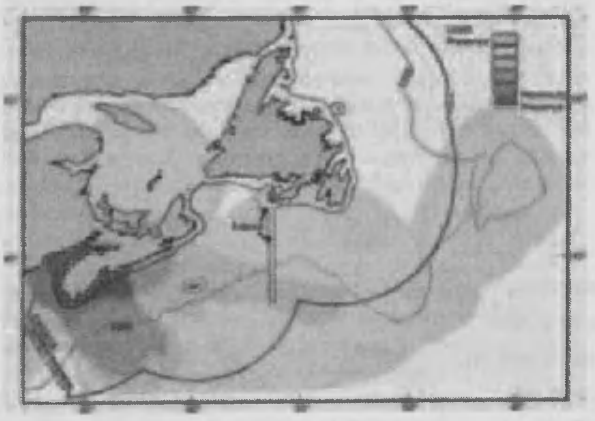


Figure 6 – Presence of CP-140 *Aurora* Maritime Patrol Aircraft: 15 Jan – 15 Feb 2004. (Data from 18 flights)

Reticence to Use Armed Forces for Domestic Enforcement

There is no simple answer to this question. However, an explanation can be found in a number of separate but related issues. Public perceptions of the army, and a general unease with the use of the army for law enforcement on land, have influenced how constabulary naval roles are viewed. At heart is the public's apparent inability to distinguish between the army and the navy in terms of domestic operations. In addition, some also question whether law enforcement is truly a legitimate use of the Canadian Forces in the first instance. Lastly, there are those who argue that constabulary duties are non-traditional, that they detract from the status of a navy, and that they erode its war fighting capability. On further examination, it becomes evident that these concerns do not present such an insurmountable obstacle as may first have been thought.

The Army and Law Enforcement

As instruments of national power, most Western armed forces have been conceived and maintained to execute state policy abroad – although they can also be employed domestically in certain situations where their unique military attributes can be used very effectively. In practice, democratic governments constrain the internal use of their militaries, usually to avoid potential political fallout, and also, to maintain the legitimacy of their democratic governance. Canada is no exception, and this tradition has its roots in British legal heritage, which was imported to British North America before Confederation.

It is argued that the perceived unwillingness to employ the Canadian Army in law enforcement roles during modern times comes from long-standing prejudices resulting from *misuse* of the army in foregone times. The British *Bill of Rights* of 1688 is the point of departure for an analysis of civil-military relations in the British Isles, and, by extension, the Dominion of Canada. This Act rendered the army subordinate to Parliament, and restricted its use by the Crown.[4] Interestingly, the *Bill of Rights* of 1688 makes no reference to the Royal Navy, a powerful arm of the state during that particular period of empire building. Clearly, it was not viewed as a threat to the domestic political structure of the era. After the *Bill of Rights*, there followed a series of acts that provided statutory authority and funding for armed forces to operate on land.

Appendix S

PUBLISHED ARTICLES

"In recent years, the navy has spent fewer and fewer days at sea, due to reductions in fleet size and annual budgetary constraints."

For well over two centuries, the army remained an important tool in the execution of domestic policy, largely because it was the only organized body of men that the Crown could call upon for its coercive ends. Consequently, well into the 19th Century, soldiers were employed frequently to maintain public order, notwithstanding the potential risk to civil liberties. Over time, public figures began to question the means employed to maintain law and order, as well as the appropriateness of the use of the army for this purpose. This evaluation coincided roughly with the *Metropolitan Police Act* of 1829, and the creation of Britain's fledgling police forces.

Attitudes toward the use of the army in the domestic context ultimately migrated to Canada. Here, the army was used prior to the Second World War to quell disturbances, to suppress election disorder, and to put down uprisings, such as the Riel Rebellion of 1885. Some argue that the negative memory of these actions remains embedded with today's population, resulting in resentment towards using the Canadian Army to quell civil disorder. However, it is difficult to gauge accurately public sentiment about the use of the army for law enforcement purposes. There have been only four instances of the use of Canadian military forces in their most intrusive form since 1945.[5] In the case of both the 1970 FLQ and the1990 Oka crises, the armed forces were praised for the calm and disciplined manner in which they both contained the crisis and prevented its escalation.[6] If there is truly lingering resentment over use of the Canadian Forces for law enforcement tasks, it is difficult to explain why visible military assistance is requested for major politically-charged events, such as the G8 Ministers' conferences in Kananaskis and Halifax, or the Summit of the Americas in Quebec City.

Legitimacy of the Canadian Forces for Law Enforcement

Contrary to what many might think, law enforcement is, indeed, a legitimate function of the Canadian Forces. Parliament has indicated clearly both its *acceptance* of and its *expectation* that the armed forces have a role in law enforcement in certain circumstances. This statutory basis can be found in the *National Defence Act* (NDA). This Act codifies the principles for control of the armed forces, and provides the legal framework for the provision of military support to provinces or other government departments for maintaining public order.

Parliament has two major expectations in relation to the armed forces and law enforcement. First, the Canadian Forces must be capable of a broad spectrum of services provision in both crisis and non-crisis scenarios. Through the NDA, Parliament empowers the Minister of National Defence or the Governor-in-Council to authorize the armed forces to "perform any duty involving public service", including the "provision of assistance in respect of any law enforcement matter". This commonly takes the form of humanitarian assistance – including ground search and rescue, aid to civil disasters, such as floods and fires, environmental emergencies and other humanitarian situations, such as missing persons and mercy flights. The "provision of assistance in respect of any law enforcement matter" clause also encompasses what is known as assistance to law enforcement agencies (ALEA). Within this category, support from the armed forces runs the gamut from the benign, such as provision of ranges or training areas for police use, to situations in which a disturbance of the peace is occurring or is about to occur, and when armed forces personnel or equipment may be required for support. The NDA also sets the conditions for armed forces support to federal penitentiaries for assisting in the suppression of prison disturbances, and it provides authority for the earlier mentioned MOUs with DFO, the RCMP, and with Environment Canada (EC). These MOUs provide the legal basis for the navy to assist the other federal departments to enforce narcotics, fisheries and environmental laws through use of naval assets for surveillance, information sharing and interdiction support.

Second, Parliament expects the Canadian Forces to be capable of taking responsibility for restoring public order when necessary – that is, for coming to the aid of the civil power. Pursuant to the *National Defence Act*, military 'service' can be furnished "in any case in which a riot or disturbance of the peace, beyond the powers of civil authorities to suppress, prevent or deal with and requiring that service". The Chief of the Defence Staff is accorded the discretion to determine the scope and nature of military 'service' in these situations. Under aid of the civil power, armed forces members possess the powers and duties of 'constables', but they remain under military command and control.

Aid of the civil power is an arguably controversial 'service', since it conjures up images of soldiers with rifles patrolling Canadian streets, and, in the view of some citizens, it embodies the idea of a police state with the threat of concomitant suspension of civil liberties. Historian Sean Maloney asserts that employing military forces domestically is a "politically provocative act, one that carries much weight regardless of the situation".[7] Others argue that the use of military forces for law enforcement purposes obfuscates military and civilian roles, undermines civilian control of the armed forces, and is not an appropriate use of resources.[8] This criticism notwithstanding, the police state has never been an acceptable concept in Canada, and the infrequent requisitions for aid to the civil power are always undertaken as a means of last resort. Moreover, as stated earlier, recent examples of armed forces employment in aid to the civil power met with overall approval. More importantly, however, Parliament has demonstrated, through various legal instruments, that it both *accepts* and *expects* Canada's military to play a role in law enforcement, but that role will be subject to tight political control.

"Attitudes towards the use of the army in the domestic context ultimately migrated to Canada."

Appendix S

PUBLISHED ARTICLES

Do constitutional issues prevent the navy, as opposed to the army, from enforcing Canadian law? A review of the *Constitution Act* indicates otherwise. The Act states that "...the exclusive Legislative Authority of the Parliament of Canada extends to... Militia, Military and Naval Service, and Defence... Beacons, Buoys, Lighthouses... Navigation and Shipping... Sea Coast and Inland Ferries". Such subjects are clearly related to maritime activities on or beyond the coasts, and the Act codifies federal responsibility for each. The Act also prescribes the exclusive powers of the provinces, powers that focus on activities and issues affecting provincial territory, namely, *terra firma*.[9] Thus, the *Constitution Act* clearly implies that Canada's ocean zones are federal jurisdictions. As such, appropriate organs of the federal government may enforce Canadian law within these jurisdictions, provided they have the legal mandate. In order for the navy to *enforce* rather than just *assist* in enforcement, relatively minor amendments to various maritime-related enabling statutes are required.

"Among naval analysts, the employment of navies for constabulary tasks is not a universally popular concept."

Lack of Distinction between Army and Navy in 'Domestic Operations'

Notwithstanding Kananaskis and other fora, in which the Canadian Forces deployed in high profile support of enforcement agencies, public perception commonly views 'traditional' military law enforcement operations as those in which the army is the 'agency of last resort'. For many, no distinction exists between the navy dealing with narcotics smuggling, pollution, and fisheries violations at sea, and the army conducting aid to civil power operations on land. The latter are very visible, affect large numbers of citizens, and can be intrusive upon normal life, whereas naval enforcement operations are largely invisible to the majority of Canadians. Due to this lack of distinction, negative biases derived from perceptions of the army's operations are unconsciously applied to those of the navy.

Enforcement as Non-Traditional Employment

When the question of naval law enforcement is raised, policymakers, lawyers, and senior bureaucrats are naturally reticent to concede any case for enhancing the Canadian Navy's constabulary role, because such activities are 'non-traditional'. It can be argued that MOU-based counter-narcotics, fisheries, customs, and immigration law enforcement operations carried out by the navy are not considered in the same category as the 'force of last resort' missions. Rather, these types of operations are deemed more to fall into the realm of support to law enforcement agencies. That these operations are seen to be a 'non-traditional' role for the navy is both unfortunate and misinformed. Indeed, the need for fisheries protection from American interests in Canadian waters at the turn of the century was a major factor with respect to the creation of an indigenous navy.

Among naval analysts, the employment of navies for constabulary tasks is not a universally popular concept. Vice-Admiral (ret'd) Gary Garnett stresses the importance of maintaining a distinction between the enforcement roles of the Canadian military and civilian authorities. He notes, as have many other analysts, that, in Canada, law enforcement has been traditionally a civilian function. With respect to naval law enforcement, there are disadvantages to employing naval vessels in these roles. The most apparent is that navies are designed generally for war-fighting, not necessarily constabulary tasks. In fact, during the 'Cod Wars' with Iceland in the 1970s, British frigates proved to be too 'overly-sophisticated' for the task.[10] Garnett's principal concern is to avoid the watering down of combat skills, and his point, in my view, has some validity. However, the intent would not be to convert the Canadian Navy into a fleet of coast guard cutters. Rather, naval ships would continue to train for their primary combat roles, and small teams would receive additional specialized training to become proficient at their secondary constabulary duties.

Maritime Warfare expert Commander (ret'd) Peter Haydon argues that the navy should be the key contributor to sovereignty and security patrols of Canada's maritime zones, because Defence is the sole department that has the capability to do the patrols properly and efficiently, and the navy is the only organization that understands and can implement the concept of sea control.[11] But he also cautions against too much 'constabularization', to the point that the nation possesses *only* a coast guard. In that scenario, he argues that Canada would find itself excluded from multinational naval operations. Both Haydon and Garnett suggest that sending forces perceived to be of a constabulary nature to international operations would signal a weak commitment by Canada to alliance or coalition objectives. Haydon argues that Canada's overseas commitments would then be limited to token army and light airlift participation, largely because Canada would lose its seat at the table at *major* international crisis management events. Canada's use of the navy to further diplomatic ends, to strengthen alliance relationships, and to engage in confidence-building measures would not be possible, and that would marginalize Canada on the world stage.[12] This effect runs counter to the government's stated desire to regain Canada's stature and influence in the international system.

This potential for marginalization expressed by both Haydon and Garnett would be legitimate, if the Canadian Navy were to be viewed in the future largely as a constabulary force. However, as long as the navy maintains the primacy of combat operations as its *raison d'être*, and trains to that end, the likelihood of such marginalization is remote.

Garnett also suggests that the presence of a combined civil-military force that executes law enforcement tasks on a routine basis could potentially inflame sensitive international situations, as was the case during the British/Icelandic 'Cod Wars'.[13] However, it can be argued that concern with respect to provocation is really an issue of expectation. The Canadian tradition has been that of civilian law enforcement in the marine environment, and other nations have come to expect that reaction. As political scientist Colin Gray points out: "If Canadian law is accepted as authoritative, and if the law is

invoked against a single vessel and not against a state, there should be no provocation." Likewise, he adds, since so many other countries use their navies for fisheries protection, it can be argued that there is a strong *prima facie* case for Canada to follow suit.[14]

Garnett is not alone in his reservations. Other serving and retired flag officers are opposed to their Service taking on a more active domestic maritime enforcement posture. In attempting to understand why this is the case, and one cannot discount simple deep-seated biases. Naval analysts, such as Mark Janis, Richard Hill and Eric Grove, offer various topologies for ranking navies by class. Generally, super-powers sit at 'the top of the pecking order', while at the lowest rungs are found the 'constabulary and token' navies. Canada ranks its own navy at Level Three, far away from those navies described as being 'constabulary'.[15] The relevance? Simply put, there is a general correlation between ranking of a nation's navy and a nation's status in the international system. The majority of navies of developed countries occupy the upper tiers, whereas the navies of developing nations, those of a more constabulary nature, are found in the lower end of the ranking spectrum.[16] The Canadian Navy, given its early roots as a fisheries protection force, wished to shed that image and become a 'real' navy. Arguably, some senior naval leaders may perceive a certain stigma if their fleets are associated with constabulary rather than combat-capable functions that rank them higher on the international stage. Thus, the attitudes of modern naval officers might well be a legacy of concern with respect to image.

Toronto Sun (Toronto), 6 June 1995. Periscope image taken by author.

The provocative, front-page periscope photograph.

Both Garnett and Haydon have cautioned against 'non-traditional' law enforcement by Canada's naval forces. However, John Thomas, former Commissioner of the Canadian Coast Guard, is more blunt:

> I do not think that DND should have the role of coastal security... Navy personnel are trained for war and navy systems are developed for war, not to fulfil a policing role on the coast... the navy should be called upon only when the police force cannot do the job... there is a need for a flexible response. The military should be seen, from a policy perspective, as a force of last resort, in the same way as they are for land-based police operations.[17]

Thomas – and, to a lesser extent, Haydon and Garnett – speaks to a bipolar world of a bygone era, during which Canada's Navy was structured to counter symmetric threats. It is unlikely that North America will face a conventional military threat, such as had been the case during the Cold War. The maritime security environment changed with the fall of the Berlin Wall, and its continuing evolution was punctuated with the terrorist attacks of 2001. Globally, societies are witnessing an increased emphasis on asymmetric capabilities by organized crime and a variety of trans-state actors. It is reasonable to assume that terrorist groups are prepared to use merchant vessels to transport their personnel and weapons. Any number of scenarios can be imagined here.

In addition to counter-terrorism, the protection of fishing rights, the prevention of illegal activity at sea, and the protection of the environment will continue to require vigilance on the part of the federal government. Canada's national security policy, *Securing an Open Society*, calls for effective, integrated multiple-agency threat assessment, protection, and prevention capabilities. However, it is no longer easy to divine what the sovereignty protection role of the Canadian Navy is when, as observed in Canada's *International Policy Statement* (IPS), "the boundary between the domestic and international continues to blur".[18] The IPS insists that security and defence policy must change. Thus, it is time to discard old ideas about traditional employment, and to consider what is practical and relevant for the future maritime security environment. Other nations have already done so.

Fisheries protection has long been a traditional role for European naval and coast guard forces. Britain's naval experience in this role dates back to the 16th Century. At present, the Royal Navy undertakes quarantine enforcement, fishery protection, contraband operations, drug interdiction, oil and gas field patrols, anti-piracy operations, support to counter-insurgency operations and maritime counter-terrorism. Moreover, the Royal Navy maintains a Fishery Protections Squadron, equipped with six offshore patrol vessels and four mine counter-measures vessels. Looking at other parts of Europe, the French Navy, for example, acquired patrol vessels several years ago for policing duties. Farther north, the Norwegian Coast Guard forms part of the Royal Norwegian Navy, whereas Denmark has no coast guard. However, the Danish Navy exercises police authority for enforcement of sovereignty issues. European navies generally furnish law

enforcement services directly to national authorities through MOUs. Usually what these navies provide are naval platforms and facilities. In some cases, such as the Danish model, the navy carries out constabulary and traffic-police duties, whereas the appropriate civil authority conducts the criminal investigations. From a European perspective, naval participation in law enforcement is a significant contribution to good governance at sea.[19]

"Fisheries protection has long been a traditional role for European naval and coast guard forces."

United States Experience with *Posse Comitatus*

It is interesting to compare the Canadian position to that of the United States – where the law has, until recently, prohibited the use of the armed forces for domestic enforcement. The *Posse Comitatus Act* was passed in 1878 to prevent the US Army from carrying out law enforcement tasks in the United States. This was a reaction to the use of military forces in the Confederate states for the maintenance of peace and good order, to the enforcement of policies for post-Civil War reconstruction, and to ensure that rebellious sentiments did not re-ignite. The US Congress became concerned when the army stationed troops at political events and polling stations under the premise of ensuring civil order. The intent of the *Posse Comitatus Act* was to prevent the Army from becoming 'the national police force', and to return the army to its proper role in defence of US territory.[20]

Interestingly, the *Posse Comitatus Act* did not apply to the US Navy, only the US Army. It is possible that, as with Britain's *Bill of Rights* of 1688, the navy was not viewed as a threat to the US domestic political structure of the era. In 1956, the *Posse Comitatus Act* was amended to apply to the US Air Force, but, curiously, it made no mention of the US Navy. By 1974, it was interpreted that, although the Act did not specifically apply to the navy, its principles were to be upheld. However, a loophole allowed the navy to be employed for civilian law enforcement purposes, given the express permission of the US Secretary of the Navy, a civilian official. Thus, the paramount principle of civilian control over military forces could be maintained.[21]

In 1982, at the request of the US Department of Transport, the US Secretary of Defense approved US Navy support to the US Coast Guard for law enforcement purposes. Specifically, the US Navy could conduct surveillance, tow or escort seized vessels, transport prisoners, provide logistic support to Coast Guard units, and embark Coast Guard personnel to conduct boardings of American and stateless vessels. These powers and procedures marked a considerable departure from the outright prohibition of US naval involvement in law enforcement, and they indicate American acceptance of this role for their navy.

Having established the legitimacy of the use of the navy for law enforcement purposes, and having challenged some perceptions about constabulary and non-traditional naval employment, it remains to be discussed what an enhanced mandate for naval law enforcement would really entail.

Proposal for Naval Maritime Enforcement of Canadian Maritime Zones

This article calls for the navy to be empowered with the legal authority to enforce directly selected federal statutes on a routine basis throughout the maritime zones of Canadian jurisdiction. At present, Canadian naval forces are relegated to a support function only, except under special circumstances when coercive force is *required,* and is *requested* by the appropriate Minister.

If these legal powers were to be granted, what would this new role entail? The navy's fundamental mission would remain the "generation and maintenance of combat-capable, multi-purpose maritime forces to meet Canada's defence objectives". Nonetheless, if naval vessels detected violations to Canadian law while conducting their defence or sovereignty missions, they would have the requisite legal tools to act upon those discoveries. However, there is no suggestion that the navy would be obliged to cease its principal operations to deal with violations detected. Rather, the naval commanding officer's decision whether to enforce the law would be shaped by the priority of his naval operations – and by the circumstances of the violation detected. In practice, this precedent already exists. Throughout Canada, police officers have similar discretion to choose when and where to enforce laws, with due consideration to the severity of the offences, the risk to the public, and so on. As well, the navy would not be expected to enforce all federal statutes, only those that apply to specific activities on the seas. These interventions would be limited only to those offences that are directly linked to the protection of Canadian sovereignty, and this constraint should allay concerns referred to earlier about placing police power in the hands of military personnel.

The proposed new role would not envisage the navy conducting investigations of violations detected at sea. Rather, naval personnel would carry out the preliminary work designed to contain the scene of the violation. Again, an analogy of normal police work is useful. Throughout Canada, general duty police officers are normally first at the scene. They then turn over difficult or serious cases to specialist officers or detectives. The general duty officer is trained in basic policing functions – such as understanding how not to contaminate a crime scene, how to maintain care and custody of evidence, and so on – so that qualified detectives can investigate the case in detail. This basic knowledge is necessary to ensure that the Crown's case is not undermined by procedural errors at the outset of an investigation. In the model proposed, naval personnel would act as the general duty officers, and would turn over the case for investigation by DFO or by EC representatives, or by the RCMP as appropriate. Moreover, the support to enforcement already established by interdepartmental MOUs would not change. Thus, routine patrols with fisheries or RCMP officers embarked would continue, and reactive operations, such as counter-drug interdictions, would be carried out with the appropriate enforcement officers embarked.

Appendix S

PUBLISHED ARTICLES

"The proposed new role would not envisage the navy conducting investigations of violations detected at sea."

Some argue that the Canadian Navy would not be qualified to undertake a more direct enforcement role, primarily because naval personnel are not conversant with the requirements of a court case. Essentially, this question involves training and shipboard organization. One solution would be to confer peace officer status on all watch-keeping officers, as well as a small cadre of sailors.[22] These people would train specifically for law enforcement duties, and would become the ship's experts with respect to the use of force, the care and custody of evidence, and other related matters. The logical choice for these teams would be the personnel who form the navy's existing naval boarding parties. At present, naval boarding party team training is very similar to, but shorter than, that received by Canadian police officers, and it would require minimal adjustment to cater to at-sea enforcement requirements. It would mainly entail becoming familiar with the minimal number of federal statutes that would be enforced by the navy, and to 'top up' the team's legalistic understanding of requirements for court.[23]

In the end, there is little doubt that the navy could execute an enhanced enforcement role, given its considerable experience in maritime interdiction operations abroad. Whether it will be given the chance to do so remains an open question.

Conclusions

Policing Canada's maritime zones and approaches presents no shortage of difficulties to overcome, particularly as the federal government struggles to allocate finite resources to a plethora of ministries charged with maintaining national security. While the navy has always had a major part to play in protecting Canadian sovereignty, the burden of law enforcement has fallen largely upon other government departments. This reality reflects a Canadian tradition of law enforcement by civilian agencies. However, in light of the evolving post-9/11 asymmetric security environment, there is a case to be made for expanding the naval role in domestic maritime enforcement. Influenced to a degree by land-oriented aid to civil power operations, detractors question the legitimacy of this use of armed forces or denounce the idea as non-traditional. However, none of these issues presents an insurmountable obstacle to developing an enhanced role for Canada's naval forces.

With federal enforcement departments becoming increasingly reliant on naval assets for support of their operations, the navy's significant presence in Canada's maritime zones should be leveraged, and the Canadian Navy, empowered with appropriate legal authority, should be granted the option to enforce Canadian law in those vast areas. Doing so would be yet another important step in realizing the goals articulated in Canada's national security policy. Specifically, that entails the provision of maritime security to Canadians in an effective integrated manner.

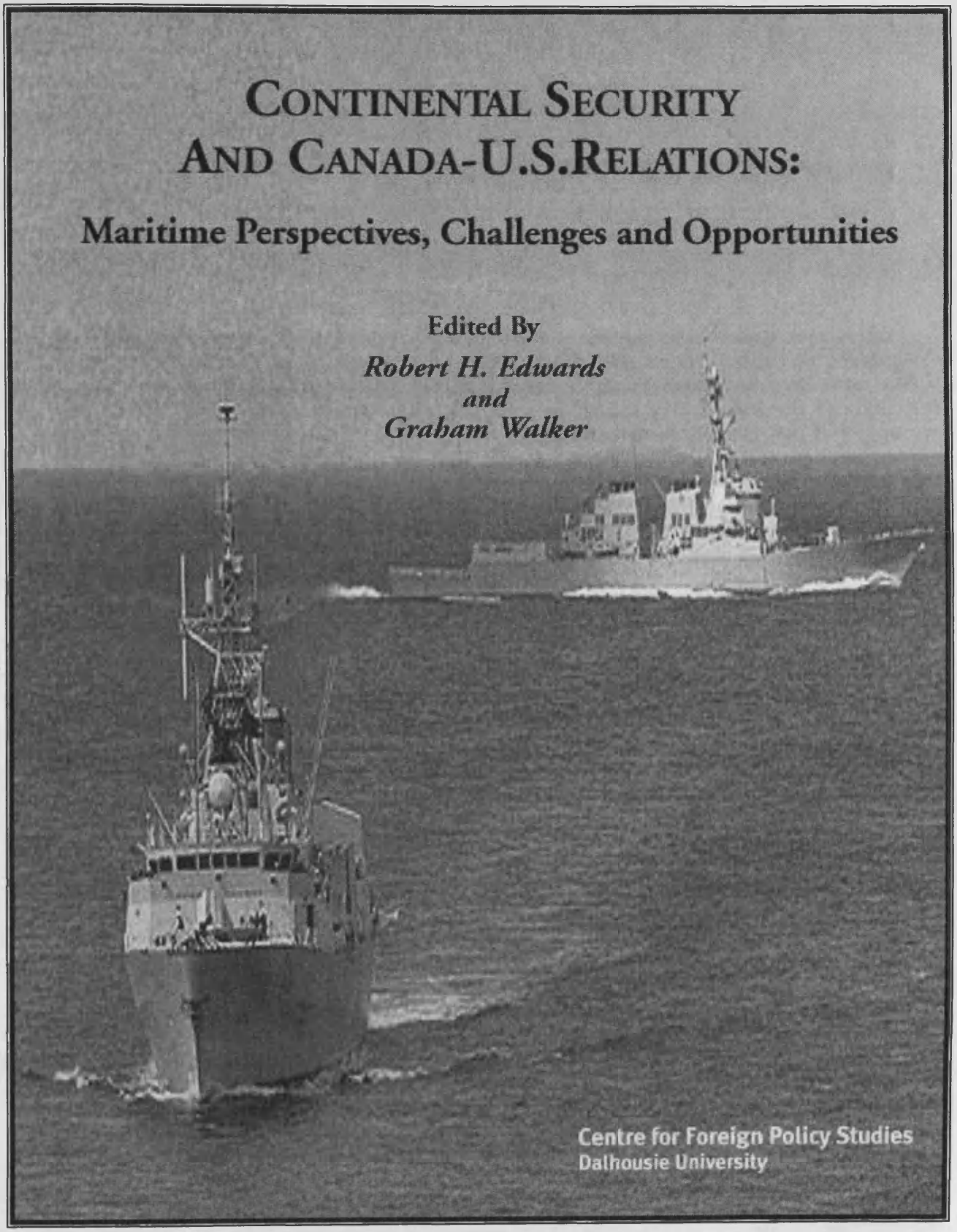
CMJ

NOTES

1. Canada, Report of the Standing Senate Committee on National Security and Defence. *Canada's Coastlines: The Longest Under-defended Borders in the World.* October, 2003. pp. 108-109.
2. Presence is essential in a vast Atlantic EEZ of 1.4 million km^2 where, for example, it was estimated that 534 fishing vessels and 1137 merchant vessels were operating in March 2005.
3. All maps were produced from the author's data, with the assistance of GIS technicians Roxanne Gauthier and Richard Mayne, as well as graphic artist Ralph Lang.
4. E.C.S. Wade and A.W. Bradley, *Constitutional and Administrative Law* (London: Longman, 1985), p. 406.
5. Aid to the Civil Power is a type of domestic operation in which military forces are called out to suppress a riot or disturbance of the peace because it is beyond the civil authorities to control. The four instances are: 1969 Montréal Police Strike; 1970 FLQ crisis; 1976 Alberta sniper; and 1990 Oka crisis.
6. Speech by Superintendent A. Antoniuk to RCMP officers at RCMP Training Academy, Regina, Saskatchewan, 27 September 1990; Desmond Morton, *Understanding Canadian Defence* (Toronto: Penguin, 2003), p. 158.
7. Sean M. Maloney, "Domestic Operations: The Canadian Approach," *Parameters* (Autumn, 1997), pp. 135-152.
8. Matthew Carlton Hammond, "The Posse Comitatus Act: A Principle in Need of Renewal," *Washington University Law Quarterly* 75 (No. 2, Summer, 1997) <http://law.wustl.edu/WULQ/75-2/752-10.html#fn160>, accessed 6 February 2005.
9. *Constitution Act*, 1867, s. 91, s. 92.
10. Elizabeth Young, "Policing Offshore: Civil Power or Armed Forces," *RUSI Journal* 122 (No. 2, June 1977), pp. 18-22.
11. Peter T. Haydon, *Canadian Naval Future: A Necessary Long-Term Planning Framework*, IRPP Working Paper 2004-12 (Montreal: Institute for Research on Public Policy, November 2004), pp. 13-14.
12. Peter T. Haydon, "What Naval Capabilities Does Canada Need?" in *Maritime Security in the Twenty-First Century: Maritime Security Occasional Paper No. 11*, E.L. Tummers (ed.), (Halifax: Dalhousie University, December 2000), p. 157.
13. Gary L. Garnett. "The Navy's Role in the Protection of National Sovereignty." In *An Oceans Management Strategy for the Northwest Atlantic in the 21st Century: The Niobe Papers; Volume 9*, Peter T. Haydon and Gregory L. Witol (eds.), (Halifax: The Naval Officers Association of Canada, 1998), p. 11; Young, "Policing Offshore," pp. 18-22.
14. Colin S. Gray, *Canada's Maritime Forces: Wellesley Paper 1* (Toronto: Canadian Institute of International Affairs, January 1973), p. 46.
15. Canada, Department of National Defence, *Leadmark: The Navy's Strategy for 2020* (Ottawa: Directorate of Maritime Strategy, 2001), pp. 43-45.
16. Michael A. Morris, "Military Aspects of the Exclusive Economic Zone," in *Ocean Yearbook 3* (Chicago: University of Chicago, 1982), p. 336.
17. Testimony of John F. Thomas before the Senate Committee on National Security and Defence, Issue 19. Evidence Morning Session 9 June 2003.
18. Canada, Privy Council Office, *Canada's International Policy Statement* (Ottawa: 2005), p. 12.
19. Michael Pugh, "Policing the Seas: The Challenge of Good Governance," in *The Role of European Naval Forces after the Cold War*, G. de Nooy (ed.), (Netherlands: Kluwer Law International, 1996), pp. 105-111; Michel d'Oléon, "Policing the Seas: The Way Ahead," in *The Role of European Naval Forces after the Cold War*, G. de Nooy (ed.),(Netherlands: Kluwer Law International, 1996), p. 144.
20. Craig T. Trebilcock, *The Myth of Posse Comitatus*, October 2000. <http://www.homelandsecurity.org/journal/articles/Trebilcock.htm>, accessed 6 February 2005.
21. Michael R. Adams, "Navy Narcs." *United States Naval Institute Proceedings* (September 1984): pp. 35-37.
22. This idea was proposed as a means of preparing the Canadian Coast Guard for constabulary duties. See testimony of John F. Thomas before the Senate Committee on National Security and Defence, Issue 19, Evidence Morning Session 9 June 2003. See also Canada, Report of the Standing Senate Committee on Fisheries and Oceans. *Safe, Secure, Sovereign: Reinventing the Canadian Coast Guard*. March 2004, p. 48.
23. Based upon author's experience and training as a former member of the Royal Canadian Mounted Police.

Appendix S

PUBLISHED ARTICLES



Appendix S

PUBLISHED ARTICLES

Regional and Interdepartmental Cooperation

Captain (N) L.M. Hickey

The tragic events of September 11th, 2001 have become the catalyst for a long-overdue appraisal of security provisions and relationships within North America. In Canada, government departments conducted this self-examination with considerably less urgency than in the United States, on whose territory the attacks were directed. Nonetheless, the Canadian population was awakened, and an *ad hoc* Cabinet Committee on Public Security Anti-Terrorism was set up to divine the way ahead and to assuage this public concern. Further, the Standing Senate Committee on National Security and Defence turned its attention to the requirement for a national security policy, with maritime security as a subset. While these activities provided ample debate for policy makers and bureaucrats in Ottawa, the real operational impacts will be felt in the regions, particularly in the maritime context. The aim of this paper is to discuss, at the regional level, the relationships and methods of interdepartmental cooperation among federal departments in Atlantic Canada.[1]

Renaissance of Cooperation

Although interdepartmental cooperation appears to have become topical only during the past two years, in fact, it has existed in varying degrees since Confederation. However, in the recent past, the impetus for greater emphasis was a 1990 Treasury Board study led by Senator Gordon Osbaldeston. The study's purpose was to identify opportunities for enhancing the efficiency, and improving delivery, of the federal marine fleets' programs. Ultimately, the Senator's report, titled *All the Ships That Sail: A Study of Canada's Fleets*, led to the consolidation of the Canadian Coast Guard and Department of Fisheries and Oceans fleets. More importantly, for our discussion, the study observed that cooperation among federal departments was poor and, as a remedy, recommended the establishment of a strategic-level committee to guide the departments with maritime fleets towards more effective operations and interactions. This recommendation was acted upon in 1991 with the convening of the Interdepartmental Programme Coordination and Review Committee (IPCRC).

Although Ottawa-based, IPCRC was important from a regional perspective because with it came a structure of sub-committees and working groups. These covered operations, surveillance, hydrographics, communications, vessel design and vessel utilisation. Operations sub-committees were formed on the east and west coasts, and set in motion tangible progress towards interdepartmental cooperation. The Atlantic Operations Sub-Committee met regularly, and oversaw the development and implementation of an unclassified wide-area information-

sharing network known as the Canadian Maritime Network. Likewise, an Interdepartmental Concept of Maritime Operations (ICMO) document was developed and accepted for use among the major departments with maritime security and enforcement mandates. It seemed as though the federal actors were well on the way to cracking the code to real interdepartmental co-ordination and effective employment of maritime human and materiel resources.

Regrettably, that was not to be the case. The 1990s saw the stagnation of interdepartmental relationships, and both the CANMARNET and the Interdepartmental Concept of Maritime Operations fell into disuse. There was little funding available to progress interdepartmental issues, and public sector managers' priorities turned inwards to their own departmental needs during periods of budgetary constraint. Relations with other government departments were buoyed by occasional spikes of activity that necessitated multi-departmental responses, such as the Turbot Crisis in 1995, and the Swiss Air disaster of 1998 but, in general terms, many of the benefits set in motion by the Osbaldeston study simply stopped dead in their tracks. Sadly, IPCRC was stood down in September 2001.

Current Situation

While IPCRC was ultimately abandoned, it provided both an example and a workable framework upon which to build. Interdepartmental cooperation exists now in an environment of complex, multi-agency relationships that, as a simple rule-of-thumb, spans three levels of interaction. The first of these levels is the strategic. Issues at the strategic level are those that are international in nature, usually concerning policy, and are addressed by national headquarters in Ottawa. The next level is the operational or regional level. Issues at the operational level are those that are province-wide or cover multiple provinces and large areas of the Atlantic approaches. The last level is the tactical or local level. Tactical level issues tend to be more narrowly focussed, often pertaining to specific incidents or operations that do not employ region-wide resources.

Interdepartmental relationships at all levels can be categorised as being:

- informal versus formal;
- proactive versus reactive; and
- intelligence versus operational response.

Security – Law Enforcement or Defence?

To understand how departments relate to one another locally, it is important to note that in Canada maritime security is viewed by government, first and foremost, as a law enforcement issue rather than a defence issue, even in the case of terrorism.[2] This significant point seems not to have been completely understood by SCONSAD in their investigation of the need for a national security policy. The Committee, in their recent report *Canada's Coastlines: The Longest Under-Defended Borders in the World*, waxes nostalgically about the Royal Canadian Navy's success in coastal protection when the country was on a war-time footing during the 1940s, and suggests that the present Canadian Navy has abandoned patrols of its home coasts.[3] However, in the present governance structure, the Canadian Navy as a part of the Canadian Forces, has no legal mandate for law enforcement and fulfils its constabulary role by supporting

those departments that do: the key ones being the Solicitor General and Royal Canadian Mounted Police, Fisheries and Oceans Canada, and Environment Canada. This is done primarily through the provision of naval ships and maritime aircraft as transport for peace officers or conservation and protection officers while other military capabilities are used for surveillance and monitoring of the Canadian ocean areas. As such, short of a direct attack on Canada or some threat so overwhelming that the responsible departments simply couldn't cope, the Navy would not become the lead agency for most maritime security scenarios in the current federal construct.

Informal and Formal Cooperation

Informal liaison occurs across the broad spectrum of government affairs. It may be simply a matter of regional staff sounding out their counterparts of the same level in another departments' regional headquarters about a routine issue or pending initiative. It could be national staffs chatting unofficially about upcoming policy deliberations or changes to programmes. Informal liaison at the tactical level could, for example, involve Royal Canadian Mounted Police or Halifax Regional Municipality Police talking to Military Police about local security patrols. Informal cooperation is highly dependent upon individual personality and networking skills. By contrast, formal cooperation is that which is established through official appointments, secondments, memberships in various committees and working groups, *ad hoc* or otherwise. In many cases, the official nature of this liaison is captured in an incumbent's job description or terms of reference.

Proactive Initiatives

Regional authorities deal with the management of their departmental mandates and emergent crises through both proactive and reactive means. In general, proactive measures reflect the interdepartmental working group and committee structure that convenes with various periodicity to resolve issues spanning departmental mandates, as well as existing Memoranda of Understanding between selected departments. This proactive structure, especially since September 11th, has become the foundation upon which departments can manage their individual and joint responses to reactive operations.

Proactive cooperation takes many forms and occurs as part of normal daily activities. Longstanding relationships have ensured that lines of communication remain open so that contact leading to action can be made easily when the need arises. These relationships have been created and maintained through day-to-day liaison, through participation in official working groups and committees, and through various local and regional training exercises.

Day-to-day Liaison
Using the case of Maritime Forces Atlantic as a single department having relationships with many other departments and agencies, the following are examples of proactive day-to-day liaisons being undertaken on a year-round basis:

- Liaison with the Conservation and Protection staffs of Fisheries and Ocean Canada (DFO) to coordinate naval support to fishery patrols in accordance with a MOU;

- Liaison with the Oceans Management Branch of DFO to provide surveillance information to assist with the scientific study, management, and potential enforcement of the proposed Sable Gully Marine Protected Area;
- Liaison with Environment Canada (EC) for assistance in detecting and investigating pollution incidents. Naval vessels have also carried Canadian Wildlife Service scientists during fishery patrols to assist with ongoing pelagic bird surveys;
- Liaison with the RCMP to provide support for counter-narcotics operations in accordance with an MOU. MARLANT also provides logistical support in the form of transportation to assist the RCMP with its Coastal Watch program;
- Liaison with Health Canada to coordinate support of the Navy's Nuclear Emergency Response Team during visits to Halifax by nuclear-powered vessels;
- Liaison with various agencies for joint security efforts such as the G-7 Finance Ministers' Conference;
- Liaison with United States Navy commands such as the Commander-in-Chief Atlantic Fleet, Commander Second Fleet, and the Office of Naval Intelligence (ONI) on naval matters of Homeland Defence;
- Liaison with the United States Coast Guard First District (Boston) on matters of safety, security, and Homeland Security.

Interdepartmental Committee and Working Group Structure

The relationships among Atlantic Canadian interdepartmental committees and working groups at all three levels are depicted in Figure 1. There are more interdepartmental groups in existence, however, those included in the diagram are the ones that are either operationally or security oriented, and they are also the most active.

The two main Ottawa-based groups that address maritime security issues are shown in Figure 1 as proactive activities at the *strategic level.* The *ad hoc* Cabinet Committee on Public Security Anti-Terrorism has minister-level representation from the Privy Council Office, Solicitor General, Canada Customs and Revenue Agency, Fisheries and Oceans Canada, Canadian Coast Guard, Citizenship and Immigration Canada, Transport Canada, Department of National Defence and police agencies. Over the past two years, PSAT has provided Cabinet with advice on proposed marine security measures and their prioritisation. The second strategic level initiative, the Interdepartmental Maritime Security Working Group, is a working body that furnishes PSAT with fully staffed conclusions and recommendations on security issues.[4] The membership of IMSWG is equally diverse. Elsewhere in this volume, Captain (N) Peter Avis discusses the composition and roles of these two groups, so I won't go into specific detail here.

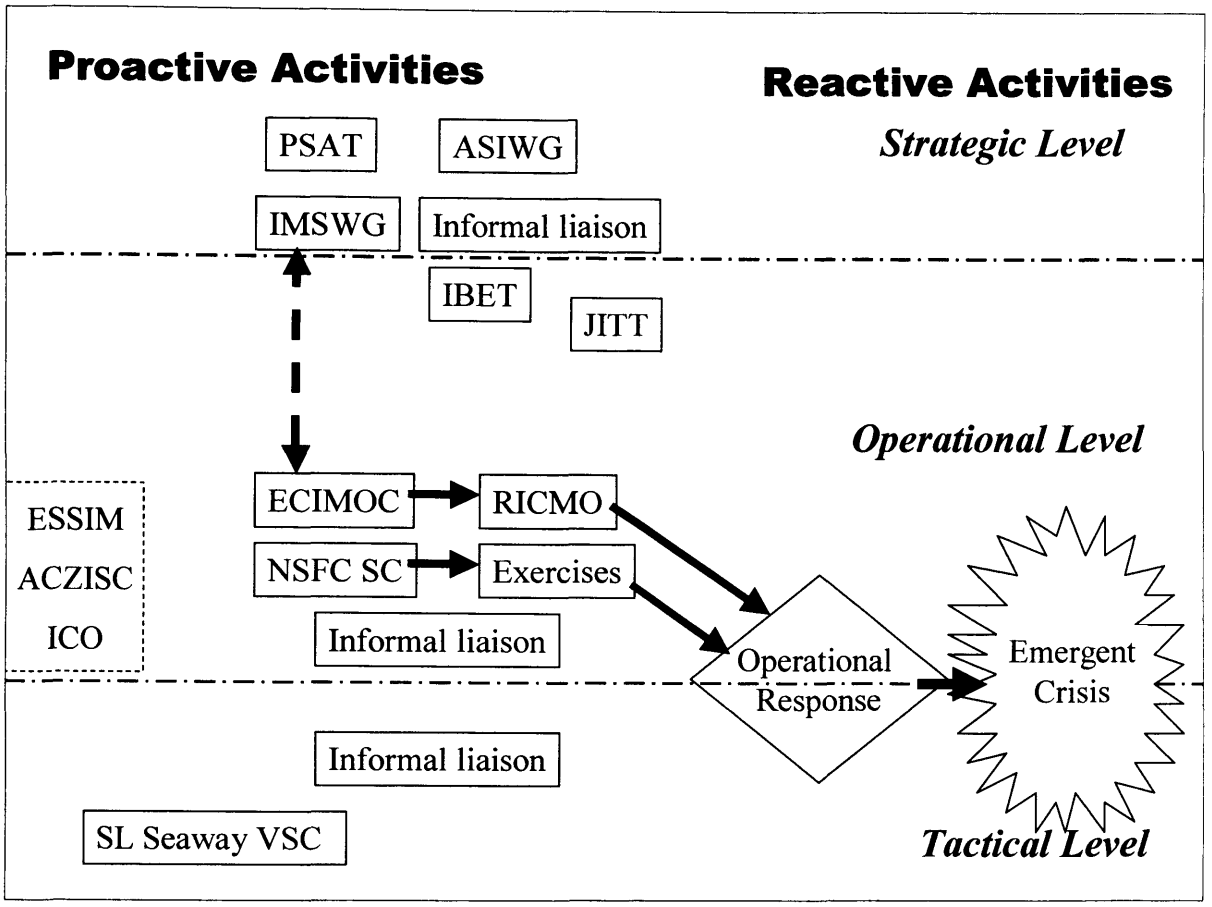
The Arctic Security Interdepartmental Working Group is the third strategic-level body with regional security on its agenda. Participants from 15 federal departments, as well as territorial representatives, meet semi-annually to discuss Arctic issues. Sub-committees have been established recently for Arctic sovereignty, security, interoperability and the environment.[5]

Moving to the *operational level*, several groups are depicted as proactive activities in Figure 1. Three of the bodies concern themselves with the broader scheme of oceans management rather than the more focussed topic of maritime security. These are the Eastern Scotian Shelf Integrated Management group (ESSIM), the Atlantic Coastal Zone Information Steering Committee (ACZISC), and the Interdepartmental Committee on Oceans (ICO). Their relevance to this discussion is simply that many of their members are the same representatives

Appendix S

PUBLISHED ARTICLES

Figure 1: Interdepartmental committees and working groups.



to the other various security groups and, as such, use opportunities afforded by oceans management venues to further foster longstanding relationships.

Originally conceived in British Columbia in 1996 to address cross-border crime, Integrated Border Enforcement Teams (IBET) have been established in 14 locations across the country, including the Atlantic region. These teams comprise representatives from the RCMP, CCRA, CIC and other police agencies in Canada, and their American counterparts in the U.S. Customs Service, U.S. Border Patrol, and the U.S. Coast Guard. IBET's focus is on potential threats of terrorism, impeding the smuggling of drugs, humans, contraband cigarettes, or other illegal substances.[6] CCRA is in the process of setting up Joint In-Transit Targeting Teams (JITT) with other agencies and American officials in Halifax, Montreal, Vancouver, Newark, and Seattle to monitor and intervene suspicious sea and air cargos and containers both in Canada and at international points of departure.

In Atlantic Canada, at the operational level, there are two key bodies that have the greatest influence on how enforcement and maritime security are managed within the region. The first is the Eastern Canada Interdepartmental Maritime Operations Committee (ECIMOC), which was formerly IPCRC's Atlantic Operations Sub-Committee prior to IPCRC's demise. ECIMOC

is made up of federal departments that either conduct, or have an interest in, operations in the maritime environment. Principal members include MARLANT (the current chair), DFO including representatives from both the CCG Maritimes, and Newfoundland and Labrador Regions, CCRA, CIC, TC, EC, and the Office of Critical Infrastructure Preparedness and Emergency Preparedness (OCIPEP). Recently, Health Canada participated in view of their major involvement in the merchant vessel *Wadi Alarab* anthrax incident. ECIMOC's aim is to identify and develop the most practical means of applying operational resources to facilitate joint and effective employment. It is through ECIMOC that a tentative link to the strategic-level IMSWG has been established through the distribution of each group's records of discussion. This link is shown in Figure 1 as a dashed double-headed arrow.

The other significant organ is the Nova Scotia Federal Council's Security Committee. This *ad hoc* committee, comprised of Regional Directors General of federal departments with enforcement or security mandates, meets every two months to discuss a broad range of security-related issues. In the aftermath of September 11th , it was this committee that recognised that the federal departments in the Atlantic region needed to improve their ability to work together in order to respond to future security incidents. This committee initiated a series of table top and command-post exercises, designed to stimulate and, if necessary, to force interaction between departments through the resolution of complex scenarios containing both terrestrial and marine elements.

Program of Interdepartmental Exercises

Although there have been several exercises held in the Atlantic region since September 11th, the most noteworthy was held in May, 2002. This two-day exercise, *ATLANTIC GUARD* was championed by the members of Nova Scotia Federal Council Security Committee, sponsored by OCIPEP and hosted by DND's Land Force Atlantic Area (LFAA). *ATLANTIC GUARD* challenged 13 federal and three provincial agencies with three different scenarios that presented security, health and environmental disaster problems. The *ATLANTIC GUARD* Final Report, prepared by an independent assessor from outside of government, highlighted the requirement to regularly exercise interdepartmental cooperation in order to standardise such things as tele-communications, public affairs and command and control.[7] A similar exercise, *ATLANTIC GUARD II* was conducted 28-31 October, 2003. This command-post exercise met the basic interoperability objectives, but reiterated the need for continued effort in resolving joint command and control issues among many departments.

Other multi-agency exercises undertaken in the Atlantic region post-September 11th include:

- CCRA Chemical, Biological, Radiological and Nuclear Table Top Exercise - 24 September, 2002. This exercise was one in a series of table top exercises held across the country by CCRA. The scenario presented was that of a "dirty bomb" entering Halifax by container ship;
- Exercise *ATLANTIC SPEAR* - 18-22 November, 2002. Hosted by LFAA, the scenario was a G8 meeting to be held on Campobello Island, New Brunsick at very short notice. While primarily an LFAA initiative to train its headquarters staff, it included participation from several federal government departments such as DFAIT, RCMP, CIC, and Health Canada. Maritime Forces Atlantic staff provided a maritime component;

- Exercise ATLANTIC SHIELD - 12 May, 2003. Hosted by the Halifax Port Authority, this exercise was designed to test the response to a bomb threat against a visiting cruise ship. The exercise served two purposes: one, it satisfied the Port Authority's need to demonstrate a specified level of security to the cruise industry in order to ensure continuing visits to Halifax, and; two, it presented an opportunity to determine the level of response required from the Halifax Regional Municipality, the province and from federal departments.

Shown in Figure 1 is an arrow that represents the ability to deal with unforeseen or emergent crises through the experience, insight, and contacts gained in multi-agency problem-solving scenario-based exercises in a proactive programme.

Regional Interdepartmental Concept of Maritime Operations
Under the aegis of ECIMOC, a sub-committee is drafting, in one umbrella document called RICMO, the procedures necessary to accomplish maritime-related tasks requiring inter-departmental cooperation. These guidelines include, but are not limited to counter-terrorism operations, environmental responses, illegal migrants, counter-drug operations, preventative patrols, and surveillance operations. As well, RICMO will contain regional interdepartmental communications and points of contact, inventories of air, sea and shore-based assets, an inventory of MOU among departments, and legislative or regulatory mandates, and statutory authorities including the use of force. In Figure 1, an arrow represents the link between RICMO and the operational response to an emergent crisis.

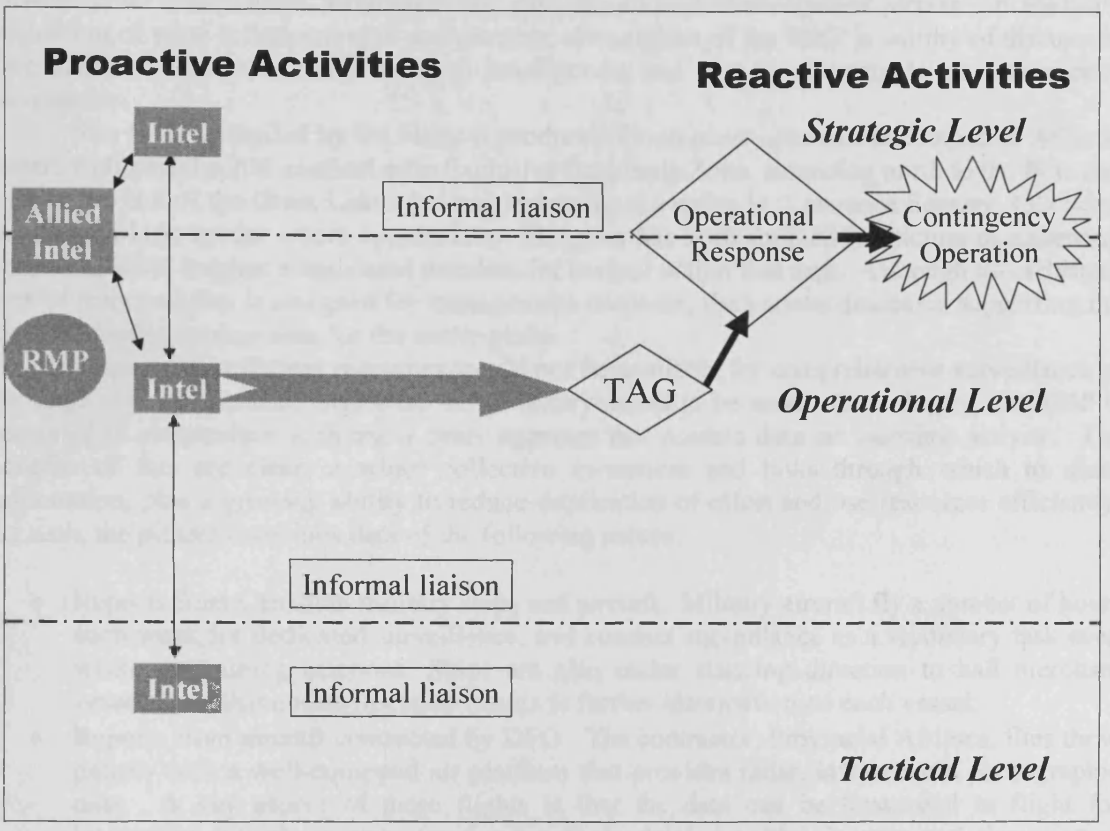
Reactive Relationships

Figure 2 depicts the elements that are in place to enable authorities to respond to an emergent situation based on information garnered through the various intelligence networks. The diagram shows departmental intelligence sections represented at all three levels, linked with each other, and with international intelligence agencies at the strategic and operational levels. The main departments contributing to this community within Canada are CSIS, RCMP, CCRA, DND CIC, and the Communications Security Establishment (CSE). Allied links in the United States include ONI, the Defence Intelligence Agency (DIA), the U.S. Coast Guard Intelligence Coordination Center, and the Joint Interagency Task Force (JIATF) East. Information is shared with departments depending upon the recipient's need to know and, in most cases, departments can respond effectively within individual department mandates.

Threat Assessment Group (TAG)
Unfortunately, or fortunately depending upon your point of view, the intelligence networks uncover large numbers of items requiring investigation and the determination of credibility, level of threat, and so on. The ability to 'filter' this information varies among departments, as does each department's understanding of what is of significance to another. In the fall of 2002, a vessel with a suspect container arrived in Halifax. Four departments or agencies were aware of this container, but the information about the container and potential responses to it were interpreted differently by each department. This pointed to a need to formalise a process to transition from compiling information, to determining whether an operational response is

required, to mounting the actual operation. As a result, in the Atlantic region, the RCMP sponsored the development of a body known as the Threat Assessment Group (TAG).

Figure 2: The relationship of intelligence to operational response.



A TAG meeting is the genesis of a coordinated interdepartmental operational response to an emergent issue that transcends the mandate of any one department. The TAG will also assist with the determination of a lead agency. TAG members belong to four principal departments: CSIS , RCMP, CCRA, and DND. Other departments may be called if the issue is obviously relevant to a particular department. TAG members include both intelligence analysts and operators, and the aim of the TAG is to ensure that a common understanding of a potential event is reached, so that each agency can then plan and coordinate its response.[8]

Maritime Domain Awareness

There is an inherent need to develop and maintain an understanding of what activities are happening in Canada's coastal zones and its approaches. This situational awareness is required by multiple government departments with overlapping mandates and interests in our maritime security environment. The Navy uses a specific tool to acquire this domain awareness, and

shares it with other government departments. It is known as the "recognised maritime picture" and is represented in Figure 2 with the circular symbol (RMP). The term "recognised" is used to indicate that the picture has been evaluated prior to its dissemination. In other words, rather than having stations simply pass data between themselves, there is a central authority to whom data is forwarded for compilation, evaluation and dissemination as a *recognised* picture: an analyst's evaluation of what is happening in a given area. Generation of the RMP is worthy of discussion here due to its inherent relationship to intelligence, and as a good example of inter-agency cooperation.

The RMP compiled by the Navy is produced for an ocean area that encompasses Atlantic waters well past the 200 nautical mile Exclusive Economic Zone, extending north to the Pole and west to the end of the Great Lakes and encompassing the entire St. Lawrence Seaway, following the Canada-U.S. border where appropriate. This area has been adopted for picture management purposes, not to suggest a legislated mandate for control within that area. Although this arbitrary area of responsibility is assigned for management purposes, the various databases supporting the picture actually contain data for the entire globe.

At present, sufficient resources would not be available for comprehensive surveillance of the large area of responsibility, were only military assets to be used. Accordingly, the RMP is compiled in cooperation with many other agencies that possess data on maritime activity. The benefits of this are clear; a wider collective awareness and links through which to share information, plus a growing ability to reduce duplication of effort and use resources efficiently. As such, the picture combines data of the following nature:

- Reports from Canadian military ships and aircraft. Military aircraft fly a number of hours each week for dedicated surveillance, and conduct surveillance as a secondary task even when on training missions. Ships are also under standing direction to hail merchant vessels, and this communication results in further information on each vessel;
- Reports from aircraft contracted by DFO. The contractor, Provincial Airlines, flies these patrols with a well-equipped air platform that provides radar, infrared and photographic data. A key aspect of these flights is that the data can be forwarded in flight for integration into the picture (except the photo data), resulting in near real time picture compilation. This makes the fisheries patrol aircraft one of the most capable surveillance assets on the east coast of Canada. Although normally limited to the fisheries context, these flights are reporting pollution incidents and have started to report merchant shipping as well. An initiative is in place to allow the Navy to redirect or task one of these flights, should that be required, to monitor a vessel of interest;
- Reports from CCG, including the mandatory reports required from commercial vessels at 96 and 24 hours prior to reaching a Canadian port. This data is hosted in the CCG's own picture and accessed by a direct link between the DND and CCG systems. The Coast Guard system is a fundamental cornerstone of maritime picture building in Canada; it contains the reports mandated by Canadian legislation, and has been identified as the data path for Automated Identification System data (transponder beacons.) Transponder beacons are important because they provide position and identity automatically by radio signal, without the need for surveillance assets to go forth to find them;
- Reports based on fishing vessel transponder beacons. These are automated radio signals from fishing vessels, with their positions and identities. DFO receives these reports for European Union fisherman when those vessels are operating in certain areas near

Canada's EEZ, and the reports are forwarded to the Navy to be included in the RMP. Likewise, Canadian vessels fishing in domestic areas started carrying these beacons in the summer of 2003;

- Reports based on positions included in merchant vessel voluntary weather reporting, on a global scale. Merchant ships report the weather in their local area, typically at 4-6 hour intervals. Pooled by weather bureaus worldwide, Environment Canada receives the sum of all this data. Since these reports contain the call sign and position of the vessels, they are of use to the RMP. These reports are forwarded to the Navy via the Internet, and converted to the format necessary for inclusion in the picture;
- Reports from various NATO sites, as a result of their own local picture-building efforts. The four main NATO centres each produce a picture for their area and share that with each other, and NATO allies. Although they do not report ships off the east coast of Canada, the data is included in the RMP for long-range cueing and to support naval ships when deployed. Although NATO has not typically been a large reporting source for merchant vessels, the focus in this regard is changing;
- Reports from various centres in the U.S. Navy. The data forwarded from the United States contains locator messages for merchant vessel traffic on a global scale. As well, the U.S. Navy shares its list of high interest vessels with Canada and the names of these vessels are placed on an alert list. When a report on any of the vessels is received in the Canadian RMP, the information is passed on to the applicable U.S. agency;
- Reports based on national technical sensors. Data from classified systems can provide information on shipping movements; and
- Commercial sources. Many shipping companies currently maintain their own plot of where their ships are operating and often that data can be seen on internet. This data is not routinely included in the RMP, but can be used to investigate vessels of interest and is a growth area for inclusion in the picture.

It is clear that the RMP's foundation is a shared effort between many partners. Canada undertakes data sharing with as many other maritime agencies as security considerations and legislation allow, since this logically increases the potential for early warning of vessels of interest. Many successful uses of the RMP have been made following notification by an outside agency of a vessel of interest or concern. All told, this effort attempts to produce a level of 'surveillance in depth' to protect Canadian interests.

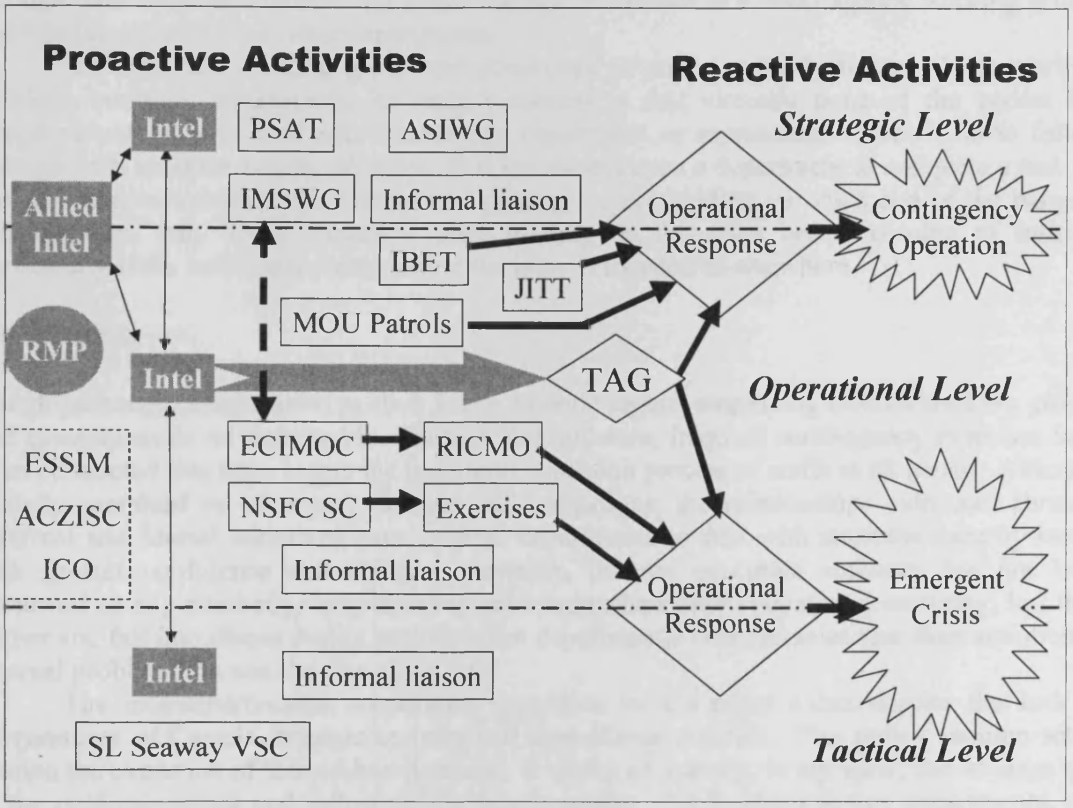
Hindrances to Cooperation

Robust interdepartmental cooperation will always have its challenges, some of which have nothing to do with personalities. The administrative structure of the federal ministries itself complicates cooperative efforts. For example, a single security or enforcement issue within the Atlantic region could involve consultation with only 1 Regional Director of Citizenship and Immigration but up to 4 Regional Directors of Fisheries and Oceans Canada and 3 Regional Directors for the Coast Guard simply due to the manner by which regional administrative boundaries of each department have been established. Equally, jurisdictions vary among and within departments depending upon the statute to be enforced, adding yet another level of complexity. A single department may have jurisdiction only out to 24 nautical miles for one

statute, while the same department can legally enforce a different statute, or element of the same statute out to the limit of the 200 nautical mile EEZ.

Arguably, the most significant impediment to interdepartmental cooperation is the historic evolution from departmental cultures bred of narrow mandates. These mandates are premised on the enforcement of a single federal statute, or the delivery of an equally constrained number of programmes. Departments with this type of organisational culture approach complex

Figure 3: Composite diagram of interdepartmental cooperation in Atlantic Canada.



scenarios from their own limited viewpoint, and tend not to look beyond their own needs until forced to do so by extenuating circumstance. Employee unions have some impact on these cultures, but their attitude towards cooperation varies from union to union. The proactive committee work and exercises attempt to educate federal staffs in prioritisation based on the requirements of particular scenarios rather than simply the specific aspects that affect their departments, but it is often an uphill battle. Continuous budget cutbacks over a prolonged period have made public sector managers more focused on cost avoidance rather than mission accomplishment. This is the culture of the business plan. The managers that have succeeded in the past are those that have managed declining budgets well, and they have been rewarded for it. There is a different mind-set in that type of manager than in the type needed for tackling complex situations with a multitude of agencies.

Although there has been significant progress since Sept 11th, there remains systemic reticence to share information, as opposed to intelligence, among departments. To be fair, in some cases there are legal and privacy issues, but in many others it is simply a matter of defaulting to the safe position of withholding information. Returning to my point about a 'business case mentality,' cost recovery continues for information, sometimes within the same department. Remarkably, in almost all federal departments there is both mistrust and poor communication between a department's regional office and its headquarters. It is a common occurrence in the Atlantic region that departmental staffs learn of strategic-level initiatives not through their own departments, but rather through attendance at a multi-agency working groups and hearing about it from other departments.

Although the working group and committee structure certainly fosters closer working relations between departments, its main weakness is that virtually none of the bodies has executive authority to hold accountable any department or representative who fails to follow through with an agreed-upon initiative. It is incumbent upon a department to complete a task for which it has volunteered; there is no real penalty for not holding up one's end of the bargain. This explains why some initiatives seem to drag on for years before coming to fruition, particularly if the individual championing the issue is transferred elsewhere.

Conclusion

Interdepartmental cooperation is alive in the Atlantic region, employing official working groups and committees as its framework. Through this structure, frequent multi-agency exercises have been conducted that have begun the long-term education process of staffs at all levels. Although initially premised on emergent disaster relief situations, the relationships cultivated through informal and formal initiatives have enabled departments to deal with maritime security issues with greater confidence and ability. However, because executive authority has not been bestowed on any one body, interdepartmental relationships require continual nurturing, lest they wither and fall into disuse during periods when departmental bureaucracies turn their attention to internal problems, as was the fate of IPCRC.

The interdepartmental cooperation described in this paper exists despite the lack of Government of Canada strategic security and surveillance policies. This policy vacuum set in motion the evolution of this *ad hoc* structure. It works adequately, in my view, due in large part to the professionalism and influence of a small number of individuals in key departments, and their genuine desire to do what is right for Atlantic Canadians despite limitations imposed by various bureaucracies. However, there are better ways 'to do business,' although some may require wholesale shifts of mindset in governance and accountability; at least if the findings of SCONSAD are any example.[9] We can only hope that the same collaborative spirit manifests itself nation-wide as these new constructs are examined and potentially adopted.

Endnotes

1. This paper draws heavily on background material written in support of the author's appearance before SCONSAD. The author wishes to acknowledge the assistance of Lieutenant-Commander Ian Anderson and Lieutenant (N) Rory Rafuse in the preparation of this material.
2. Canada, Royal Canadian Mounted Police. *National Counter-Terrorism Plan.* Annex L.
3. Canada, Standing Senate Committee on National Security and Defence. *Canada's Coastlines: The Longest Under-Defended Borders in the World.* October 2003, p. 17.
4. Captain (N) Peter Avis, "Surveillance and Canadian Maritime Domestic Security," *Canadian Military Journal* Vol. 4, # 1 (Spring 2003): pp. 9-14.
5. Colonel Norris Pettis, Chairman, "Minutes of Arctic Security Interdepartmental Working Group Meeting 18-19 November 2002" (Yellowknife: December, 2002).
6. Canada, Royal Canadian Mounted Police, "Canada / U.S. Integrated Border Enforcement Teams" <http://www.rcmp.ca/security/ibets_e.htm> (accessed 31 October 2003).
7. Jim Bruce, *Exercise Atlantic Guard Final Report* (Halifax: Science Applications International Corporation Canada, Emergency and Safety Services Division, 2002).
8. Testimony of Chief Superintendent Ian Atkins, Royal Canadian Mounted Police, before the Standing Senate Committee on National Security and Defence, Issue 22 – Evidence 22 September 2003 <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/Com-e/defe-e/22evb-e.htm?Language=E&Parl=37&Ses= 2&comm_id=76> (accessed 30 October 2003)
9. SCONSAD has recommended a complete restructuring of the Canadian Coast Guard as an Agency, and the formalising of strategic direction by the permanent appointment of a Deputy Prime Minister, with the establishment of a permanent Secretariat for national security issues within the Privy Council Office. See Canada, Standing Senate Committee on National Security and Defence. *Canada's Coastlines: The Longest Under-Defended Borders in the World.* October, 2003, 85-93 and 125-133.