



REPORT
of the Sub-committee on
NATIONAL DEFENCE
of the Standing Senate Committee
on Foreign Affairs

Canada's
Maritime
Defence

MAY 1983

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sub-committee



The Honourable Paul C. Lefond, Chairman

The Honourable Jack Marshall

and

The Honourable

Sir

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Office

Members

December 19, 1982

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REPORT
of the Sub-committee on

NATIONAL DEFENCE

of the Standing Senate Committee
on Foreign Affairs

Canada's Maritime Defence

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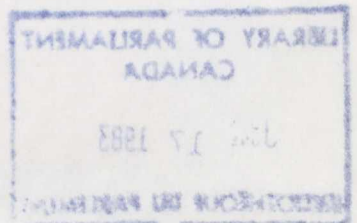
Canada
Maritime
Defence

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MAY 1983



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The Honourable Jack Marshall, *Deputy Chairman*

and

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Paul Yuzyk

*Ex Officio Members

**Deceased December 19, 1982

Orders of Reference

Extract from the Minutes of the Proceedings of the Senate, Wednesday, May 14, 1980:

“With leave of the Senate,

The Honourable Senator van Roggen moved, seconded by the Honourable Senator Asselin, P.C.:

That the Standing Senate Committee on Foreign Affairs be authorized to hear evidence on and to consider matters relating to national defence.

The question being put on the motion, it was—

Resolved in the affirmative.”

Robert Fortier
Clerk of the Senate

Extract from the Minutes of the Proceedings of the Standing Senate Committee on Foreign Affairs, Thursday, June 12, 1980:

“Pursuant to Rule 77(4) of the Rules of the Senate, the Honourable Senator Lafond moved, seconded by the Honourable Senator Stanbury:

“That a Sub-committee of the Standing Senate Committee on Foreign Affairs, to be known as the Sub-committee on National Defence, be appointed;

That the Sub-committee be authorized to hear evidence on and to consider matters relating to national defence; and

That the Sub-committee be composed of the Honourable Senators Flynn, Grosart, Hicks, Lang, Lafond, Langlois, Marshall, McElman, Molgat, Molson, Neiman, Perrault, Roblin, Smith, Stanbury, van Roggen and Yuzyk”.

The motion carried.

Patrick Savoie
Clerk of the Committee

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SUMMARY OF RECOMMENDATIONS AND OBSERVATIONS

1. The sub-committee persists in its January 1982 recommendation that work on a white paper on national defence begin immediately. The white paper should clearly state Canada's defence policy and priorities. It should describe the tasks, military or other, which the government expects Canada's armed forces to perform. This process should not, in the meantime, stand in the way of re-equipping the forces. (page 3)
2. The sub-committee further recommends that the white paper be followed by a firm government commitment to ensure that the required manpower and materiel will be provided according to a stated, definite timetable. (page 3)
3. Because the first item in the current list of commitments of the Canadian Armed Forces, the protection of Canadian sovereignty, has been narrowly interpreted to include only police functions, the sub-committee recommends that it be recast so as to include specific reference to the defence of Canada. (page 25)
4. The sub-committee reiterates the recommendation from its first report that the entire question of the CAST commitment should be re-examined by Canada in consultation with Norway, the other allied governments and Alliance military commanders. (page 32)
5. The sub-committee recommends that the Description of Military Tasks, which provides the framework for the daily operations of the Canadian Armed Forces, be reformulated immediately so as to give appropriate emphasis to the defence of Canada; to clarify priorities; to show performance criteria; to indicate dedicated resources; and to identify their geographic distribution. (page 32)
6. In order to enhance public understanding of defence requirements and to strengthen parliamentary control over defence expenditures, the sub-committee recommends that the Description of Military Tasks in its new and more comprehensive form be revised at the beginning of each new Parliament and tabled for reference to the relevant committees of both Houses. (page 33)
7. The sub-committee finds that there is a requirement for Canada's maritime forces to be equipped to perform a sea-denial role in waters over which Canada claims jurisdiction. (page 39)

8. The sub-committee recommends that the precise nature of the maritime tasks undertaken by Canada within the context of the Atlantic Alliance be subject to continuous review so as to ensure that Canada's maritime forces will reacquire the capacity to make a full contribution to NATO at sea, while maintaining their ability to act in defence of Canadian sovereignty and to contribute effectively to the defence of North America. (page 40)
9. The sub-committee recommends that Canada's anti-submarine warfare tasks be confined to those of a tactical nature — defense against anti-shiping submarines — and only such strategic surveillance missions as can be carried out with the same equipment. (page 40)
10. The sub-committee recommends that any equipment acquired for Maritime Command should be designed primarily with specific wartime tasks in mind. Peacetime duties could then be assigned as ancillary missions, as is now the case. (page 42)
11. The sub-committee recommends that the practice be established of regularly seconding some Maritime Command personnel to the Coast Guard for practice and training in Arctic navigation. (page 52)
12. To arrest the continuing decline in the status and readiness of our maritime forces, the sub-committee recommends that, as an increment to funding required for replacement of current equipment on a one-for-one basis, an extra \$550 million per year, in constant 1983 dollars, be dedicated to the acquisition of capital equipment for MARCOM. This would represent a 7 per cent real increase in the defence budget, a 0.64 per cent increase in the national budget, and an increase in defence expenditures as a percentage of GNP from the current just over 2 per cent to about 2.2 per cent. (page 60)
13. The sub-committee's general recommendations for a balanced fleet are, in order of priority:
 - that contracts be let immediately for the CPF program *and* for the follow-on program; (page 60)
 - that orders for eighteen more Aurora aircraft be placed immediately, in order significantly to improve MARCOM's capabilities in the shortest possible time, and to provide an ongoing, enhanced capability; (page 60)
 - that a significant mine-countermeasure capability be acquired by MARCOM; (page 61)
 - that more diesel-electric submarines be acquired by MARCOM; (page 61)
 - that missile-equipped fast patrol boats be acquired; (page 61)
 - that the existing Auroras be equipped with air-to-air and air-to-surface missiles, and the Trackers with rockets; (page 61)

- that the Oberon-class submarines receive a sub-surface-to-surface missile and a more modern torpedo and that the ten newest DELEX destroyers be equipped with a surface-to-surface missile and a close-in defence system. (page 61)
14. The sub-committee recommends that two studies be undertaken without delay by DND, for tabling in Parliament. The first should analyze the relative merits of providing Tactical Air Group with anti-shipping attack aircraft or equipping Tactical Air Group and Fighter Group CF-18s with Harpoon or other air-to-surface missiles. The second should examine the feasibility in the Canadian context of fitting several merchant vessels to accommodate the helicopters and other weapons necessary for ASW escort duties. (page 61)
 15. The sub-committee recommends that the government seek to lengthen its perspective on military procurement, de-emphasize formula funding and favour series production in order to shorten the procurement process and to effect economies. (page 67)
 16. The sub-committee recommends that, to the extent possible, costs incurred by DND for purposes other than defence be identified as such in the spending estimates. (page 69)
 17. The sub-committee was deeply impressed by the evidence presented in support of the requirement for additional opportunities for shore duty for sea-going personnel and recommends that the Department of National Defence immediately explore means of increasing the number of shore postings available to the naval trades and allocate a larger number of positions in the training and service functions for such personnel. (page 74)
 18. The sub-committee recommends that the projected rate of increase in MARCOM's authorized personnel establishment be accelerated. (p. 75)
 19. The sub-committee, on the basis of testimony received, recommends that MARCOM personnel be issued and permitted to wear recognizable trade badges and distinctive rank identification. (page 77)
 20. In order to fill the gap between the size of the Regular Force in peacetime and the immediate requirement for trained personnel in the event of war, the sub-committee recommends that:
 - the number of identified Naval Reservists from all components of the Naval Reserve be increased to a minimum of 8,000;
 - four additional Naval Reserve divisions be established in communities where no division exists at present;
 - a Fishermen's Reserve be created;
 - as recommended in the sub-committee's first report, the Supplementary Reserve be provided with some minimal training and that arrangements for its mobilization be put in place;

- each component of the Naval Reserve provide personnel in the following numbers:

Primary Reserve	4,500
Supplementary Reserve	2,300
Fishermen's Reserve	<u>1,200</u>
Total	8,000 (page 82)

21. The sub-committee recommends that the government consider adding \$75 million to the capital budget of DND for procurement of essential training aids; upgrading of accommodation for some existing Naval Reserve units; and construction of four new Naval Reserve divisions. (page 83)
22. The sub-committee recommends that the Naval Reserve be provided with suitable training vessels on a priority basis and that, to the maximum extent possible, reservists be trained in peacetime aboard classes of vessels which they would be called upon to operate in wartime. (page 83)
23. The sub-committee recommends that, in order to encourage all other employers to grant leave for reserve training, the Government of Canada make it mandatory for federal departments and crown corporations to allow reservists up to two weeks special leave a year for purposes of reserve training. (page 83)
24. The sub-committee recommends that a mobilization plan for Canada's armed forces be adopted and promulgated forthwith so that Canadians may be re-assured by more than bland assertions. (page 88)
25. The sub-committee recommends that planning and organization of the national emergency agencies defined in Order-in-Council 1981-1305 be proceeded with on a priority basis, and that the resources necessary to complete such arrangements in no more than four years from the commencement of the current fiscal year be allocated to the relevant departments. (page 90)
26. The sub-committee recommends that new legislation be presented to Parliament for early enactment to permit graduated government responses in crisis situations; to enable the government to draw on civilian capabilities in crisis situations short of war; and to authorize the mobilization of reserve forces and civilian capabilities as required by crisis situations or the outbreak of war. (page 90)
27. The sub-committee believes that the question of the status, in crisis period or wartime, of Canadian vessels operated under foreign flag requires examination. Because of the important commercial and transportation considerations involved, the sub-committee recommends that this matter, in its civilian and military aspects, be referred to the Senate Committee on Transportation and Communications for study and report. (page 90)
28. (a) The sub-committee recommends that the feasibility of modification for military use be studied before any new government vessel is constructed, acquired or refitted and that, where possible, the design incorporate the necessary features up to and including the fitting for, but not

with, the necessary weapons, communications and sensor systems. Such systems should, however, be acquired and stored in appropriate locations for rapid installation as required. (page 92)

- (b) The sub-committee also recommends that any resulting additional costs be financed by commensurate increases to the capital budget of the Department of National Defence so that the already inadequate re-equipment program for the Canadian Armed Forces will not be further retarded. (page 92)
29. The sub-committee reiterates the recommendation from its first report that a comprehensive system for the mobilization of Canada's non-military maritime resources be established and that, as a first step towards this end, plans be developed for full integration of all government operations at sea in times of hostilities. (page 92)
30. Keeping in mind the need to continually assert sovereignty, the sub-committee recommends that the government examine the need for a year-round Arctic base to provide support for air, land and sea operations of all departments with responsibilities in the North. (page 93)
31. The sub-committee recommends that the Canadian Armed Forces continue to be assigned search and rescue as a major task. (page 95)
32. The sub-committee recommends that the government immediately undertake a study to determine which strategic materials are vital to Canada and which depend on uninterrupted sea lines of communications. It should also seek to determine the feasibility and costs of creating stockpiles of strategic materials for which substitutes are not available in Canada. (page 95)

In the sub-committee's view, the primary aim of Canadian maritime defence policy should be to create a renewed, balanced fleet within twelve years. The policy should take into account both the need for approximately twice as many major weapons-platforms as MARCOM now possesses and the need to compensate rapidly for current lack of capabilities and numbers, while ultimately creating a balanced force. (page 55)

The sub-committee is fully conscious that the implications of the recommendations contained in this report involve increases in defence expenditures. Pains have been taken to spell out these costs. The report argues that, to rebuild Canada's maritime forces, an additional \$550 million a year in constant 1983 dollars must be added to the capital budget of the Department of National Defence over the next twelve years and earmarked for this purpose. The ongoing costs for personnel, operations and maintenance of implementing the recommendations would be approximately \$80 million a year (in constant 1983 dollars). In the sub-committee's first study, *Manpower in Canada's Armed Forces*, the cost implications of the recommendations amounted to \$350 million a year (approximately \$400 million in 1983 dollars). Taken together, these recommendations of the two reports would see defence expenditures mount, in relation to Canada's GNP, from about 2 per cent to about 2.3 per cent. The sub-committee has not completed its studies of Canada's armed forces. As it looks at other commands, such as Mobile Command and Air Command, the sub-committee fully expects to

encounter situations demanding additional expenditures. The sub-committee finds it is being drawn inexorably towards recommendations which would ultimately see Canada's defence expenditures rising to somewhere between 2.5 per cent and 3 per cent of its GNP. (page 97)

For years, Canada has placed great emphasis upon reducing the risk of nuclear conflict. Canada has been singularly active in pursuing this goal in international forums and through informal consultations. In addition, this country has sought to distance itself more and more from employment of nuclear weapons. First, Canada refused to develop them itself. Later, Canadian forces were withdrawn from nuclear roles. Shortly, the last nuclear weapons held by Canada, those deployed with its NORAD forces, will be replaced by conventional systems. It would be utterly inconsistent with Canada's past attitudes and present policies not to continue to act in a manner which has the ultimate effect of reinforcing efforts within the Alliance to minimize the possibility of nuclear war. Canada should, in particular, do everything possible to enable the Alliance to espouse a strategy of "no early use" of nuclear weapons. By running down its forces, as it did in the late 1960s and through the 1970s, Canada contributed not to raising but to lowering the nuclear threshold. (page 99)

Foreword

Following the submission of its report, *Manpower in Canada's Armed Forces*, the sub-committee turned its attention to what appeared to be the area of Canada's defences most in need of urgent and substantial improvement: Maritime Command. Everything we have learned in the intervening months justifies that decision.

This report may appear repetitive at times, but it is not addressed only to governments, to analysts or to defence experts. We are placing our conclusions, observations and recommendations before the people of Canada whose security has been jeopardized. We accept the necessity of reiteration of the basis on which our conclusions are founded in order to make them clearly understood and to encourage the wide public debate which we believe is required at this time.

We believe our recommendations are consistent with the universal striving for peace and the growing public demand for the reduction and eventual banning of nuclear weaponry.

The sub-committee is grateful to the Minister of National Defence, the Honourable Gilles Lamontagne, P.C., M.P.; to the Chief of the Defence Staff, General R.N. Withers; and to their senior officers and other officials for their valuable assistance to the sub-committee in its undertaking.

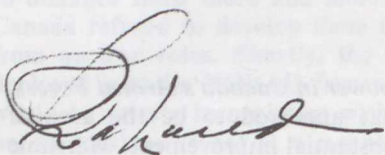
The sub-committee has been particularly impressed with the admirable manner in which the men and women of DND have managed to cope so creditably with their tasks in the very restrictive budgetary circumstances imposed upon them by the government. It also recognizes that the current Minister of National Defence has established a commendable record of determination and persistence in improving the capabilities of our Armed Forces and protecting their share of the budget at a time when all governments are desperately searching for ways to cut back on expenditures, and when many of his colleagues appear not overly responsive to defence matters.

The sub-committee also thanks witnesses from outside government, many of them former members of the Armed Forces, who readily responded to the invitation to share their views, and to senior officials of other departments of government who rounded out some of the information we were seeking.

The sub-committee wishes to express its deep appreciation to Mr. Patrick Savoie, the Clerk of the sub-committee; to Mr. Douglas C. Rowland of the Parliamentary Centre for Foreign Affairs and Foreign Trade, who, with the able assistance of Mr. Daniel Bon, organized our program and research and, under the sub-

committee's direction, gave form to this report. The sub-committee also wishes to acknowledge the contribution of Messrs. Roger Hill and George Betts, also of the Parliamentary Centre, and to the Director of the Centre, Mr. Peter C. Dobell.

The sub-committee intends to proceed later this year to further studies on defence matters.



Paul C. Lafond
Chairman
May 1983

Glossary of acronyms and abbreviations

AEGIS	A totally integrated shipboard weapons system of the U.S. Navy which combines computers, radars and missiles to provide a defensive umbrella for surface shipping. The system is capable of automatically detecting, tracking and destroying airborne, seaborne and land-launched weapons.
AEW	Airborne early warning
ARAPAHO	A containerized ASW system planned by the U.S. navy for placement aboard civilian vessels, especially merchant ships. It would include rotary wing or VTOL aircraft and associated command and control facilities, quarters, repair shops and weapons.
ASROC	Anti-submarine rocket
ASW	Anti-submarine warfare
ASW-SOW	Anti-submarine warfare stand-off weapon
Aurora	Name of Canada's new long-range maritime patrol aircraft (LRPA). It is also referred to as CP-140.
CASARA	Civil Air Search and Rescue Association
CAST (brigade group)	Canadian air-sea transportable brigade group, to be deployed to North Norway in an emergency.
Cmdre	Commodore
CDS	Chief of the Defence Staff
CF	Canadian Forces
CF-18	Canada's new fighter aircraft
cm	Centimeter
cm ²	Square centimeter
CMRA	Canadian Maritime Rescue Auxiliary
COMCANLANT	Commander, Canadian Atlantic
CP-140	Canada's new long-range maritime patrol aircraft (LRPA). It is also known as the Aurora.
CPF	Canadian patrol frigate. Six of these ships are to be completed by 1991 or 1992. The first unit is expected to become operational in 1987.
CSSRA	Canadian Shipbuilding and Ship Repairing Association

DDH-280	Canada's most modern destroyers currently in service. The four ships in question are also referred to as the Tribals, or Tribal class
DEA	Department of External Affairs
DELEX (program)	Destroyer Life Extension program, designed to extend the life of most of Canada's destroyers now at sea
DIAND	Department of Indian Affairs and Northern Development, now Department of Indian and Northern Affairs
DM	Deputy Minister
DND	Department of National Defence
DRIE	Department of Regional Industrial Expansion (not an official name)
DSS	Department of Supply and Services
ECM	Electronic countermeasures
EEC	European Economic Community
EPC	Emergency Planning Canada
FLU	French-language unit
GIUK (gap)	Greenland-Iceland-United Kingdom gap, where ASW barriers would seek to deny access to the Western Atlantic to Soviet submarines
ITC	Industry, Trade and Commerce (Department of)
km	Kilometer
km ²	Square kilometer
LGen	Lieutenant-General
LNG	Liquefied natural gas
LRPA	Long-range patrol aircraft
LSM	Landing ship, medium
LST	Landing ship, tank
m	Meter
MAD	Magnetic anomaly detector
MAG	Maritime Air Group
MARCOM	Maritime Command
MARPAC	Maritime Forces Pacific
MCM	Mine-countermeasures
MGen	Major-General
MND	Minister of National Defence
MRPA	Medium-range patrol aircraft
(N)	(Navy)
NATO	North Atlantic Treaty Organization
NCS	Naval control of shipping
NEA	National emergency agency

NOIC	Naval-officer-in-charge
NORAD	North American Aerospace Defence system
(R)	(Reserve)
RAdm	Rear-admiral
RCAF	Royal Canadian Air Force
RCC	Rescue control centre
RCN	Royal Canadian Navy
RCNR	Royal Canadian Naval Reserve
RCNVR	Royal Canadian Naval Volunteer Reserve
R & D	Research and development
RFA	Royal Fleet Auxiliary
SACLANT	Supreme Allied Commander, Atlantic
SALT	Strategic Arms Limitation Talks (also Strategic Arms Limitation Treaty)
SAR	Search and rescue
SLBM	Submarine-launched ballistic missile
SOSUS	Sound surveillance under the sea
SSBN	Nuclear-powered ballistic-missile submarine
SSGN	Nuclear-powered cruise-missile submarine
SSN	Nuclear-powered attack submarine
STANAVFOR-LANT	Standing Naval Force, Atlantic
STUFT	Ship taken up from trade
SUB	Submarine
SUBROC	Submarine-launched rocket
SURTASS	Surveillance towed-array sensor system
SYEP	Summer Youth Employment Program
TACTAS	Tactical towed-array system
TBS	Treasury Board Secretariat
Tracker	Name of Canada's medium-range patrol aircraft (MRPA)
Tribal (class)	Name of Canada's most modern class of destroyers currently in service. (Also DDH-280.)
USN	U.S. Navy
UNTD	University Naval Training Division
VAdm	Vice-Admiral
VAST	Versatile Automatic Shop Test (unit)
VCDS	Vice-Chief of the Defence Staff
VTOL	Vertical take-off and landing (aircraft)

INTRODUCTION

Findings

This report is a call for action. Eighteen months' study of Canada's Maritime Command (MARCOM) has convinced the sub-committee that our maritime defences have so far deteriorated that immediate and drastic remedies are called for.

Canada has the world's longest coastline, some 71,000 km excluding most islands. The economic zone covers approximately 1,400,000 km² off the Atlantic coast and 380,000 km² off the Pacific coast. The waters of the Northern archipelago add another 6,300,000 km². Canada's commitment to NATO entails responsibility for a total of 2,760,000 km² of the north-west Atlantic. In addition, arrangements with the U.S. for joint defence give Canada the primary role in exercising surveillance over 1,660,000 km² of the north Pacific.¹

Canada is more dependent upon trade for its economic well-being than any other major industrialized nation: over 25 per cent of its GNP is generated by trade and close to 55 per cent of that trade is carried in ships.² The access of international shipping to the world's greatest inland waterway, the St. Lawrence Seaway, is through Canadian waters. Vancouver is the second busiest port in North America, and growing. Significant commercial traffic may develop in northern waters. There is talk of using huge tankers fitted with ice-breaking hulls to transport oil and liquified natural gas (LNG). There is even talk of using nuclear submarines configured as tankers, or as tugs with a train of underwater barges.

Canada's continental shelf possesses some of the world's richest fisheries, substantial proven reserves of natural gas and oil, and excellent prospects for more discoveries. It also holds promise for sea-bed mining.

Canada's ocean areas are bounded on the north and south by those of the world's three most powerful political entities: to the north, the Soviet Union; to the South and North-west, the United States; and on the east, the European Economic Community, with an ocean enclave of metropolitan France off Newfound-

¹ *Facts from Canadian Maps*, Department of Energy, Mines and Resources, Ottawa, 1972, Information Canada, Catalogue No. M. 87-1/1974 (coastline), and *the proceedings of the Senate sub-committee on National Defence*, 15 June, 1982, p. 33A:24 (All other figures)

² In volume.

land's south coast, and Greenland to the north-east. Some ocean-boundary claims are disputed. In addition, many nations have a strong and lengthy association with the Canadian fishery, carrying with it claims and interests.

Without most Canadians being consciously aware of it, their country has enormous maritime interests and substantial maritime obligations. These have grown substantially in the course of the past two decades by virtue of often unilateral actions authorized by the Parliament of Canada in response to pressing changes in economic and environmental circumstance and considerations of sovereignty. Vast amounts of diplomatic effort have been expended in seeking the agreement of the international community. It is the concern of the sub-committee that these interests and obligations are not reflected in any tangible fashion in Canada's defence posture. On the contrary, while Canada's maritime claims have been increasing, its ability to defend them has been declining.

The overwhelming weight of testimony received and personal observations made during extensive fact-finding visits to east and west-coast operational establishments all point to the same conclusion. With the equipment now available, MARCOM, which is responsible for the country's seaward defences, cannot meet its commitments to the protection of Canadian sovereignty, to the defence of North America — much less to NATO.

The sub-committee has found that while Soviet capabilities at sea have markedly advanced, Canada's maritime forces have withered. While changes in military technology have drastically altered the environment at sea, only marginal efforts have been made to keep MARCOM's equipment up to date. "Too few" and "too old" are recurring refrains in testimony before the sub-committee. MARCOM's surface fleet was variously described as "pathetic"³ and "at least a generation behind in its capability".⁴

Moreover, the sub-committee found that plans to mobilize civilian resources in support of maritime forces in an emergency are embryonic at best, and, often, non-existent. The industrial plants and skills to provide for the needs of MARCOM within Canada in an emergency have all but disappeared as a result of fifteen years of inactivity in naval shipbuilding. The sub-committee notes that the Canadian Patrol Frigate (CPF) program will provide some remedy. However, a six-ship purchase is not sufficient incentive for Canadian industry to re-tool and so reduce dependency on off-shore suppliers. Longer time horizons and longer production-runs must be established if industry is to adjust.

The sub-committee has not found a magic formula to improve Canada's maritime defences. Money in substantial amounts is needed. Canada's armed forces have been starved for funds since the mid-sixties. Recently, the sub-committee notes with approval, assiduous efforts have been made by the government to improve the status of the forces' equipment in the context of marginal increases in expenditure. In the case of MARCOM, however, the game plan will not work. There is too much requiring replacement at virtually the same time. Either more

³ *Proceedings of the Senate Sub-committee on National Defence*, 8 February, 1983, p. 38:9.

⁴ *Ibid*, p. 38:24.

money is found or MARCOM will remain an ineffective force until sometime in the next century.

As critical to remedying the inadequacies of Canada's maritime defences as money is a new statement of purpose and a set of well-defined objectives. Without these, there is no yardstick against which to measure stated needs, and no basis for making judgements among competing demands for scarce resources. The last defence white paper, *Defence in the 70s*,⁵ was presented thirteen years ago. The world has changed in that time and the fleet has aged. The armed forces need direction. The Canadian public has a right to be informed. Eighteen months have passed since the sub-committee first identified the urgent requirement for a new white paper. That need is now more pressing than ever.

The sub-committee persists in its January 1982 recommendation that work on a white paper on national defence begin immediately. The white paper should clearly state Canada's defence policy and priorities. It should describe the tasks, military or other, which the government expects Canada's armed forces to perform. This process should not, in the meantime, stand in the way of re-equipping the forces.

The sub-committee further recommends that the white paper be followed by a firm government commitment to ensure that the required manpower and materiel will be provided according to a stated, definite timetable.

Some fundamental considerations

In examining Canada's maritime defence needs, the sub-committee has consistently attempted to go back to basic premises. It recognizes that equipment plays a fundamental role in determining the shape of a modern navy and that the most striking characteristics of today's naval vessels and maritime aircraft are their complexity, their costliness and the consequent long lead-times between the determination of a need and the actual entry into service of the ship, aircraft, weapons system, sensor device or communications complex designed to meet it. The lifespan of new ships and aircraft is two or three decades, so that decisions taken now about equipment will determine the form and capabilities of Canadian maritime forces into the twenty-first century.

Because of this, today's naval programmes have to aim at fitting the circumstances likely to prevail in ten, twenty and thirty years' time, and should not be based on the facile assumption that there will be no major political or other changes. The sub-committee agreed that it could not base recommendations for a future fleet on the simple expectation that friendships and enmities now characterizing the world will necessarily continue to do so in the early years of the twenty-first century. However, at the same time, it recognized that it could not say with confidence what the world would in fact look like after the turn of the century. Consequently, its approach has been to explore the full range of threats that modern naval forces could pose to Canada today and over the next thirty years, and then to consider what steps Canada could, within reason, take to counter them.

⁵ *Defence in the 70s: White Paper on Defence*, Ottawa, August 1971, Information Canada, Catalogue no. D3-6/1971.

The sub-committee is a strong proponent of Canada's membership in NATO, but felt it also had to examine the country's needs in circumstances when the Alliance might not be involved.

The sub-committee has not assumed, as have many writing about Canada's defences, that this country is indefensible at sea. It is conceded that, confronted by a well-planned and determined attack mounted by a hostile major power having the backing of its populace, Canada could not defend itself alone. However, such situations usually arise when conquest appears easy — when resolve and resources seem weak. Opportunism is more to be feared and guarded against than is sheer malevolence, which seldom characterizes the actions of states. Opportunism can be deterred. That is to say, if the price which could be exacted by Canadian forces from a potential aggressor is seen to be high enough, then the likelihood of attack is diminished. It is highly doubtful, for example, whether Argentina would have invaded the Falkland Islands if its leaders had not underestimated Britain's resolve to defend them. The invasion was due in part to a misreading of decisions Britain was taking at the time, such as the decision to remove its last naval vessel from the area for reasons of economy. Colloquially expressed: "If you offer a free ride, someone will take you up on it."

Two other basic assumptions have coloured the sub-committee's findings. The first of these is that Canada has no need or desire for the kind of forces which would permit it, on its own, to project its power abroad. The second is that Canada will continue as a matter of policy to abstain from membership in the nuclear club and to voluntarily reject nuclear arms for its forces. *The sub-committee wholeheartedly supports that policy.* The watchwords for Canada's defence policy should be: "protection, not aggression" and "armour, not armaments".

A word about people

The inadequacies the sub-committee has found in MARCOM are those of tasking and equipment. The men and women serving in MARCOM are professionals equal to any others in the world. Indeed, their expertise in anti-submarine warfare (ASW) operations is sought by our NATO allies. Their will and dedication is the only reason that the situation is not even blacker than the following report paints it. Seeing what these men and women have to work with, the sub-committee was moved to question why they continued to serve, and is filled with admiration that they do. Rear-Admiral Michael A. Martin (retired) described the situation thus:

... delays in promised programs, reductions in programs, reductions in the number of people or reductions in the manning levels ...

You work them harder because there are fewer to go round. They are working on rotten old equipment that is their problem to look after and the equipment that somebody else is supposed to look after. Morale starts going down ...⁶

⁶ *Proceedings of the Senate Sub-committee on National Defence*, 8 February, 1983, p. 38:36.

The tragedy is that if Canada found itself at war, the nation which has failed to provide these men and women with the wherewithal to fight would still send them to sea — and they would go. Too many would not come back. To cite RAdm Martin again:

... over the past five, six or seven years, I have felt frustration and a little anger — certainly some fear ... These feelings increased when I finally found myself in command and where I was in a position to carry the whole can if something happened. I realized I was not going to be able to do it.

I do not mean I did not have the finest sailors in the world, but there was a good chance I might not be able to do the tasks my masters wanted me to because I didn't have enough resources, people or enough equipment to give them. Not only did I not have enough, but I found what I had getting older in the face of the threat getting greater. I would wake up in the morning and worry about that. What would I do if we went to war?

I would have gone to war, but my ability to do it successfully could have been questioned ... ⁷

⁷ *Ibid*, p. 38:35.

THE CURRENT STRATEGIC CONTEXT

Defence needs and politics

If considerations such as history, alliances, natural affinities and established patterns of international relations could be set aside, Canadians would undoubtedly see some of the greatest potential maritime threats to their sovereignty being posed by countries which are friends and allies. France disputes our right to claim jurisdiction over vast stretches of ocean lying within 300 km of Newfoundland, because it exercises sovereignty over St. Pierre and Miquelon. The United States has refused to acknowledge our sovereignty over the Northwest Passage. A number of western European nations have an economic interest in Canada's east-coast fishery. The United States, West Germany and the United Kingdom, among others, have taken different approaches than Canada to the question of sea-bed mining. These are just a few examples. Yet, however bitter sentiments may become on either side of these issues at times, the chance of their leading to naval or any other military engagements in the foreseeable future seems remote. What the situation may be in ten, twenty or thirty years is impossible to predict with absolute certainty, but at the present time there is little prospect of such disagreements producing anything even as violent as the cod wars between the United Kingdom and Iceland.

The Soviet threat

Currently, the only substantial military threat to Canada is that posed by the USSR and its allies. Canada and the USSR are neighbours across the Arctic; but common boundaries sometimes provide cause for disputes. As the wealth hidden beneath Arctic ice becomes known, the potential for differences grows. Moreover, as is the case with the U.S. and western European nations, the Soviet Union and its eastern European allies have a considerable interest in the fisheries off Canada's east and west coasts. However, it is not out of the bilateral relationships between the USSR and Canada that the current threat arises, but out of the fact that Canada and the Soviet Union are members of opposing philosophical, political and economic systems.

The factors which led Canada to play a leading part in the creation of NATO and which have dictated her continuing membership in the Alliance are sufficiently well known not to demand repetition here. The future of Canada's institutions and well-being depends to a large extent on how east-west relations and the balance of power evolve in the world at large, particularly in Europe. It is,

TABLE 1
Comparisons of defence expenditure and military manpower 1975-82

Country	\$ million			\$ per capita			% of government spending			% of GNP		Numbers in armed forces (000)			Est. reservists (000)	Para-military (000)
	1975	1980	1981	1975	1980	1981	1975	1980	1981	1975	1981	1975	1981	1982	1982	1982
Warsaw Pact																
Bulgaria	457	1,254	1,346	52	141	150	6.0	6.4	6.0	2.7	4.2	152.0	149.0	148.0	795.0	172.5
Czechoslovakia	1,706	3,601	3,796	116	234	246	7.3	7.5	8.2	3.8	n.a.	200.0	194.0	196.5	325.0	133.5
Germany, East	2,550	4,793	6,953	148	286	415	7.9	8.2	8.6	5.5	7.7	143.0	167.0	166.0	305.0	409.3
Hungary	506	1,067	1,237	48	99	115	3.5	3.8	3.9	2.4	3.0	105.0	101.0	106.0	143.0	75.0
Poland	2,011	5,063	5,408	59	141	151	7.0	5.6	5.1	3.1	4.3	293.0	319.5	317.0	605.0	635.0
Romania	707	1,361	1,351	33	61	60	3.7	3.5	4.0	1.7	2.0	171.0	184.5	181.0	365.0	1.59m
Soviet Union	124,000	n.a.	n.a.	490	n.a.	n.a.	n.a.	n.a.	n.a.	8.4-15.0%		3,575.0	3,673.0	3,705.0	5,000.0	80.56m
NATO																
Belgium	1,971	3,958	3,342	200	399	337	10.0	9.2	9.2	3.0	3.3	87.0	89.5	93.5	141.5	16.2
Britain	11,118	25,921	24,223	198	463	433	11.6	10.7	12.1	4.9	5.4	345.0	343.6	327.6	281.7	9.95
Canada	2,965	4,253	4,914	130	178	203	11.9	n.a.	8.3	2.2	1.7	77.0	79.5	82.86	21.3	1.3
Denmark	939	1,608	1,434	185	314	280	7.3	7.3	7.3	2.2	2.5	34.0	32.6	31.2	153.4	—
France	13,984	26,067	23,545	264	483	437	20.2	19.5	20.7	3.9	4.1	502.0	504.6	492.9	457.0	89.9
Germany	16,142	33,611	29,047	259	548	471	24.4	28.3	28.2	3.7	4.3	495.0	495.0	495.0	750.0	20.0
Greece	1,435	2,275	2,273	159	239	237	25.5	22.5	20.3	6.9	5.7	161.2	193.5	206.5	404.0	29.0
Italy	4,700	9,579	8,769	84	168	153	9.7	5.4	5.6	2.6	2.5	421.0	366.0	370.0	799.0	204.7
Luxembourg	22	52.5	46	65	144	128	3.0	3.2	3.5	1.1	1.2	0.6	0.7	0.7	n.a.	0.5
Netherlands	2,978	5,534	4,717	218	395	333	11.0	9.9	9.7	3.6	3.4	112.5	102.8	104.0	171.0	8.7
Norway	929	1,618	1,646	232	394	401	8.2	10.7	9.0	3.1	3.3	35.0	37.0	42.1	243.0	—
Portugal	1,088	868	840	124	88	88	35.2	11.7	10.2	6.0	3.8	217.0	70.9	66.4	90.0	38.2
Spain	1,701	3,991	3,655	48	106	96	14.5	12.2	11.7	1.8	1.9	302.3	342.0	347.0	1,085.0	105.0
Turkey	2,200	2,306	2,632	55	51	56	26.6	18.5	20.7	9.0	4.5	453.0	569.0	569.0	836.0	120.0
United States	88,983	142,200	176,100	417	644	782	28.8	23.6	25.3	5.8	6.1	2,130.0	2,049.1	2,116.8	899.6	125.3

therefore, in this country's national interest to make an effective contribution to the Alliance. Yet, the sub-committee has been repeatedly reminded that only Luxembourg spends a lower percentage of its GNP on defence than Canada. As shown in table 1, in 1981 Canada spent 1.7 per cent of its GNP on defence. Average expenditures for the Alliance are 3.6 per cent, while some members spend up to 6 per cent. On a per capita basis, Canada's contribution looks somewhat better, as it exceeds the per capita contributions of Italy, Luxembourg, Portugal, Spain and Turkey.

Perhaps more telling than Canada's comparatively low level of military expenditures is the steady decline in the percentage of its GNP devoted to the defence budget until recently: 9.0 per cent in 1953, 6.0 per cent in 1958, 4.5 per cent in 1963, 2.7 per cent in 1968, 2.0 per cent in 1973, and 1.8 per cent in 1978.¹ It has been more than fifteen years since Canada has placed an order for new fighting ships and eleven years since the last armed vessel joined the fleet.

The east-west naval balance

As John Anderson, Assistant Deputy Minister (Policy) in the Department of National Defence, pointed out, the western democracies, "scattered bastions linked by oceanic highways",² are heavily dependent upon the sea and sea lines of communication, while the Warsaw Pact is not. In case of hostilities, the geographically cohesive alliance led by Moscow would only have to follow a sea-denial strategy, while NATO would have to ensure sea control. The latter requires far greater naval resources than the former. NATO estimates that, if a conflict broke out in Europe, in the first month alone some eighteen hundred shiploads of men, materiel, foodstuffs and other goods would have to be moved from North America to Europe. Thus the balance of forces at sea becomes a critical element in calculating NATO's ability to sustain a conflict with the Warsaw Pact without resorting to nuclear arms. Developments in the NATO-Warsaw Pact balance at sea are shown in table 2. Table 3 illustrates the situation between the major powers in the Pacific.

It can be argued that over the past twenty years, shrinking western fleets have held their own by making up in sophistication what they have lost in numbers. (Canada's maritime forces have been a notable exception to this rule over the past decade, declining in both numbers and relative sophistication except in the area of long-range patrol aircraft.) Nonetheless, the salient fact is that the relative strength of the NATO fleet has drastically diminished in comparison to that of the Warsaw Pact fleet. Western navies are still stronger than their opponents, particularly when account is taken of the Soviet navy's division into four separate fleets. As Dr. George Lindsey, Director of the Operational Research and Analysis Establishment of the Department of National Defence, told the sub-committee, NATO maintains better than a three-to-two advantage in such critical categories as aircraft carriers, destroyers, frigates, amphibious ships, maritime reconnais-

¹ Figures drawn from a number of issues of *The Military Balance* (International Institute for Strategic Studies, London).

² *Proceedings of the Senate Sub-committee on National Defence*, 2 March, 1982, p. 22:6.

TABLE 2

NATO-Warsaw Pact naval balance in the Atlantic and European areas, 1971 and 1981

WARSAW PACT	1971	1981
Kiev class ships	0	2
Helicopter carriers	2	2
Cruisers	20	21
Destroyers and frigates	142	182
Coastal escorts and fast patrol boats	553	551
Amphibious ships		
—Ocean-going	7	16
—Independent coastal craft	190	155
Mine warfare ships	374	360
Total Submarines (All types)	248	258
—Ballistic Missile submarines	38	52
—Long-range Attack submarines	115	149
—Other types	95	57
—% Submarines nuclear powered	32%	45%
Sea-based tactical and support aircraft including helicopters	36	146
Land-based tactical and support aircraft (including some transport aircraft and transport helicopters)	521*	719*
Land-based Anti-Submarine Warfare fixed-wing aircraft and helicopters	225	179
NATO	1971	1981
Aircraft carriers	9	7
Helicopter carriers	6	2
Cruisers	11	15
Destroyers/frigates	381	274
Coastal escorts and fast patrol boats	180	167
Amphibious ships		
—Ocean-going	24	41
—Independent coastal craft	62	69
Mine Warfare Ships	349	257
Total submarines	195	190
—Ballistic missile submarines	38	35
—Long-range attack submarines	72	60
—Other types	85	95
—% NATO submarines nuclear powered	50%	49%
Sea-based, tactical and support 801 aircraft including helicopters	712	
Land-based tactical and support aircraft	112	180
Land-based Anti-Submarine Warfare fixed-wing aircraft and helicopters	471	450

* About 300 of these are bombers.

Source: *NATO and the Warsaw Pact: Force Comparisons*, NATO, 1982.

Note: Not shown in NATO figures are French and Spanish naval units. France ceased to be part of NATO's integrated command in 1967. Spain joined the Alliance in 1982. In 1971 and 1981, their naval forces included:

French & Spanish naval forces, 1971 and 1981

	1971		1981	
	France	Spain	France	Spain
Aircraft carriers, incl. helicopters	4	1	3	1
Cruisers	1	1	1	0
Destroyers, frigates & ocean escorts	46	33	40	28
Coastal escorts & fast patrol boats	14	10	14	12
Amphibious ships				
—ocean going				
—independent coastal craft	19*	8*	18*	9*
Mine warfare ships	89	25	22	16**
Total submarines	20	3	26	8
—Ballistic missile submarines	1	0	5	0
—Long-range attack submarines	19	3	21	8
and other types				
Sea-based, tactical and support aircraft, including helicopters	n.a.	n.a.	n.a.	n.a.
Land-based tactical and support aircraft	n.a.	n.a.	n.a.	n.a.
Land-based ASW aircraft	n.a.	n.a.	n.a.	n.a.
Total maritime aircraft	200	n.a.	191	61

*Estimate
 **Spanish Accession to NATO—Arguments, Facts & Figures (North Atlantic Assembly report, Brussels, March 1982), p. 16

Source: Based on *The Military Balance* 1971-1972 and 1981-1982, International Institute for Strategic Studies, London, 1971 and 1981.

TABLE 3

U.S.-Soviet naval balance in the Pacific, 1973 and 1982

	1973		1982	
	U.S.	USSR	U.S.	USSR
Aircraft-carriers	10	0	7	1
Major surface combatants	81	52	76	84
Submarines	n.a.	107	39	120

Note: Includes Indian Ocean and Persian Gulf detachments.

Source: Based on *The Military Balance* 1973-1974 and 1982-1983, International Institute for Strategic Studies, London, 1973 and 1982.

sance, attack and fighter aircraft, and ASW helicopters.³ However, NATO's great reliance upon the sea means the navies of its member countries are faced with the difficult problem of sea control whereas the eastern bloc can focus on sea denial. The sub-committee was informed that sea control requires a favourable balance of at least twice and probably three times the maritime strength of the enemy.⁴

³ *Ibid*, pp. 22:17-18.

⁴ *Ibid*, 8 February, 1983, p. 38:22.

Growth of the Soviet navy

Not only have Warsaw Pact naval forces grown in numbers over the past two decades, they have also changed from being largely a coastal defence force, operating as an extension of land forces, into a blue-water fleet able to challenge NATO's maintenance of its sea lines of communication. Individual units have also increased in size, sophistication and strength. Most prominent among units recently added to the Soviet fleet, or about to join it, are: Kiev-class aircraft-carriers; nuclear-powered guided-missile cruisers of the Kirov class; a class of amphibious ships nearly three times the size of earlier, similar Soviet units; two classes of conventional guided-missile destroyers, the *Sovremennyy* and the *Udaloy*; a new class of large guided-missile cruisers, the *Black-Com-1*; and new classes of nuclear-powered submarines — the *Alfa*, an attack submarine (SSN); the *Oscar*, a cruise-missile submarine (SSGN); and the *Typhoon*, a nuclear-powered ballistic-missile submarine (SSBN).

The Soviet fleet of major surface warships and amphibious vessels has now grown to more than 360 units. In addition, the Soviet navy operates 367 submarines, of which 184 are nuclear-powered. Attack submarines alone number 283; 115 of them are nuclear-powered. It also has 69 SSBNs carrying 944 submarine-launched ballistic missiles (SLBMs) which can deliver over 2,000 warheads.

The naval air arm has also acquired greatly increased capabilities. To its fleet of more than four hundred aircraft (not including aircraft of the Soviet air force earmarked for attack against shipping) are being added *Backfires* that extend by a full 1,600 km the operating radius of maritime air flights. The strike force is equipped with anti-ship stand-off missiles with a range of up to 300 km, and although the air groups found aboard Soviet carriers do not provide a strike capability, their fixed-wing and other aircraft add significantly to the effective range of stand-off armament on other vessels, since aircraft — particularly helicopters — can provide over-the-horizon targeting information and perform mid-course corrections for long-range missiles.

The Soviet navy has also developed a significant amphibious capability, much of it recently. Besides the *Ivan Rogov*, it operates twenty-five LSTs (landing ships, tank), sixty LSMs (landing ships, medium) and a vast number of lesser landing craft, including the world's largest fleet of air-cushion vehicles. Together, these give an important assault-lift capability, which might help to secure political advantages in the Third World or, in the case of a major conflict, could secure the coastal approaches to Soviet bases or the choke points through which Soviet vessels would have to proceed to reach the high seas.

A final, major component of the Soviet navy is its fleet of about 385 mine-countermeasure (MCM) vessels, many of them 700-tonne ships, equipped with anti-aircraft guns, sonars and ASW-rocket launchers. Together with stocks of 200,000 to 300,000 mines of all types, they illustrate vividly the importance placed by the USSR on mine warfare and the likelihood of its using mines on a large scale to impede convoys and paralyze those harbours it is unable to destroy at the outset of hostilities by bombing and other methods.

This growth in the numbers and capabilities of the Soviet maritime forces has been accomplished by a rapid expansion of the Soviet global naval presence. After

establishing itself in the Mediterranean in 1964 and in the Indian Ocean in 1968, the Soviet Union began regular operations in the Caribbean in 1969. Since formation of the nucleus of its Atlantic flotilla in 1970, its vessels have been sighted with ever-increasing frequency off the coast of Africa. In addition, not only has its Pacific fleet had an explosive growth since 1978, but its ability to use modern facilities built by the U.S. at Cam Ranh Bay, Vietnam, has extended its reach more than 3,000 km towards the south. The Soviet Union has also built and continues to develop a major auxiliary fleet, and has acquired a limited but significant number of naval facilities in Third World areas of great interest to the members of NATO. For an alliance whose strength depends on keeping open long maritime-supply lines and lines of communication, these trends are worrisome.

Soviet civilian fleets

Finally, the Soviet Union has large civilian fleets which it can use in crises or wartime for logistics support, amphibious operations and intelligence-gathering. In Soviet doctrine these fleets are seen as an integral part of maritime capability. Naval officers are assigned to the offices of shipping companies while active-duty specialist personnel are employed on civilian ships. The crews of civilian ships also receive some military training. Civilian shipbuilding is supervised by a military-industrial commission reporting directly to the Ministry of Defence, and civilian hulls are often built to military specifications or designed for easy conversion to military use. A growing number of civilian vessels are roll-on/roll-off craft (45 at present). The Soviet Union can also mobilize 125 container ships, more than 2,000 bulk carriers (its merchant fleet has gone from twenty-sixth to sixth place in the world over the past twenty years), and 2,700 fishing vessels (the world's largest fishing fleet). Ironically, its manpower-lift capability was given an unintended boost by western nations. By abandoning temporarily the passenger-liner business, the west gave Moscow a real economic incentive to build liners that can easily be converted to personnel transport.

The Soviet navy also receives significant support from a major fleet of research vessels and aircraft, fifty intelligence collectors, and forty-three ice-breakers. Three of these are nuclear-powered and can operate in the high Arctic year-round to keep open coastal lines of communications which, in case of hostilities, would play an essential role, and might even serve as a transit route between the northern and pacific Soviet fleets.

Canadian responses

As the Soviet Union and its allies possess virtually a full range of naval weaponry and also constitute the current most likely threat to Canada, the relative strengths of Soviet and Canadian naval forces suggest that Canada must participate in an alliance if it is to defend itself. NATO is a mutual defence alliance. Nonetheless, in a generalized conflict with the Warsaw Pact, Canada would have to have at least some capacity to contribute to the protection of its own coasts and harbours and to guard its maritime interests. It would be unwise to operate on the assumption that even the best-motivated allies would always be ready, willing and able to provide the forces necessary to counter active threats to Canada, especially since all or most of them would also be under attack. Even in the context of the

NATO Alliance, the protection of Canada's sovereignty and interests at sea involves dependence upon the strength of Canada's own forces, especially in areas where, as Professor Harriet Critchley pointed out, "Canadian jurisdiction is hazy or disputed."⁵

The Alliance provides a number of benefits for Canada. First, it gives assurance that all of the Warsaw Pact's naval strength cannot be concentrated against Canada at the same time. Second, it offers prospects of assistance and reinforcement of Canadian maritime forces by naval units from other members of NATO. Third, as Vice-Admiral Robert Timbrell (ret.) observed, because of this latter consideration, the Alliance also offers Canada an opportunity to specialize to a degree in the development of its maritime forces, so that the whole range of types of ships and aircraft need not be represented in the Canadian inventory.⁶

Conversely, if Canada, for reasons of cost-effectiveness, wishes to specialize, then it can be assumed that other allies will wish to do likewise and will expect Canada to help fill some of the gaps in their own capabilities. This implies that Canada must build a rather different navy from the one it would need if only its own defence requirements had to be taken into account. For example, Canada might need ocean-going submarines, capable of deployment over wide areas of the oceans, rather than coastal submarines. It might require surface vessels capable of undertaking extended operations in a hostile environment, away from their home ports, rather than smaller, shorter-range vessels designed to operate under shore-based air cover.

In short, membership in the Alliance provides Canada with greater prospects of successful defence and deterrence against the Soviet threat but requires as a trade-off more capable and costly vessels and aircraft than Canada would need just for its own protection. In light of severe budgetary limitations, this may imply that Canada purchases fewer though more powerful weapons-platforms. Thus, Canada might find itself with fewer units than are necessary for optimal surveillance and control of its own waters.

The objective, then, is to strike a balance between NATO requirements and national needs, so that neither distorts the planning of Canadian naval forces to the point where MARCOM cannot fulfil its obligations towards the other. In short, any naval force which Canada constructs must have the numbers to adequately patrol its immense coastal areas but, at the same time, be capable of facing highly sophisticated, strongly supported adversaries, who can launch a range of surface, sub-surface and air attacks, often simultaneously.

⁵ *Ibid*, 8 June, 1982, p. 32:13.

⁶ *Ibid*, 8 February, 1982, pp. 38:17-18.

THE TECHNOLOGICAL CONTEXT

Changed technology

Canadians who think about their navy in the Second World War tend to carry an image of the spume-swept bridge of a corvette (laid down six months before, built by a brewer, and paid for by nickles and pennies contributed by elementary students from rural Prince Edward Island), occupied by various young bankers, school teachers, farm boys from the Prairies and a crusty old fisherman, none of whom (except for the crusty old fisherman) had ever seen the sea until joining the navy ninety days before. Binoculars clamped to their keen eyes, strong stomachs coping with the violent pitching of the tiny grey vessel, they sailed off to be hidden in the mists of the North Atlantic. Not all that far from the truth. At the outbreak of World War II, Canada's regular navy had 6 destroyers and 2,600 uniformed personnel. By 1945, there were 211 vessels of significant size in commission and more than 94,000 men and women in naval uniforms.

Such scenes, even making allowances for rose-coloured glasses, will not be seen again. The ship will have taken eight years to design, at least three to build, and will have cost as much as the annual budget of a good-sized Canadian city. Instead of the open bridge, there will be a compartment deep within the ship's gas-tight citadel, fed by recycled, filtered air. Instead of the binoculars, there will be cathode ray tubes displaying the computerized images provided by a half-dozen or more sensor systems. The men whose faces will be caught in the dull red light of the room and the flickering green of the display terminals will be professional military with years of experience and training in electronics, mathematics and physics, computer science, and engineering. The ship will not sail off into the mists to be lost from view. The mists will be penetrated by space satellites; the sounds of the ship will be heard by a submarine 160 km away; infra-red scanners of aircraft hours away from their home landing strip will seek it out. This ship and this team of men cannot be thrown together overnight. If they are, they will not likely sail back into harbour.

There has been a revolution at sea driven by nuclear submarines, missiles and electronics. For the foreseeable future the naval environment is likely to become even more hostile and dangerous, especially for surface vessels, with no corner of the ocean completely free from the possibility of simultaneous threats from on, over and under the sea. "Technology (has) reduced the survivability of the surface ship, whether merchant or naval," as Dr. Lindsey told the sub-committee.¹

¹ *Proceedings of the Senate Sub-committee on National Defence*, 2 March, 1982, p. 22:12.

Sub-surface warfare: Detection

Since World War II, there have been remarkable advances in submarine technology, as table 4 illustrates.

TABLE 4
Changes in Submarine Technology

Submarine Characteristics	World War II	Horizon 1980-1985	Multiplying Factors
Maximum speed (submerged)	6-8 knots	Conventional sub 20-25	3
		Conventional sub 25-30	5
		Nuclear-powered — hunter-killer sub 40-50	6-7
Endurance (submerged)	several hours	2 months or more	200-300
Detection capability (in km)	several km	50-100 km (high variable)	10-20
Weapons' range	several km	Wire-guided torpedo 20 km	5
		Missile 40 km	10
		Counter force missile 400 km	100
Payload	250 kg TNT	Nuclear warhead	10 ⁶
Maximum depth	200 m	300-600 m	2-4

Source: Commander Brenot, as cited by Hervé Coutau-Bégarie in «Après les Falkland ... Quel avenir pour les flottes de surface?» ("After the Falklands ... What does the Future Hold in Store for Surface Fleets?"), *Politique Étrangère*, No. 3, October 1982, p. 702.

Even without nuclear warheads the submarine is a formidable weapon; and modern conventional boats are outstripped only by their nuclear-powered counterparts. In recent years technological change has favoured submarines over ASW detection and destruction systems. Several witnesses agreed with Rear-Admiral J.C. Wood, Chief of Maritime Doctrine and Operations:

The nuclear submarine is very much the major warship or battleship of today ... but there is nothing that frightens a nuclear submarine more than a conventional submarine. They are very quiet. Our most recent experience in this regard is with the Royal Navy in the Falklands. Admiral Woodward ... had as one of his major concerns the whereabouts of the two little (Argentinian) submarines down there ... I do not think you should dismiss conventional submarines ... lightly ... They ... will spoil your whole day if you are in an enemy ship and they shoot a torpedo at you.

So there is a role for everything. If you want bang for the buck, and if Canada wants to be able to go bang should the balloon go up, you will get a fair return for a very modest outlay from our conventional submarine. I think we need a mix.²

Nonetheless, there have also been advances in the means of detecting submarines from above, on, and below the surface. All detection platforms including ASW submarines, have shifted emphasis from active to passive sonars. While active sonars produce more accurate readings, and are thus more effective in the attack phase immediately preceding destruction, the latter are of greater usefulness during area searches because of their longer range and silent mode of operation. Neither system is sufficient on its own, however, and ASW units have to rely on both — as well as on all other means of detection available — to compensate even partially for the advantages which stealth, speed and surprise give sub-surface combatants.

The most recent developments of this sort are two passive towed-arrays systems, tactical towed array systems (TACTAS) and surveillance towed-array sensor systems (SURTASS). They evolved from early devices used by U.S. SSBNs to locate shadowing submarines. They are mentioned with increasing frequency as standard or add-on equipment for a number of surface vessels, including civilian and support ships, and for submarines. They allow for long-range detection. In the case of TACTAS, submarines can be heard at distances of up to 160 km or more. SURTASS has even longer ranges but requires links with satellites and shore facilities. Both require significant computer back-up. Their effectiveness varies with a number of factors, including the noise being made by the submarine, towing speed and, more significantly from the point of view of ships travelling in company, background noise. Nor can they localize a target. That task must be left to other sensor systems such as variable depth sonars, which can explore water below the surface layers but whose range and accuracy are limited, and hull-mounted sonars which can operate in both passive and active modes but whose range is again very limited — although they can be extremely accurate in the active mode. Nonetheless, because of the extremely long ranges at which submarines can currently pick up a target and prosecute an attack, long-range passive towed arrays are becoming essential items of equipment for surface warships.

In the case of aerial ASW, sonobuoys are a key detection device. Standard issue models have a detection range of several kilometers, but give no directional information when used singly. Directional, variable-depth, passive sonobuoys allow naval aircraft to detect their preys at distances between 8 and 16 km; but, like passive towed arrays, they fail to give a precise indication of range and, when such data is needed, must be supported by active sonobuoys, whose range is quite low (1.5-3 km). Because they too require computer back-up, they are of limited value to helicopters and to all but the most sophisticated maritime patrol aircraft.

Dunking sonars perform the same task for aircraft that variable-depth sonars do for ships: they allow them to reach below surface water layers. They are most effective in barrier searches, but must be used at low speed. In addition, although their exact range is classified, it probably does not exceed 3 or 4 km.

² *Ibid*, 19 April, 1983, p. 44:23.

Magnetic anomaly detectors (MAD) are used by helicopters and other aircraft to localize targets. They are employed in the attack phase and have an effective range of little more than 300 m.

Submarine detection is not limited to mobile platforms. Sound surveillance under the sea (SOSUS) is a field of hydrophones connected to shore stations by cable. Initially, this U.S. system covered the Atlantic continental shelf along the coast of North America. Now it reaches far beyond the approaches to this continent. It has been in operation for over thirty years, and picks up most submarines moving at more than 8 knots. The Soviet Union is not known to possess a comparable system, but probably has something similar along its more sensitive coastal areas.

Sub-surface warfare: Destruction

Once a submarine is detected, there remains the problem of destroying it. The increased speeds and depths of which modern submarines are capable have rendered obsolete the type of depth charges used in World War II. Even anti-submarine mortars capable of propelling a salvo of charges up to 1,000 m have been overtaken by submarine technology. Their targets can take evasive action between the time the mortars are heard to fire and the moment their charges explode. The rocket-launched torpedoes that are gradually replacing mortars reduce significantly this interval between firing and explosion.

Torpedoes are currently the prime anti-submarine weapon. In many instances, however, they are now fully akin to guided missiles. The largest continue to be fired by submarines. But lighter models can be launched from surface vessels, aircraft, and even helicopters. Newer models are quite sophisticated. The American Mark-46, for example, can rely on either an active or a passive homing mode as it spirals downward in its search for the target, once it has been dropped within 1,000 m of its objective. (It is currently being upgraded to counter the sound-absorbent covering used on new Soviet submarines.)

Rocket-torpedo combinations fired by surface vessels can reach targets several kilometers away. Examples of such weapons are the U.S. anti-submarine rocket (ASROC) with nuclear and conventional warhead capability, now obsolescent (range: 11 km); Australia's Ikara, a system equipped with in-flight guidance (range: 20 km); France's Malafon (range: 15 km); and the Soviet SS-N-14 (range: 55 km). Most submarine-launched torpedoes are relatively slow, with top speeds in the order of 50 knots. Many are wire-guided because of the limited capacity of their acoustic homing sensors. Although cumbersome, wire guides enhance accuracy over the fairly long distances the weapons travel (30-50 km). By comparison, existing nuclear/conventional-capable submarine-launched rockets (SUBROCs) and anti-submarine warfare stand-off weapons (ASW-SOWs) which can be fired from submerged stations achieve far greater speed as a large portion of their path is travelled in an aerial mode. But they lose in accuracy over their maximum range (approximately 35 km), because of the difficulty encountered in relaying targeting information to them while in flight.

Even with the increased capabilities becoming available, ASW weapons used by surface ships are far out-ranged by, and less accurate than, the weapons that

can be used against surface vessels by submarines. It is for this reason, as well as because of the complementarity of their detection devices, that surface ASW vessels will operate most often in company with fixed-wing or rotary-wing aircraft which, once a submarine is detected, can rapidly bring their weapons within range. Indeed, virtually all modern ASW ships are designed to carry one or two ASW helicopters.

Mines also present a significant threat to submarines, particularly when they are deployed in anti-submarine barriers such as those planned by NATO in the Greenland-Iceland-United Kingdom (GIUK) gap, between the Danish Islands, off Gibraltar, and in the Dardanelles. They are becoming increasingly dangerous as their technology incorporates features of other systems. One such recent development is the U.S. Captor mine which, when triggered, will release an acoustic homing torpedo, thus combining the lethal power of the two most effective anti-submarine weapons.

Surface warfare

The advent of the guided missile and the subsequent development of the long-range sea-skimming missile have completed the process begun in World War II of subordinating surface combatants to air combatants. The major surface combatants today are designed either to carry aircraft or long-range missiles into battle or to protect other surface vessels against attacks by aircraft or missiles. Even the smaller ASW vessels are almost invariably designed to carry helicopters. Air cover has become an essential element in the planning of any surface movements.

The days of vessels closing to within visual range to exchange fire are also gone — courtesy of the missile. Moreover, in an exchange between surface vessels, the missile may have reversed the established order of things by giving the advantage to the smaller combatant. The small vessel may have missiles as powerful as those of the larger ship, and might have a better chance of firing them first because its small silhouette is more difficult to detect on radar. This situation might, however, be equalized if the larger vessel has better radar and more effective point-defence. Be that as it may, the missile has conferred strength on some smaller vessels. For example, small, fast patrol boats are opponents to be reckoned with in some of the waters of the world — although not in all because they lack the sea-keeping qualities to operate effectively in high seas.

Missiles can home in on targets at angles varying from virtually 0° to 60° or more, and are acquiring target discrimination and target selection capabilities. For that they rely on guidance systems which include active radar and infra-red systems. Their range is considerable, and limited only by the user's sophistication in acquiring targets. Satellites allow for greatly increased accuracy in targeting, but they cannot be deployed in nearly the numbers required to support very-long-range combat. At closer ranges — but still over the horizon — specially equipped helicopters and other aircraft can either make the attack themselves or relay to surface and sub-surface combatants the targeting information they need. In a few instances, aircraft are the third component in a complex, integrated system for which they provide in-flight guidance as well as the initial targeting information.

Currently, Soviet missile-capability ranges from the surface and sub-surface-launched SS-N-19, combining an estimated range of 500 km with a speed of

Mach 2.5 and over-the-horizon capability, to the SS-N-7, which will travel 55 km at Mach 1. The latter's short range may, however, be a complicating factor since the target will have little more than three minutes to react to not just one, but a salvo of four — perhaps up to eight — missiles shot from a submerged SSN or a surface vessel.

NATO's current missiles appear less capable. The Exocet AM 39, of Falklands fame, is a subsonic missile with a maximum range of 50-70 km. The range of its newest surface-to-surface version, the MM 40, does not exceed 70 km. The U.S. Harpoon has a longer reach (90 km), but has never been tested in actual operations. It may provide NATO as well as national armed forces with added flexibility, however, since it can be launched from surface, sub-surface and airborne platforms. Another U.S. weapon, the Tomahawk, with its reach of 500 km or more, will almost treble the longest range claimed by a western missile, the Franco-Italian Otomat (180 km). But it will not be capable of supersonic speeds. For missiles able to achieve those speeds, NATO will likely have to wait until the end of the decade.

Mines remain the cheapest maritime weapons system and, judging by the record of past wars, can claim the highest cost/effectiveness ratio against surface vessels. Yet, since World War II, the West has paid remarkably little attention to them either as defensive or as offensive weapons.

Mine warfare has also become a good deal more complex and sophisticated since World War II. Magnetic, acoustic and pressure-triggering mechanisms, operating singly or in combination, have become sufficiently sensitive for mines to be laid in much deeper waters. They remain easy to lay — from aircraft, surface vessels, and even submarines — but are becoming ever harder to sweep or hunt. The increase in their effective depth has greatly widened the areas over which they can be seeded. Moored mines, including those laid in fairly deep waters, can be swept more easily than acoustic and magnetic ground mines. But by far the most difficult to deal with are pressure mines, which must be exploded one by one. Various techniques exist to cope with them, including divers equipped with hand-held sonars, remote-control vehicles, wooden or plastic-hulled mine-hunting vessels or specially equipped helicopters.

Pressure mines present a particularly nettlesome problem in that they slow down operations considerably. Not only must they be approached at very low speeds, but locating them requires examination of the large number of pieces of metallic junk found on the bottom. Estimates are that processing each contact — whether a mine or not — takes some 15-20 minutes.

Although the Soviet Union is not known to possess them yet, Captor-type and other deeper-water mines will in future present an even greater danger to Western navies since they can be laid below the 20-35 m range of mine-hunting sonar. Yet, given the ease with which mines can be laid, and the low costs involved, the greatest challenge may not be so much a technical as an allocational one: what proportion of resources — time, human, financial and other — can be devoted to mine countermeasures?

Rear-Admiral William Hughes (retired) made the following statement to the sub-committee, clearly describing the potential of mines:

Mines are a very cheap and effective way of disrupting maritime operations. In addition, they can be laid by unsophisticated vessels, such as the many Soviet or Polish vessels which transit the Strait of Juan de Fuca every year. In 1981, for example, there were 600 such transits to Canadian ports fed by the Strait.

The effectiveness of mine warfare was aptly demonstrated in the Korean War when the North Koreans mined the approaches to Wonsan using old Russian mines laid by fishing junks, thus preventing the landing of the UN amphibious force for many days. The commander of that operation, Admiral Smith, of the United States Navy, reported: "I have lost command of the sea to a nation without a navy, using weapons which were obsolete at the time of World War I, delivered by vessels which were obsolescent at the time of the birth of Christ".³

Air warfare

Aircraft may not present quite as elusive a danger to naval forces as do submarines, but the Falklands campaign made it clear that unless the latest radars and air early warning (AEW) systems are available to ships and ship-formations, the air threat may be just as difficult to counter as the underwater one. Indeed, stand-off and other missiles compound the difficulty, since they make long-range detection a basic requirement. The speeds of these projectiles are increasing at the same time as their detectability by radar diminishes — in some instances, the surface they offer to radar has been cut down to below 500 cm.² (That is, a circle of just over 25 cm in diameter). In addition, as hostilities in Lebanon showed last summer, electronic warfare seems again to favour the aircraft.

For aircraft-carrier task forces such developments may not seem overly threatening, since their successive layers of defence include missiles and fighter aircraft for long-range area-defence, as well as shorter-range missiles, aircraft, electronic countermeasures (ECM) and rapid-fire guns for short-range area-defence and point-defence. But surface units or groups with no air capability of their own and thin land-based air cover may be seriously imperiled. Even if they do not have to venture into areas where enemy aircraft are highly concentrated and "only operate off the shores of Canada", former Vice Chief of the Defence Staff Vice-Admiral John Allan (retired) considers our ships vulnerable to Soviet aviation.⁴ Indeed, carrier task-forces themselves may soon be more vulnerable to air-launched missiles capable of travelling at speeds approaching Mach 3 to reach targets at a distance of some 300 km, that is, approaching the limits of carrier-borne air cover.

The task of destroying enemy aircraft equipped with long-range missiles is entrusted to supersonic fighters such as the U.S. F-14. Their effective range is approximately 300 km and they are equipped with Phoenix missiles that can engage up to six targets at a time from a distance of 100 km. Against missile-equipped but less capable enemy forces, fixed-winged-aviation support can be supplied at considerably less cost by such aircraft as the Sea Harrier, which proved both its flexibility and its worth in the Falklands. But, as demonstrated in that conflict, such long-range defence requires back-up from early warning aircraft. In

³ *Ibid*, 22 March, 1983, pp. 43:22-23.

⁴ *Ibid*, 3 March, 1983, p. 39:24.

addition — especially in the case of major carrier task-forces — it does not seem likely to progress as fast as the threat it aims to counter. As a result, closer-in defences have been receiving a great deal of attention.

Besides aircraft, naval formations can rely on a variety of missiles to ensure their protection out to 50 or 100 km. However, the effectiveness of these weapons depends on warning time and tends to be diminished by the small radar signature and high speed of incoming missiles. The USSR's major air-launched threat, for example, is the AS-4. Not only is it mounted on the modern, long-range, supersonic Backfire bomber, but, once launched, it will travel some 250 km or more at Mach 2. As a result, costly counter-systems have to be deployed on escorts accompanying capital ships. The AEGIS cruisers of the U.S. Navy, for example, rely first and foremost on a massive phased-array radar complex and cost close to \$1 billion (1983 dollars) per unit. Such systems would be absolutely indispensable if nuclear warheads were to be used at sea — a possibility not to be ruled out.

Point defence can be provided either by missiles or by rapid-fire guns. The former can be extremely effective against aircraft but, on Western ships at least, are often hampered by lack of speed in the anti-missile role. The French Crotale and British Sea Wolf are regarded as making a significant contribution to NATO's capabilities, but the latter arrived in the Falklands too late to prove itself under operational conditions. Radar-controlled guns with a very high rate of fire are currently the only weapons considered effective for close-in defence. They set up a curtain of fire within 1,000 m of a ship, so as to explode the warheads of incoming projectiles. Test results have been impressive, but a high degree of reliance on automatic radar functions, combined with the prospect of hardened warheads and the possibility of multiple missile salvos, point to definite limitations in the face of rapidly advancing missile technology.

Electronic countermeasures seek to shield intended targets by either preventing target acquisition (for example by jamming enemy radars) or presenting decoy targets to enemy fire (for example with clouds of chaff). But to have a chance of being effective, electronic warfare requires state-of-the-art radar and data processing instrumentation. It is also the case that ECM devices may be less effective in duplicating the signatures of larger ships than those of smaller ships, and indications are that progress in the branch of electronics that favours missiles is at least as rapid as in the branch that seeks to produce effective counters to them. Moreover, in its decoying modes, electronic warfare can have serious side effects: in the Falklands the *Atlantic Conveyor* was sunk by missiles aimed at a warship. The intended target had distracted them — and deflected them — with chaff. This difficulty could be a significant drawback for ships travelling in company.

THE LESSONS OF THE FALKLANDS

The significance of the war

Argentina's invasion of the Falkland Islands on 2 April 1982 sparked off the most important naval operation since the Korean conflict thirty years earlier, providing experts with a host of lessons about naval tactics and equipment. The two sides employed a range of modern weaponry which until then had never been used in operational conditions, although it had been tested, and whose ability to perform in combat therefore remained largely a matter of conjecture.

The impact of submarines

The first shot ever fired in anger by a nuclear submarine was off the Falklands, when H.M.S. *Conqueror* sank the Argentine cruiser *General Belgrano* despite the fact that the latter was screened by two destroyers. Thereafter, the Argentine fleet was effectively bottled up in harbour. Although Argentina possessed an aircraft-carrier and some modern ASW vessels, including two British-built type-42 destroyers, the dangers posed by the presence of British nuclear attack submarines were considered too great to allow them to sail.

Argentine submarines are also known to have been a source of serious concern and discomfort to the commanders of the British task force especially until all the land forces were put ashore: the *Santa Fe* was caught on the surface during the British attack on South Georgia, but another Argentinian submarine continued to pose a threat. A report of the U.S. Department of the Navy indicates that an Argentinian German-built type-209 diesel-electric submarine "was at sea, at times in the area of the British force, for an estimated thirty-six days . . . (and) survived all British ASW efforts" in spite of "a large number of ASW weapons being expended."¹

The impact of missiles

Missiles, shipborne and air-launched, were awesomely effective. Of the seventy-two Argentine aircraft hit in action against the task force and its ground

¹ *Lessons of the Falklands: Summary Report*, Department of the Navy, Washington, D.C., February 1983, Section 3.C. (The 209's main torpedo fire control was not operational and the back-up panel improperly wired, causing all torpedoes to be fired on incorrect bearings, according to Section 3.Q. of the same report.)

forces,² sixty-one (or 85 per cent) were shot by missiles, including twenty-one (or fully 29 per cent) by shipborne missiles. Two of the Exocet attacks on the task-force scored lethal hits — one sank the *Sheffield* and another destroyed the *Atlantic Conveyor* (with two missiles intended for a warship).³ A third damaged, but did not sink, the *Glamorgan*. Although the damage inflicted in at least one instance is said to have been due to the missile's fuel, not its warhead (which did not explode), the Exocet had a clear and marked impact on operations. Indeed, it is said to have forced the task force to modify its tactics, "obliging the aircraft-carriers to be maintained during most of the daylight hours to the east of the Falklands where they were virtually out of range of Argentine aircraft",⁴ which seriously limited the patrol time of Sea Harriers.⁵ Nonetheless, the fact that "chaff was extensively and successfully used" against the Exocet⁶ suggests that appropriate ECM devices can help to ensure that missiles do not have it all their own way.

The role of aircraft and air defence

The loss of six British ships to air attack and the damaging of at least ten others⁷ underlines the need for effective air defence of surface vessels, including means of detecting aircraft at long-range, air cover capable of intercepting incoming aircraft at a distance, area- and point-defence against aircraft and missiles, and electronic countermeasures. Without such capabilities, surface units are highly vulnerable.

The British paid dearly for their lack of airborne early warning aircraft; the insufficient range, armament and payload of their fixed-wing aircraft; and the limited performance of the radars aboard their ships and aircraft. Meanwhile the Argentine air force demonstrated that even old aircraft carrying old-fashioned inertial ordnance can inflict serious damage on inadequately protected surface vessels if the pilots are ready to pay the price for their daring. The importance of adequate anti-aircraft defences, in the form of air cover and close-in, point- and area-defence against both aviation and missiles, can hardly be overstated.

Among the other types of naval equipment which received their baptism of fire in the Falklands, the Harrier vertical take-off and landing (VTOL) fighter aircraft was outstanding, especially in the air defence role. Its achievements have given new impetus to British and U.S. studies on providing air cover for convoys from container ships modified to carry VTOL fighters.

² Including those hit on the ground, a total of 117 Argentinian aircraft are estimated to have been destroyed; *The Falklands Campaign: The Lessons*, London, Cmnd. 8758, report of the British Secretary of State for Defence, presented to the British Parliament December 1982, Annex B, note 3, p. 45.

³ *Ibid.*, para. 119. See also *The Falklands Crisis*, a report of the Assembly of Western European Union Document, 8 November 1982, para. 6.18.

⁴ *The Falklands Crisis*, *op. cit.*, para. 6.16.

⁵ *The Falklands Campaign: The Lessons*, *op. cit.*, para. 228.

⁶ *Ibid.*, para. 229.

⁷ *Ibid.*, para. 218. (See also *Lessons of the Falkland: Summary Report*, *op. cit.*, p. C. 1)

Although not themselves new to warfare, helicopters proved their adaptability in a variety of roles including anti-submarine warfare, anti-surface warfare, logistics, search and rescue, casualty evacuation, reconnaissance and support. They were also employed, or readied for employment, in a number of innovative capacities. Helicopters are said to have been used, for example, to deflect the Exocet threat. Unfortunately for the task force, it was a week after the end of the shooting war that technicians finally succeeded in modifying the Sea King helicopter to take the long-range radar of the Nimrod aircraft. The modified Sea King could have provided the task-force with the airborne early warning (AEW) capability it so sorely missed (and now to be added to British aircraft-carriers as a result of the Falklands experience).

Ship design

Naval architects also learned something from the Falklands experience. Early newspaper accounts of the role played by aluminum in the fires that swept British vessels appear to have been somewhat exaggerated, and the British Ministry of Defence has stated unequivocally that "there is no evidence that (aluminum) has contributed to the loss of any vessel".⁸ Nonetheless, the weakness of this metal in superstructure had been recognized for some time. What was far more devastating was the use, in the thousands of kilometers of electronic and electrical cable in the ships, of sheathing which was not sufficiently fire-resistant and which, once alight, gave off copious quantities of smoke and toxic flames, thus hampering fire-fighting efforts. The sinkings underlined the great attention which must be given to compartmentation and to damage-control equipment and systems.

Support systems and arrangements

As Vice-Admiral H.A. Porter (retired) reminded the sub-committee, after a campaign like the Falklands the amateurs examine the tactics employed whereas the professionals concentrate on an analysis of the logistics.⁹ He described the logistics support of the Falklands campaign as "remarkable".¹⁰

The Falklands crisis underscored pointedly the vital importance of legislative and other arrangements allowing a government to call upon civilian resources in situations short of war. The British Prime Minister, Margaret Thatcher, gave instructions to assemble and dispatch the task force at a time when she thought war could be avoided — at any rate long before hostilities broke out in earnest. Of the more than 110 ships eventually deployed, 45 were merchant ships, compared with 44 warships and 22 auxiliaries; and these merchant vessels transported 9,000 personnel, 100,000 tons of freight and 95 aircraft. The supply train carried 400,000 tons of fuel.¹¹ The merchant ships, or ships taken up from trade (STUFTs), were assembled in from four to five days. Their civilian crews were all

⁸ *Ibid*, para. 220.

⁹ *Proceedings of the Senate Sub-committee on National Defence*, 22 March, 1983, p. 43:9.

¹⁰ *Idem*,

¹¹ *The Falklands Campaign: The Lessons*, *op. cit.*, para. 107.

volunteers. The British had the resources and a plan to mobilize them. As the report of the British Ministry of Defence states:

The smooth and rapid implementation of existing contingency plans to use merchant shipping . . . was a major success story of the Campaign. Some 45 ships . . . taken up from trade, from passenger liners to trawlers . . . , provided vital support across the entire logistic spectrum. Tankers carried fuel for ships, aircraft and land forces. Liners such as the QE2 and Canberra, and ferries gave service as troop carriers. Cargo ships, such as the Atlantic Conveyor, carried helicopters, Harriers, heavy equipment and stores. Other vessels were taken up as hospital ships, repair ships or tugs. All . . . were manned by volunteer, civilian crews, supplemented by small Naval or RFA parties.¹²

The critical role played by civilian assets in the Falklands may be among the most important lessons of the campaign for Canada, because of the limited resources this country is willing or able to devote to defence.

Other lessons of the Falklands

The need for a demonstrated resolve is another lesson which Canada would do well to take to heart. Most observers agree that Argentina would not have invaded the islands if Britain had continued to maintain a naval presence in the area, in the form of a frigate or perhaps a nuclear submarine. Further, while Britain's remarkable success in mounting a combined operation so far from her own shores has been duly noted, the fact that a small nation possessing only limited military resources could come close, at sea at least, to defeating a ranking global power and the third major fleet in the world should not escape Canadians.

Finally, there is the lesson of the failure of the planners. Following its June 1981 white paper on defence, Britain had begun to dismantle precisely the kind of fleet needed to fight limited conventional engagements. It has been argued with some persuasiveness that, had Argentina waited a further six months or a year before invading, the British government would have experienced difficulty in assembling the task force it needed. However, this kind of experience with defence planning is certainly not unique to the British. In his comments to the sub-committee, VAdm Porter observed that predicting the future is a risky business:

Planners do the best they can, but as you are well aware, predicting the future from a military viewpoint is an almost impossible task. About the most certain thing you can say is that the future will not unfold in accordance with the plan. The last conflict in which the Canadian Navy took part was the Korean War. That war was not foreseen in the defence plan of that time. It called up requirements such as naval gunfire support and interdiction which were not in the plan. Fortunately our ships had the capability to respond.¹³

Given the limitations of planners' powers of clairvoyance, Canada should ensure that the future capabilities of its maritime forces are not determined by the requirements of a single scenario. By making balance and flexibility — a capacity to contend with the unexpected — key elements of fleet planning Canada will be better positioned to respond to whatever eventualities arise.

¹² *Ibid*, para. 246 (emphasis added).

¹³ *Proceedings of the Senate Sub-committee on National Defence*, 22 March, 1983, p. 43A:4.

THE PURPOSE OF MARITIME FORCES

Defence commitments

In the 1971 white paper on defence, *Defence in the 70s*, the commitments of the Canadian Armed Forces were listed as the protection of Canadian sovereignty; the defence of North America; contributing to the North Atlantic Treaty Organization; and peacekeeping. In the twelve years since the defence white paper was published, nothing has happened to render any of these general commitments inappropriate. Indeed, nothing indicates that Canada may soon be able to abandon any of them.

To a large extent, the four commitments can be seen as a continuum. Peacekeeping operations may prevent a situation from growing into a general conflict which would present a direct threat to Canada. The contribution Canada makes to NATO serves to provide forward defence of its territory, institutions and way of life, together with guarantees of assistance in the event of a direct threat to this country or continent. Contributing to the defence of North America helps to maintain the deterrent capability of U.S. forces and to extend their defensive umbrella over Canada in a form and a fashion consistent with Canadian sovereignty. As for the protection of Canadian sovereignty, it is simply the basic element of the total defence effort.

However, commitments provide only broad indicators of what the armed forces are expected to do. They also need up-to-date priorities and tasking instructions. The problem is that the world has changed since 1971 and military technology has gone through a revolution. The tasking of the Canadian Armed Forces is, nonetheless, still predicated upon a 1971 assumption, dubious today and perhaps seriously inaccurate twenty years hence, that: "the only direct external military threat to Canada's military security today is that of a large scale nuclear attack on North America".¹ It was a short step to the further assumption that defence, unlike protection of sovereignty, would always be conducted in conjunction with allies — primarily with the United States through NORAD, and secondarily with NATO.

Of course, the authors of *Defence in the 70s* recognized that Canada needed the capacity to perform certain sovereignty-protection duties without foreign assistance. But they failed to acknowledge that the assertion of sovereignty

¹ *Defence in the 70s*, *op. cit.*, p. 25.

embraced distinctly military as well as police-like functions when they stated, under the heading "Protection of Canada", that:

... the two principal aspects of this role for the Forces are surveillance and control. Surveillance requires detection and identification to obtain information on what is happening on Canada's land mass, in her airspace and on and under her coastal waters; control implies appropriate enforcement action to ensure that laws and regulations are respected.²

It is the view of the sub-committee that the commitment to the protection of Canadian sovereignty involves at minimum, in the case of MARCOM, ensuring that Canada can exercise jurisdiction over its waters in peacetime, successfully assert its control when confronted by a probing show of force, and deter the kind of opportunistic military adventures fostered by absence of a defensive capability.

Sovereignty is more than a concept to be repetitively proclaimed. It must be continuously asserted and exercised in tangible and visible fashion. Canada's geography dictates a need for these efforts, particularly in the Arctic and on the country's extended sea frontiers along the east and west coasts. Through inertia, encroachments on sovereignty can easily be invited from friend or foe. Canada's strategic geographic position, for example, virtually guarantees that if Canada were to be unwilling or unable to provide in some measure for its own defence, the United States would be obliged to fill that vacuum at the expense of Canadian sovereignty.

Even for a member of an alliance, it is dangerous, in providing for national security, to presume that the nation will never be called upon to act on its own in defence of its interests. Self-defence should always be the first consideration and should be provided for to the extent that resources permit and the competing demands upon them allow. The government may also decide that the surest or most cost-effective way of defending the security of the nation is through collective defence agreements. For lesser powers, such as Canada, it may well be normal to rely heavily upon alliances. Trade-offs between optimal self-defence arrangements and optimal collective defence arrangements may have to be made in favour of the alliance. Never, however, should the country lose sight of the fact that a trade-off is taking place. To operate otherwise is to risk leaving the nation defenceless.

Because the first item in the current list of commitments of the Canadian Armed Forces, the protection of Canadian sovereignty, has been narrowly interpreted to include only police functions, the sub-committee recommends that it be recast so as to include specific reference to the defence of Canada.

Priorities in 1971

The white paper of 1971 provided many indications of the government's thinking about maritime defence priorities at that time. Pride of place was accorded to the protection of Canadian sovereignty, and it was thought likely that

² *Ibid*, p. 17.

the Department of National Defence might have to increase its activities in surveillance of the Canadian north, the detection of submarine activity in the Arctic and the control of Canada's offshore waters. The Argus long-range aircraft, the Tracker, and other existing maritime forces were to carry out these tasks for the time being, but the white paper also left open the possibility of acquiring a new long-range patrol aircraft in due course; indicated that it might be desirable to increase submarine detection capability in the Arctic; and discussed the eventual purchase of hydrofoils, fast patrol boats and air-cushion vehicles for surveillance and control operations.

Canada's contribution to the maritime defence of North America was to be made by the twenty destroyers, three support ships, four submarines and several air squadrons available at that time, the white paper indicated.³ However, the navy would shift its focus away from "anti-submarine warfare directed against submarine-launched ballistic missiles"⁴ and towards other maritime roles. These other roles were not specified, but *Defence in the 70s* stated:

The Government believes Canada's maritime forces must be reoriented with the long-term objective of providing a more versatile capability. Versatility is required because it is not possible to be certain precisely which maritime activities will be required and which will not, in the years ahead.⁵

The sub-committee points out to Canadians that the long term has arrived but the versatility has not.

The white paper dealt with Canada's commitment to NATO's maritime defence in general terms only. The Canadian government would continue to contribute to the maritime defence of the Alliance, it indicated, and to earmark ships, aircraft and submarines for assignment to NATO in the event of an emergency. Also Canada would continue to provide ships for NATO's Standing Naval Force, Atlantic (STANAVFORLANT). The ships and aircraft involved in these NATO tasks would be the same twenty destroyers, three support ships, four submarines and several Argus and Tracker squadrons then employed for the protection of Canada, the defence of North America and other tasks.

The maritime contribution to peacekeeping was not specifically mentioned in the white paper, but Canada's naval forces had already been involved in the transportation and support of several peacekeeping forces by 1969, and the expectation was that this experience would be repeated if circumstances called for it. Shipment of troops and supplies in the three fleet support ships, for example, was an obvious possibility. There seems to have been no question of acquiring any specialized ships for peacekeeping operations.

³ *Ibid*, p. 27. These ships and aircraft were to be multi-tasked to carry out surveillance and control duties, NATO responsibilities and peacekeeping when necessary.

⁴ *Ibid*, p. 28.

⁵ *Idem*,

Current tasks of MARCOM

(a) The description of tasks.

Defence in the 70s did not discuss Canada's maritime activities or requirements in terms of military tasks. An exact list of tasks could be elaborated only once the main lines of defence policy had been decided and laid down. After 1971, the Canadian government identified fifty-five major tasks for the armed forces, some of which required contributions from all elements — land, sea, air, communications and others — whereas the remainder tended to be the responsibility of one particular service. A very recent revision in fact lists fifty-six operational and eleven miscellaneous tasks. The new document appears as appendix A. The addition is "to prevent the outbreak or spread of hostilities in areas of tension" (task 14.01). Otherwise, the wording of the tasks has remained essentially unchanged from the earlier version which the sub-committee received.

The relationships between the 1971 defence commitments and the later military tasks are evident and provide a useful framework for judging present performance against the government's earlier statements and intentions. Appendix B describes the relationships between commitments and tasks in chart form.

(b) Problems of form.

It is disturbing to the sub-committee that the list of tasks has remained classified until recently. This is the first parliamentary report on defence to benefit from knowing what the tasks are. Large sums have been voted by Parliament for defence in recent years, yet until now Parliament has never had a precise idea what those dollars were intended to accomplish. Now that the catalogue of tasks has been released it is perhaps even more disturbing to discover an undifferentiated list which sets no order of importance or priority among the various duties. Equal emphasis is given, for example, to providing "a Canadian presence abroad by operational, informal and formal visits in foreign countries" (4:09), locating and neutralizing "mines laid in Canadian waters" (9:01) and supporting "community activities such as St. John's Ambulance, Red Cross and recreational programs" (6:02). Moreover, the mere identification of tasks is no guarantee that they will be translated into action. As the document received by the sub-committee states, "The existence of a task does not necessarily mean that the department has been able to assign resources to the task."

To be useful, the document should be more than a list that provides no performance criteria; no description of the equipment and other resources allocated to, or available for, the performance of tasks; and little indication of divisions of responsibility among government departments. It should, for example, specify the lead department in cases such as responding to fishing violations, which involve other government agencies besides the Department of National Defence. It should describe available military resources, as well as the military support capabilities of other government departments. The absence of such information makes it difficult to judge whether or not the department can, in fact, carry out its assigned tasks.

As a final comment on form, it should be noted that the tasks are not organized in a way which easily permits MARCOM to take into account, when estab-

lishing performance criteria and identifying available resources, the radically different conditions and requirements on each of Canada's three coasts, not to mention the various NATO areas. The list of tasks should be related as closely as possible to these realities of geography and equipment, which affect naval operations profoundly. Moreover the separate identification of tasks by coast, when coupled with a description of available resources, would emphasize the duty to offer adequate protection to all three — Atlantic, Pacific and Arctic — and would reduce the possibility of one or another being neglected. The current lack of differentiation in the list of tasks, together with DND's custom of aggregating the tally of available resources, means that declining capability in one area, or a shift in resources is not readily apparent.

(c) Problems of content.

Turning to content, the sub-committee is disturbed by the apparent lack of inclination to include military input into the design and purchase of vessels and aircraft for non-military government fleets. A glaring gap in the list is the absence of any reference to the task of identifying other governmental and private-sector resources which could be employed by the military or adapted to military use in time of war. Nor is there any reference to planning for the mobilization of such resources. It may be that the task of providing "a mobilization capability" (10.06) is designed to cover all of these matters; but if it is, it is expressed far too vaguely.

Perhaps even more disturbing is the fact that the list makes no precise reference to Canada's need for a capability to defend itself under certain circumstances. For example, the document does not seem to envisage situations short of a major East-West conflict or situations in which the U.S. would not be involved as an active ally. There is no clear reference to the task of sea-denial in Canadian waters, for example. Where there is reference to a purely Canadian military task — locating and neutralizing mines — all evidence points to the conclusion that Canada does not have the necessary equipment.

The description of tasks calls for MARCOM to "escort the seaborne elements of the CAST (Canadian Air/Sea Transportable) Group to Northern European waters" (task 10.20). That commitment poses a number of serious problems for MARCOM. If movement was authorized in a crisis period, before the start of hostilities, then the activities of the CAST force could very well add to the tension and heighten the danger of an outbreak of war. If Canada waited until it was politically acceptable to send the force, then it might not be possible to get it underway before the Warsaw Pact launched an assault on North Norway — which would entail the cancellation of the operation since the government has indicated that it would not send the CAST force after hostilities had broken out. Alternatively, the force might be under way but not have completed its movements by the time of a Warsaw Pact attack and could thus be caught in an exposed situation, in some region such as the Norwegian Sea. Losses to personnel, transports and escorts could be extremely heavy.

An additional problem with the CAST commitment is the difficulty of evacuating the force by sea. If this became necessary, very heavy losses might be sustained. Also, there is currently a shortage of suitable escorts. Present plans for ship replacement mean that it will be at least 1992 before Canada can hope to assemble a force of seven to ten vessels competent to escort the CAST ships (in

the sense of providing reasonable protection and being themselves capable of survival in a hostile multi-threat environment). The difficulties and dangers of the naval aspect of this operation together with other problems inherent in the CAST commitment mentioned in *Manpower in Canada's Armed Forces*,⁶ lead the sub-committee to suggest that the government should consider complete pre-positioning of equipment and complete reliance upon air transportation for personnel if the CAST commitment is to be maintained. This would seem to be the least costly way of fulfilling the CAST requirement in terms of capital expenditures and, conceivably, lives.

The sub-committee reiterates the recommendation from its first report that the entire question of the CAST commitment should be re-examined by Canada in consultation with Norway, the other allied governments and Alliance military commanders.

The provision of close protection for convoys, an element of task 10.01, also requires discussion and will be examined at some length in the context of equipment requirements in the following chapter.⁷

(d) A sounder approach.

To summarize, the sub-committee found the list of defence tasks to be inadequate both in form and in content. It urgently needs revision. Obviously the blame for what ails Canada's maritime forces cannot be laid entirely at the doorstep of the list. Years of inadequate funding, failure to identify military needs and insufficient building programmes are mainly responsible. Nonetheless, revising the list of tasks would be a step in the right direction.

The sub-committee recommends that the Description of Military Tasks, which provides the framework for the daily operations of the Canadian Armed Forces, be reformulated immediately so as to give appropriate emphasis to the defence of Canada; to clarify priorities; to show performance criteria; to indicate dedicated resources; and to identify their geographic distribution.

It is logical to assume that, from time to time, the order of priority amongst the various tasks will change. The significance attached to each task will also vary over time, with changes in the government's assessments of strategic, technological, financial and political circumstances.

Cumulatively, and even individually, such changes might have substantial policy implications. For example, in testimony before the sub-committee, a senior military officer listed six maritime missions. One of them was "to contribute maritime forces to international arrangements in order to prevent or contain conflict outside the NATO area".⁸ Preparedness for this sort of role may well make

⁶ *Manpower in Canada's Armed Forces, first report of the Sub-committee on National Defence of the Senate Standing Committee on Foreign Affairs*, Ottawa, 1982, ISBN 0-662-51761-X; See in particular pp. 19-20.

⁷ See Chapter VII, page 73.

⁸ *Proceedings of the Senate Sub-committee on National Defence*, 9 March, 1982, pp. 23:7-10.

sense in today's world. However, it represents a change from the policy set forth in *Defence in the 70s*, and the description of tasks does not mention it — unless the new task cited earlier (14.01) is meant to refer to it.

Such shifts are of sufficient importance to demand a formal statement of policy and debate before being assigned as missions to the armed forces. They should be subject to acknowledgement and defence by the government, not slipped in the back door as the consequence of a series of ad hoc decisions taken away from public view. If the Canadian people are to provide adequately for their defence, then they, and their representatives in Parliament, must be regularly furnished with such information. Therefore,

In order to enhance public understanding of defence requirements and to strengthen parliamentary control over defence expenditures, the sub-committee recommends that the Description of Military Tasks in its new and more comprehensive form be revised at the beginning of each new Parliament and tabled for reference to the relevant committees of both Houses.

If this were done, national attention would be focussed at regular and reasonably brief intervals on a major, well-structured debate on defence matters in the Parliament of Canada. Who can remember the last one? Moreover, in anticipation of the debate, or in response to it, each of the national political parties would be obliged to develop a defence policy. No longer could they treat defence as an awkward matter to be swept under the rug or, at best, left to the attention of a corporal's guard of interested parliamentarians. For all of the foregoing reasons, the Sub-committee considers that the two immediately preceding recommendations may well be among the most important contained in this report.

MARCOM's ability to carry out its current tasks

One of the main criticisms of the government's approach to defence is that it has not made a serious effort to implement the policies it has adopted. On this point, after examining the evidence before it, the sub-committee concluded in its first report that: "The current state of Maritime Command reflects the government's obvious uncertainty about present naval commitments and failure to maintain the credibility of the fleet through the addition of new ships dedicated to realizable objectives."⁹

This judgment reflects assessments of Maritime Command's ability to perform several of its main tasks, including some which have to be carried out in peacetime and others which would arise only in wartime. For example, for the tasks of sovereignty surveillance and control, MARCOM still has none of the modern patrol vessels heralded in the 1971 white paper. For this work it has to rely on its destroyers which are too few in number and cost-effective for such duties only if the sovereignty tasks are seen as incidental and ancillary. Nor has provision been made for arming suitable vessels from other government fleets so that they could assist MARCOM with sovereignty duties when necessary.

The failure to provide MARCOM with additional equipment designed for the purpose of sovereignty surveillance and its related wartime tasks becomes truly

⁹ *Manpower in Canada's Armed Forces, op. cit.* p. 25.

baffling when the enormous additions to Canada's maritime jurisdictional claims since publication of *Defence in the 70s* are taken into account. L. A. Willis of the Department of Justice described them in the following terms:

The 12-mile territorial sea . . . was extended from three miles (in 1970). Landward of the headland baselines (there are) pockets of internal waters where Canada's sovereignty is complete. In addition (there are) a number of areas where Canada has special historical claims . . . (among them) Hudson Bay, the Gulf of St. Lawrence and the waters of the Arctic Archipelago . . . (and the) Bay of Fundy as well . . . in the case of the territorial sea, our sovereignty is absolute in general and subject only to the right of innocent passage . . . Moving seaward . . . Canada exercises sovereign rights over the seabed under the continental shelf . . . convention (1958). . . the new definition of the continental shelf, as worked out in recent negotiations (and embodied in the recent *Canada Oil and Gas Act*), incorporates as a minimum limit for the continental shelf . . . the 200-mile limit. It also permits Canada to exercise continental shelf jurisdiction beyond the 200-mile limit where the actual physical characteristics of the seabed indicate that there is a natural prolongation of Canadian territory beyond that limit . . . (for example) on the east coast . . . beyond 400 nautical miles . . .

. . . (another) special category of offshore jurisdiction . . . is a specialized one for pollution and environmental control purposes only. (It covers a) . . . 100-mile belt of Arctic waters . . . from any point of the coast north of the 60th parallel . . . (Including the coast of islands north of the 60th parallel.)"¹⁰

To provide the measure of surveillance and control over Canada's coastal economic zone that is necessary to the exercise of sovereignty in peacetime, the nation has at its disposal the vessels and aircraft of two government departments besides those of the Department of National Defence. Fisheries and Oceans has fifty-six fisheries inspection and scientific vessels of significant size. At Transport Canada, the Coast Guard has approximately fifty such vessels and thirty-four helicopters. Of these, many are not capable of operating out to the two-hundred-mile limit. Only ten in the fleet of the Department of Fisheries and Oceans and thirty-seven in the Coast Guard can do so. Many others are so highly specialized in design that their utility would be marginal in surveillance and control operations. None are armed. None are fitted for arms. Nor have any been designed with a view to facilitating the fitting of arms. Over the course of a year, about 20 to 25 per cent of these vessels are unavailable because of maintenance, refits and repairs.

Backing up the two civilian departments in the exercise of sovereignty in peacetime are the twenty operational destroyers, three submarines, three operational support ships, six former minesweepers used as training vessels, a diving support ship, and the eighteen Aurora, eighteen Tracker and thirty-five Sea King aircraft of MARCOM, as well as a mix of smaller naval auxiliary vessels. Up to 25 per cent of this modest force is in maintenance, refit or repairs at any given time — as is the case with most navies.

These are the same few vessels and aircraft which carry the responsibility for patrolling the huge areas of ocean assigned to Canada by her alliances. Additionally, continuing commitments such as STANAVFORLANT, national, Canada-

¹⁰ *Proceedings of the Senate Sub-committee on National Defence*, 23 February, 1983, p. 21:26-29.

U.S. and NATO exercises, specialized training and maintaining a Canadian presence abroad diminish the number of units readily available for sovereignty surveillance.

Only just able to cope with normal requirements, the three major fleets maintained by the Canadian government become stretched almost beyond capacity in exceptional circumstances, such as when larger than usual numbers of foreign fishing vessels are found in the waters adjacent to Canada's. This leads to a situation where the only possible way to respond seems inappropriate. In a recent West coast incident, for example, a destroyer was the only armed vessel available (there are no other armed vessels on the west coast) to assist in the arrest of some narcotics smugglers in a small boat. In much of the vast Arctic, the only Canadian presence is provided by the infrequent and brief appearance of one of the over-extended force of eighteen long-range patrol aircraft (LRPAs). Each year a total of approximately sixteen sets of missions, each about three to four days long, are flown over the north.

What is barely adequate in peacetime becomes, by any measure, wholly inadequate in wartime. Not counting three old, mothballed destroyers, MARCOM has only twenty-three combat vessels to patrol the huge ocean area for which it is responsible. There are three submarines and twelve helicopter-carrying destroyers on the east coast, and eight destroyers (none of which carry ASW helicopters) on the west coast. Four of the west coast destroyers are employed in a training role. There are fourteen LRPAs on the east coast, and four on the west coast. The eighteen coastal patrol Trackers are currently unarmed, although thought is being given to equipping them with rockets. Again, 20 to 25 per cent of this force would probably not be immediately available.

Of the surface naval vessels, the general consensus is that only four, the DDH-280s, possess a marginal capability to survive in a multi-threat hostile environment. As observed by the mildest critic of the current state of affairs among the retired officers who appeared before the sub-committee, VAdm Porter, the others "could only be used in the western Atlantic at this point, because they are . . . unable to defend themselves . . . against missiles."¹¹

RAdm Martin had previously stated:

. . . in the Atlantic, four of the destroyers . . . could probably do a reasonably effective job; but do not be misled. These ships are at least a generation behind in their capability. The other helicopter-destroyers are so old that all they are really providing is a command and control centre and a deck from which a . . . helicopter can operate. In the Pacific, the situation is even worse. The four improved Restigouche class destroyers will have some ability to survive, and I put it that way intentionally. However, the Mackenzie class will not only be in danger but a liability to the Commander.¹²

Only the four DDH-280s are equipped to handle a modern air threat — and that capability is marginal because it does not include an effective anti-missile system. None of the surface vessels could deal with a modern surface threat, nor

¹¹ *Ibid*, 22 March, 1983, p. 43:15.

¹² *Ibid*, 8 February, 1983, p. 38:24.

does Canada possess any aircraft with an anti-surface capability. There is not a surface-to-surface or an air-to-surface missile to be found among them. The three East coast submarines would be dangerous to a surface intruder, but they lack modern torpedoes and do not carry sub-surface-to-surface missiles.

In ASW action, if not simultaneously confronted with an air threat or submarine-launched missiles, the East coast surface units, equipped with helicopters, could probably give a good account of themselves. The West coast units, which cannot operate helicopters, are less likely to be able to deal with modern submarines. Except for the DDH-280s, virtually all the remaining vessels on both coasts have reached or exceeded their design life span, while the helicopters they carry are twenty-five years old. Destroyer life extension (DELEX) refits, when completed, in 1986, will reduce the likelihood of break-downs and modestly enhance the capabilities of a few of the older steam-driven destroyers, but the force is still a pretty thin reed. The submarines would be useful in ASW, but, again, lack a modern torpedo.

The Auroras, in contrast, are state of the art. All testimony about their capabilities was highly enthusiastic, and most witnesses seemed to agree with VAdm Timbrell who, if forced to choose, "if . . . only allowed one item . . . would pick the long range patrol aircraft" because of its flexibility.¹³ However, three caveats were invariably entered. First, these aircraft have no capability to defend themselves against an air threat and no means of attacking surface targets. "Vital components such as the air-to-surface missile have not been provided."¹⁴ Second, they are too few in numbers: "The Aurora is an excellent aircraft but is available in ridiculously low numbers," RAdm Hughes noted:

. . . if one Aurora is grounded, for whatever reason, 25 per cent of air ASW resources on the west coast are lost. It is a rare day when more than two Auroras are fully mission capable . . . Canada, with 59,000 coastline miles, has 18 Auroras; the Netherlands, with 228 coastline miles, has 13 P3-Cs; Japan, with 5,500 coastline miles, has 130 P2s and S2Fs, 45 P3-Cs on order, and 40 to 50 more P3-Cs planned.¹⁵

Third, they are encountering spare parts problems: John Killick, Assistant Deputy Minister (Materiel), at DND had previously confirmed that "we have difficulties with the Aurora. We have met our flying hours . . . but with some difficulty. It will take us about another year before we have completely corrected the situation."¹⁶

Despite a highly specific reference to mine-countermeasures in the description of tasks, Canada has no MCM vessels or aircraft. If forced to deal with the mining of harbours or harbour approaches, the only force MARCOM could deploy would be divers carrying hand-held sonars.

It has taken eighteen years to reach the current level of incapacity. On 15 January 1965, there were forty-five major warships, frigate-size and above, in

¹³ *Ibid*, p. 38:16. (See also p. 38:28).

¹⁴ *Ibid*, 22 March, 1983, p. 43:26.

¹⁵ *Ibid*, p. 43:24.

¹⁶ *Ibid*, 15 March, 1983, p. 42:23.

commission and ten minesweepers. By December 1967, the number of major warships had dropped to thirty-nine. By 1971, there were only twenty-five, and the only aircraft-carrier had been paid off. In 1975, the number rose to twenty-six, including the three operational support ships. It has remained constant since then — but there are no longer any mine-countermeasure vessels. No new major vessels have been commissioned since 1972. The fleet is aging.¹⁷ All this has taken place during a period when, as chapter II demonstrates, Canada's current most likely foe, the USSR, has not only almost totally replaced its fleet but has also significantly increased its capabilities.

Commodore R.I. Hendy (retired), in commenting on this general situation before the sub-committee, made the following observations:

... the Navy of the Soviet Union has expanded from virtually a coastal defence force to a blue water navy deploying major units in every ocean of the world, a development that has put it on a par or superior in some ship categories, with the noteworthy exception of aircraft carriers, with the NATO navies. This build-up has given the Soviets the capability to gain local naval superiority pretty well wherever they choose, given the advantage of being able to select the time and place ...

... what has been the experience of those who served in our Naval Forces? ...

... the Chief of the Naval Staff in 1964 advised a committee of the House of Commons that we then had a commitment to provide 42 escort vessels, which at that time were some of the St. Laurent class destroyers and several wartime built destroyer and frigates still under 20 years old. I presume that this was a serious commitment not only to our own defences but in support of our allies. Is there any record that our allies ever suggested this commitment be reduced? Certainly, if we measure the greater responsibilities we have undertaken by reason of the 200 mile economic zone as well as the developments in the far north, even with no change in the direct military threat, there is a greater naval task to maintain sovereignty in these areas. We have recently seen how a province lost its sovereignty over off-shore resources by failure to assert it, and I submit the same principles apply in the international field. Accordingly, how can we say we meet our commitments today, particularly in the Atlantic, with barely 12 escorts, not overlooking that 20 years ago we also operated an aircraft carrier which had a substantial capability for surveillance and anti-submarine warfare. Considering how the submarine threat has increased, the removal of this ship from our Naval Forces represents a serious reduction in over-all capability.

Again reverting to our 20 year comparison, in 1962, we were able to provide an effective back-up for the U.S. Navy when it moved south to confront the Soviets off Cuba. Last year, we would not have been able to perform a similar function for the British when they had to divert a substantial part of their escort forces to the Falkland Islands.¹⁸

RAdm Hughes provided a graphic illustration of Canada's current incapacity.

A prime example of the Russian qualitative improvement was provided in the fall of 1981, when a task force, consisting of a Kara class guided missile cruiser, two Krivak guided missile destroyers and a support tanker, deployed to within 70 miles of Van-

¹⁷ Figures taken from the brief history of Canada's maritime forces found in appendix C.

¹⁸ *Proceedings of the Senate Sub-committee on National Defence*, 22 March, 1983, p. 43A:14-17.

couver Island. During this deployment the task group demonstrated a significant improvement in their tactical skills from those observed in a similar Soviet deployment in 1971.

In the 1971 Soviet deployment, the Russian ships were about five years old, and the Canadian destroyer conducting surveillance duties was about eight years old. In 1981 the Soviet ships were virtually new and the Canadian destroyer observing the force was 22 years old.¹⁹

The situation on the air side is comparable. In the late-1960s there were thirty-two state-of-the-art LPRAs in service, backed up by over forty reasonably new Trackers with an ASW capability, and thirty-four almost new Sea King ASW helicopters. The west coast had fifteen of these aircraft and the remainder were on the east coast. In 1983 there are eighteen Auroras, eighteen Trackers (divested of their ASW equipment and their parent aircraft-carrier), and thirty-five Sea Kings. These helicopters are beginning to show their age. Recently, they were all grounded because of defects in the engine mounts. Only seven fixed-wing aircraft, three of them Trackers, and no helicopters are assigned to the west coast.

Not only do the numbers and quality of MARCOM's equipment call into question its ability to fulfil its tasks and meet its commitments, but the distribution of resources also raises some questions. For example NATO lists twenty Canadian escorts among its assets. Technically, as part of NATO's Canada-U.S. region, they are. However, eight of them are stationed on the west coast and, hence, in reality, are highly unlikely to be available for duties in the Atlantic, whatever NATO military commanders may hope. No Canadian government, if engaged in hostilities or confronted with the immediate prospect of hostilities, could denude the west coast of its defences, however frail they might be. RAdm Martin noted:

... when somebody says that we have committed a certain number of destroyers to NATO, everybody thinks we will be sending them all to the Atlantic. I simply point out that we have a two ocean problem now and we have a two ocean navy. We cannot ignore the fact that we have defence commitments in the Pacific which are just as binding as the ones which exist in the Atlantic.²⁰

No matter which way the issue is approached, even the most cursory examination leads to the judgement that MARCOM's capabilities fall woefully short of the requirements which the government itself has recognized.

Needed revisions to maritime defence requirements

Strategic, technological, political and other circumstances have of course changed in various respects since 1971, so that one needs to ask not only whether MARCOM can meet requirements established earlier, but also whether these requirements are the right ones for the 1980s and 1990s. Given the need for a greater focus on self-defence and taking into account the Soviet capabilities discussed in chapter I, a number of tasks which do not appear in the current list should be assigned to MARCOM. Other tasks which are on the list may be called

¹⁹ *Ibid*, p. 43:22.

²⁰ *Ibid*, 8 February, 1983, p. 38:32.

into question. The following are among the most significant but are not intended to be an exhaustive list.

There is a requirement to take control of enemy commercial, fishing and scientific vessels found in Canadian waters on all three coasts at the outbreak of war. In the case of the Warsaw Pact nations, several hundred merchant and fishing vessels pass through Canadian waters each year. As Mr. Anderson stated: "... plans would envisage, as one of the early steps to be taken in an emergency situation, the rounding up of those Russian ... vessels so that they could be brought into our ports ... some of the fishing vessels are capable of being converted into mine layers or mine sweepers fairly easily ... most of the ... merchant vessels would be used more as support ships."²¹ In the event of hostilities, it would be important to deprive an enemy of these vessels, their cargos and the trained seamen manning them. They would also have to be kept from gathering intelligence or from more overt military uses, such as sowing mines or resupplying naval vessels. Enemy vessels would have to be ordered into Canadian ports, seized or sunk.

Possessing the ability to neutralize foreign naval vessels operating in support of limited economic, political and territorial objectives or violating Canadian coastal waters (as the sovereignty of Sweden and Norway was violated in recent incidents off their coasts) is another requirement. In the former case, the purpose would be to force the dispute into resolution by diplomatic means, by demonstrating that a *coup de main* would be met, or by persuading the potential enemy that use of force would entail high risk. MARCOM should also be given the specific task of denying enemy submarines and surface warships the use of Canadian waters in the event of hostilities. In brief,

The sub-committee finds that there is a requirement for Canada's maritime forces to be equipped to perform a sea-denial role in waters over which Canada claims jurisdiction.

Of the current list of NATO-oriented tasks, as noted earlier in this chapter, there are few that Canada's existing maritime forces could perform, given the high-threat environment which would exist. Certainly none that involves operations in northern European waters could be undertaken with confidence. Northern European waters are likely to be among the most dangerous in the world, given the current dispositions of the Soviet fleet and air forces. Having seen the damage that obsolescent Argentinian aircraft were able to inflict upon modern British frigates and destroyers, one cannot be highly optimistic about the probable fate of Canada's ancient surface vessels confronted by what the USSR can put into the air.

The new CPFs and the DDH-280s after their mid-life refits, might survive in such an environment; but they are years away. Nor are the Auroras equipped with the necessary defensive armament to operate in a high air-threat environment. Obviously, if Canada is to be of any use to its European allies these capabilities must be rapidly acquired. However, simple honesty would suggest that, in the interim, Canada should cease to commit its forces to tasks involving such an environment, or limit the areas in which they would perform them.

²¹ *Ibid*, 2 March, 1982, p. 22:22.

Current tasks may have made sense fifteen years ago, when the only significant Soviet threat at sea was from submarines which had to close to use their weapons, and when Canada's surface ASW vessels were state-of-the-art and could be acquired in significant numbers on a limited budget. None of those conditions applies today.

MARCOM cannot, at present, fulfil the tasks it has been assigned in respect to NATO, nor is it able to meet most of its other commitments without entirely rebuilding the fleet. Therefore, NATO requirements should be examined in the context of the overall requirements for the new fleet, rather than allowed to completely determine the shape of the country's maritime forces.

The sub-committee recommends that the precise nature of the maritime tasks undertaken by Canada within the context of the Atlantic Alliance be subject to continuous review so as to ensure that Canada's maritime forces will reacquire the capacity to make a full contribution to NATO at sea, while maintaining their ability to act in defence of Canadian sovereignty and to contribute effectively to the defence of North America.

The ultimate threat to Canada from the sea is from sub-surface-launched nuclear missiles. At present, these are all ballistic missiles, but in the future they will include cruise missiles. Should such weapons ever be employed, events would have progressed far beyond Canada's capability to influence them. Canada has voluntarily refrained from joining the nuclear club, has signed the nuclear non-proliferation treaty and is in the process of divesting itself of the last tactical weapons equipped with nuclear warheads — all in order to avoid contributing directly to the danger of a nuclear war. These actions — and helping to strengthen NATO's conventional forces so as to reduce the Alliance's dependence on nuclear weapons — are, in the view of the sub-committee, the most effective means at Canada's disposal for dealing with the nuclear threat. For these reasons, the sub-committee is of the view that Canada should make no specific attempt to acquire a *strategic* ASW capability, but should concentrate on *tactical* ASW.

Strategic ASW consists in operations against ballistic missile submarines (SSBNs), while tactical ASW concerns operations against anti-shiping submarines. The equipment necessary to deal with SSBNs will become increasingly expensive as SSBNs increase the range at which they can strike; the depth at which they operate; and reduce the noise they make on station. Moreover, operations against strategic sub-surface forces would probably require the use of nuclear weapons. Ultimately there is a futility in attempting to seek out and destroy SSBNs on a piecemeal basis and a danger, as Professor Rod Byers pointed out, that an effective strategic ASW capability could be destabilizing.²² Despite this, if equipment acquired for tactical ASW operations were also capable of locating and tracking SSBNs, it could be employed for this purpose in peacetime, to contribute to NATO's intelligence and crisis management capability.

The sub-committee recommends that Canada's anti-submarine warfare tasks be confined to those of a tactical nature — defence against anti-shiping submarines — and only such strategic surveillance missions as can be carried out with the same equipment.

²² For a discussion of this problem, see *Proceedings of the Senate Sub-committee on National Defence*, 21 June, 1982, pp. 34:7-8; 34:16-19, 34:30-32

EQUIPMENT REQUIREMENTS

Types of maritime threats to Canada

Barring the unlikely event of some early major break-through in particle-beam or laser weapon technology, the threats that could be posed to Canada from the sea by modern naval powers thirty years hence are most likely to be the same as exist today. Weapons might become faster or harder to detect, or have longer ranges or an enhanced ability to defend themselves, but they are not likely to be substantially different in kind.

The threats from the sea Canada might have to face would include: attacks from ballistic missile nuclear submarines; attack from missiles and aircraft launched from ships; large and small amphibious operations against coastal areas or outlying installations; interruptions of shipping; and mining of harbours and choke points. Further, the normal operations of foreign commercial shipping off our coasts and in our harbours could be the cause of disasters, irritations and inconveniences. In some cases incidents of this kind could affect the health or economic well-being of Canadians, or Canada's maritime claims and jurisdiction.

Appropriate Canadian responses

As it decides which vessels it needs to respond to the various potential threats, the government has to bear in mind costs but, as VAdm Allan has suggested, to be effective in deterring threats and in countering them if called upon to do so, any weapons system purchased must be "combat capable . . . that is, capable of existing in the threat environment up to the reasonable norms of that environment . . . it must have an offensive capability that is commensurate with the same objective."¹ Building or purchasing military ships and aircraft whose sole capability would be to enforce Canada's sovereignty claims during peacetime, mainly by providing aid to other departments as requested, would leave Maritime Command without the ability to preserve Canadian interests in bilateral disputes or the capacity to make useful contributions to any alliance.

Another reason military forces should not be designed primarily with peacetime roles in mind is that the latter are most appropriately carried out by civilian agencies, with the military operating in support of these agencies and under their

¹ *Proceedings of the Senate Sub-committee on National Defence*, 27 January, 1983, p. 39:26.

direction. The tradition in Canada is to use the armed forces in domestic affairs only under exceptional circumstances and only when their assistance has been requested by civilian authorities. The sub-committee endorses this approach and would not wish to have it altered. For these reasons:

The sub-committee recommends that any equipment acquired for Maritime Command should be designed primarily with specific wartime tasks in mind. Peacetime duties could then be assigned as ancillary missions, as is now the case.

Numbers of weapons platforms are important in the effort to defend Canada's vast coastline and the approaches to North America. Coastal defence forces could provide Canada with a considerable ability to perform both these duties in the face of most threats from the sea, except attacks by ballistic or long-range cruise missiles. Nonetheless, the sub-committee rejects this option, because it is too limiting. Canada should always be prepared for eventualities in which it might need maritime forces able to operate away from home waters. Canadian naval units were involved in the Korean War and the Suez peace-keeping operation, for example.

Activities in distant waters usually entail the deployment of larger, more capable and more complex ships than required by purely coastal forces. Moreover, as a member of NATO, Canada has certain commitments to the Alliance. These commitments involve providing units capable of more than coastal defence duties. Such vessels are more costly and, given budgetary limitations, the higher the unit cost the fewer units can be built. The increased flexibility provided by more capable vessels warrants some trade-off of numbers for capabilities. However, there is a delicate balance to be struck. For example, it would be a mistake for Canada to direct all its capital investment in equipment towards weapons-platforms designed principally for the NATO role in the belief that this approach would also best serve to protect Canadian sovereignty and to contribute to the maritime defence of North America.

The determination of appropriate force levels and of the optimal fleet mix to provide a balanced and flexible force dedicated to a well-defined purpose is ultimately a judgement call. However, that judgement can be made with relative confidence if it is based upon a thorough knowledge of such critical factors as: the strengths and weaknesses of various weapons-platforms; the area which can be effectively patrolled by different weapons-platforms in a given time span; the desirable frequency of patrols in given areas; the locations where given threats are most likely to appear; the effectiveness of various weapons systems in combination; and an assessment of how many of one type of weapons-platform could compensate for the absence of another. The sub-committee cannot claim such expertise. Nor has it had made available to it by the military the results of studies of these matters — if, indeed, such studies exist. Consequently, the suggestions which follow should be considered to be indicative rather than prescriptive. Nonetheless, they are derived from the testimony of expert witnesses who have appeared before the sub-committee in substantial numbers during the past sixteen months.

Force levels and fleet mix

Apart from a statement to this sub-committee by the Minister of National Defence to the effect that Cabinet has determined a need for twenty-four frigates,² the government has never published its assessment of the desirable force level and fleet mix for MARCOM with the attendant rationale. Nor has the military's advice to the government ever been made public. Thus the sub-committee has no official target to build on (or shoot at). However, there has been a substantial amount of agreement among witnesses that the current number of destroyers, submarines and LRPAs represents about one-half of the major weapons-platforms necessary to meet current commitments. Compared to the current total of forty-one major platforms in service (twenty destroyers; eighteen Auroras; and three submarines), VAdm Timbrell suggested eighty-two,³ and Rear-Admiral N.D. Brodeur, sixty-nine to seventy-four,⁴ for example. The Department of National Defence, in a document prepared for the sub-committee, referred to the Timbrell suggestion as "a sound professional estimate of what is required" and "the minimum capable navy necessary to carry out the roles, missions and tasks presently assigned by the government."⁵

What was recommended as an appropriate mix varied considerably, but there was wide agreement as to the types necessary. All the witnesses who addressed this question suggested adding to the LRPA fleet; only one even tentatively questioned the acquisition of frigates; few questioned the need for more submarines; all wanted minesweepers; implicitly or explicitly, all stressed the requirement for balanced maritime forces. Some witnesses referred to a requirement for fast patrol vessels and coastal patrol aircraft. A closer look at some of the functions to be performed will provide guidance in ranking the relative importance of each type and determining the numbers required of each.

(a) Sovereignty protection.

Sovereignty surveillance and control is of prime importance. Any increase in the numbers of combat capable units available to MARCOM for wartime duty will simultaneously increase its capability to handle peacetime sovereignty tasks. It should be kept in mind that even if the wartime role of these units might not call for such weapons, the peacetime role does mean, for example, that surface vessels should have a small-calibre gun, and aircraft cannon or rockets in case a demonstration of force is needed.

(b) Anti-submarine warfare and convoy duty.

Possession of a substantial anti-submarine warfare capability will remain a high priority for three reasons: to deny an enemy the use of Canadian waters; to maintain sea control in conjunction with U.S. forces for the protection of North America; and to establish sea-control as embraced in NATO strategies. Canada

² *Ibid.*, 19 April, 1983, p. 44:8.

³ *Ibid.*, 26 May, 1981, pp. 18:12-13.

⁴ *Ibid.*, 9 March, 1982, p. 23:18.

⁵ DND memorandum to the Senate Sub-committee on National Defence entitled "Senate Sub-committee on National Defence, Vice-Admiral Timbrell's Fleet proposal", May 1983.

may, however, wish to de-emphasize the task of providing close (as opposed to distant) escorts for convoys.

The sub-committee believes this task should be re-examined for two separate but closely related — indeed mutually re-inforcing — reasons.

The first concerns the capital cost of providing the numbers of surface escorts demanded by the close escort role. Of the weapons platforms which Canada might consider purchasing, the patrol frigate is undoubtedly the most expensive. For the same price as a patrol frigate, with no account taken of the cost of its helicopter, more than two modern, conventionally powered submarines or nearly eight Aurora LRPAs could be purchased.

The second reason for not investing too heavily in close convoy escorts is increasing doubt about the effectiveness of the traditional convoy system in a NATO-Warsaw Pact conflict. Official estimates of the minimum number of frigate-type vessels that would be required is 450 to 500 ships, compared with a current inventory of 274 to 306 (the former figure is NATO's; the latter is from the International Institute for Strategic Studies). However, even the figure of 500 might underestimate the forces required if the traditional convoy is to provide the means to move an estimated eighteen hundred supply and troop ships each month from North America to Europe for a period of even ninety days.⁶ Furthermore, a significant number of these frigates and destroyers would be employed on other duties, such as ASW barriers and carrier battle group escort, and thus would be unavailable for convoy escort.

What this suggests to the sub-committee is not that the re-supply of Europe is impossible, but rather that tactics other than the traditional type of convoy may have to be employed to accomplish it. For example, NATO may have to consider heavier reliance upon pre-positioning, so as to reduce convoy and, hence, escort requirements. The use of a zonal approach to anti-submarine defence, entailing efforts to contain Soviet submarines in the sea areas behind the GIUK gap and south of the Bermuda line, might have to be given greater emphasis. The aim would be to destroy Soviet submarines before they could close with allied shipping. Another option would be to hold shipping back until a combination of zonal defences and hunter-killer operations in the North Atlantic had reduced Soviet submarine strength significantly and made passage relatively safe. Instead of small convoys accompanied by a close escort, it might be possible to send larger groups of ships through a moving, sanitized zone, swept by ASW forces operating in advance of the merchantmen. The zone would be protected on the flanks by distant, stationary screens, and would be patrolled by ASW aircraft.

The sub-committee would not feel confident in asserting that the traditional convoy is dead, or in arguing that a balanced Canadian maritime force could be constructed without some provision for close convoy escort. However, it does believe that Canada would be making a serious error if it built a naval force founded upon the assumption that close convoy escort would necessarily be the major task in the event of hostilities. Such a policy would result in a relatively small navy, because modern, ocean-going surface escort vessels are extremely

⁶ Estimate based on figures supplied by or drawn from various sources.

expensive and Canada can afford only a very limited number of them. Submarines and long-range patrol aircraft are much more affordable, and can be as effective as surface vessels in every ASW role except close convoy escort. Submarines can provide barriers and, in sufficient numbers, can also provide sanitized zones. Canada should purchase all three types of ASW platforms and not focus on one type to the point where it becomes impossible to pay for adequate numbers of the others.

Another, less costly possible alternative to the use of ASW frigates in the escort role is to create escort merchant ships, that is, container ships equipped to carry a number of ASW helicopters and, perhaps, some weaponry against air and missile attacks. They would be the modern equivalent of armed merchant cruisers. The British demonstrated in the Falklands that helicopters could operate from such ships. The USN has been experimenting with a program called ARAPAHO, whose object is to develop containers which could be rapidly fitted to the decks of container ships so as to provide them with a flight deck, protective weaponry, accommodation for up to five helicopters and their crews, as well as the necessary stores and test equipment. The Canadian government might give some consideration to requiring CN Marine, for example, to maintain continually under Canadian registry a small number of suitable container ships to be employed in trade in peacetime, but with this particular wartime use in mind.

(c) Surface encounters.

More attention must be paid to countering the danger of surface threats than has traditionally been the case in Canadian defence thinking. This should take into account the full range of possible, eventual threats, such as gunboat diplomacy over a fisheries or boundary dispute, or attempted amphibious landings, as well as the current and concrete capabilities of the Soviet navy discussed in chapter I.

The existence of actual or potential surface threats requires a range of available responses: surface vessels to neutralize attempts by another country to intimidate Canada through the positioning or passage of surface units in Canadian waters; small missile-carrying fast patrol boats designed to operate in restricted waters such as the Gulf of St. Lawrence and the straits of the West coast; submarines for use in the case of open hostilities or as a powerful deterrent; and, in light of the successes of Argentine aircraft in the Falklands campaign, missile-equipped, shore-based, attack aircraft. With this kind of force for operations against surface warships, MARCOM would also have an increased capability for dealing with enemy merchant shipping and fishing vessels in the event of hostilities.

(d) Mine countermeasures.

As emphasized elsewhere in the report, the potential danger posed by mines, and by the substantial stocks of mines and mine-laying capabilities of the Soviet forces, *demand*s that Canada have a mine-countermeasure force. Tactics currently being developed by nations with MCM forces suggest that the most cost-effective course is to combine a small number of highly sophisticated minehunting vessels with a larger number of fairly simple minesweepers. Each minehunter would direct and co-ordinate the efforts of several minesweepers.

(e) Training.

Every navy must possess means to ensure that its officers and NCOs experience, early in their careers, the pressures and stresses which come with command. All ranks must also be given the opportunity to acquire a degree of competence in seamanship which will enable them to contribute to rather than detract from the fighting efficiency of a first-line unit when they join it. The same is true for the Reserves. First-line operational units are simply not the place to acquire such experience and elementary levels of training. Such units should always have battle-readiness as their primary aim. Naval auxiliaries provide some potential in this regard. But the ideal are small, relatively inexpensive vessels which could be effectively employed on sovereignty patrols, search and rescue, and similar duties in peacetime, and which could serve in a combatant role if war broke out. The lift-aboard sonars, navigation equipment and basic stores⁷ suggested by F.M. McKee, of the Naval Officer's Association of Canada, would be especially helpful in this regard. Minesweepers of the less sophisticated type could fulfil these roles, as could small, armed, fast patrol vessels.

Finally, it must be remembered that, in an arena as subject to change as defence, certainty about equipment is an unattainable goal. To seek it too assiduously means unconscionable delays, ungovernable cost increases and, ultimately, failure. There comes a time when a decision must be made and the consequences accepted. Ultimately the usefulness of a defence force depends upon its being staffed by professionals provided with a range of modern equipment, who, because of their professionalism, can improvise. At some point it becomes more important to give these people something credible to work with than to attempt to meet every imaginable circumstance. Who, prior to the event, could have conceived of the Falklands? A naval historian, Dr. Barry Hunt, has made the case well:

In these matters one does not even surmount the next horizon. The best that can be achieved . . . is to institute building and associated naval programs that provide for the continued existence of a professionally competent and well-motivated permanent naval establishment that can, when the time comes, adapt itself to new weapons and new circumstances as they arise.⁸

(f) The need for a mixed fleet and a balanced force.

In sum, drawing upon observations in this chapter and those preceding it, the opinion of the Sub-committee is that Canada should set itself the goal of building a maritime force equipped with surface ships on the model of the CPF; ASW helicopters; ocean-going conventional submarines; LRPAs; minchunters; minesweepers; fast patrol boats; attack aircraft; coastal patrol aircraft; and the necessary operational support ships and auxiliaries. This does not take into consideration the special requirements of the Arctic, which will be left until later in the discussion because the Arctic is such a special case.

Each weapons platform has its own set of strengths and weaknesses. Aircraft, for example, can reach a designated area much more rapidly than surface and sub-surface units; and they can also search a much broader area of the ocean in a

⁷ *Proceedings of the Senate Sub-committee on National Defence*, 15 June, 1982, p. 33:13.

⁸ *Ibid*, 23 February, 1982, p. 21:17.

given time-span. However, aircraft are subject to more down-time for maintenance than are ships and submarines and are much more vulnerable to weather. Surface vessels have the advantage of great flexibility in tasking and, compared to aircraft, are less subject to the weather. On the other hand, they are comparatively easy for an enemy to detect and, unless they are equipped with extremely expensive air, surface and sub-surface weapons, sensor systems and ECM equipment, they are terribly vulnerable to attack from all three elements. Conventional submarines are among the most effective ASW vehicles, and, of the three major weapons platforms being considered here, the most dangerous to surface warships. However, they are essentially weapons of position and are also largely unsuitable for employment in most peacetime tasks which might be assigned to MARCOM, such as search and rescue or providing a means of putting a fisheries inspection officer aboard a foreign trawler.

Operating together, air, surface and sub-surface units do more than simply compensate for each other's weaknesses: they take on a strength greater than the sum of their parts. For this reason balance should always be sought among the various elements when equipment purchases are being considered. Further, it is simply unwise to place all or most of one's eggs in one basket, because it is always possible that new developments or conflicts of some unforeseen kind might render one or another weapons platform permanently or temporarily ineffective. There must always be something to fall back upon.

Weapons, sensors and communications systems

The types of weapons, sensors, communications systems and ECM equipment carried by the various platforms listed above are as important a consideration as the platforms themselves. Again, intending to be indicative rather than prescriptive (and certainly not exhaustive), the sub-committee would like to advance the following comments for consideration.

(a) Surface ships and their systems.

Surface vessels designed to serve purposes which would involve operating outside Canadian waters and away from the protection of shore-based air cover must be equipped to survive in a hostile multi-threat environment. Above all they must be equipped with ASW helicopters, for both offensive and defensive purposes. Submarines are often as fast or faster than surface vessels, can detect targets at distances of up to 160 km and, when operating in conjunction with satellites, aircraft or surface ships, can attack adversaries with sub-surface-launched missiles from up to 500 km away. Surface vessels must also possess very long-range passive sonar for detection purposes, probably TACTAS, as well as sonars capable of localizing a target and directing an attack.

Both the ship and its ASW helicopter (which should be equipped with its own detection systems) should carry ASW weapons, probably torpedoes with a homing device. In the case of the ship, the torpedo should probably be rocket-launched to give it additional range.

Surface vessels should be equipped with surface-to-surface missiles for protection against surface warships. Protection against aircraft and missiles is also

required. At a minimum, this means point-defence missiles and a close-in weapons system. Sophisticated radars are also needed to make these systems effective, as are electronic countermeasures to blind or confuse attacking aircraft or missiles. Because such ships would be employed on escort duties, they should also have missiles and radars with which to protect other vessels against air attack, and so provide a form of area air defence. (These missiles would be of longer range than point-defence missiles.) At the moment, such a weapons system can only be accommodated in a hull much larger than that contemplated for the CPF. However, efforts being made to develop more compact area air defence systems may bear fruit before a CPF follow-on goes into production or the DDH-280s receive their mid-life update. Data-link communications systems are also essential and infra-red detection devices would be extremely useful. Such vessels should, in addition, be fitted with a gun for sovereignty protection duties and to give them a shore-bombardment capability.

(b) The LRPA and its weapons systems.

As noted before, Canada's LRPA, the Aurora, is highly effective in detecting and tracking submarines. It is equipped with a data-link system. Those in service require a more effective ASW torpedo, however, and some means of protecting themselves against aircraft and missiles. In addition to their ECM equipment they probably need an air-to-air missile. They also should have an air-to-surface missile. In point of fact, they are currently equipped for, but not with the Harpoon missile. Should additional Auroras be purchased, they should be ordered fully equipped and the missiles for them should be acquired.

(c) The submarine and its weapons systems.

The modern diesel electric submarine is a weapons-platform of remarkable flexibility and efficiency. In part this is because it is not vulnerable, when submerged, to long-range attacks by aircraft and ships. Thus, it does not require the same variety of sophisticated weapons and sensor systems for its own protection as do surface vessels. It is much less expensive to build a conventional submarine than a surface vessel of frigate size. Because of automation, and because there are fewer functions to perform on board, it requires only thirty to forty personnel as opposed to the surface vessel's two hundred or more. Its diesel electric engines consume far less fuel than do the diesels and turbines of modern surface vessels. Its passive sonar systems can detect targets at ranges beyond 100 km, and it can be fitted with a passive towed-array sonar to further extend its detection range. The diesel electric submarine has a very high weapons-per-ton ratio. It can carry torpedoes, submarine-to-surface missiles, or a combination — two dozen or more. The submarine-to-surface missiles currently available to NATO navies have ranges of up to 180 km, and there are prospects, with the development of a submarine version of the Tomahawk, of achieving ranges of up to 500 km. Modern torpedoes of the guided or homing variety can be used at distances of 35 to 50 km.

Modern conventional ocean-going submarines have an endurance of from seventy to ninety days at sea. They can operate as independent units or as part of a team. With their snorkles they are rarely required to surface. They can descend to depths of up to 300 m. They are capable of submerged speeds of up to 25 knots for short bursts, although their efficient transiting speed submerged is in the order of 11 knots. When operating at very low speeds (up to 4.5 knots), they are so quiet

as to be virtually undetectable. While submerged at shallow depths, they are able to communicate with ships and aircraft through a fin-mounted radio antenna and when more deeply submerged, by means of a floating very low frequency antenna. Should they wish to minimize possibilities of detection, they can release a canister containing data and messages programmed to transmit after a time-delay.

Conventionally powered submarines are suitable for a wide variety of roles. They are highly effective as ASW platforms; perhaps the most dangerous opponent for surface warships; and extremely effective against other surface traffic. They are also extremely useful in surveillance and reconnaissance and in mine-laying. As ASW vehicles, they would be especially useful in barrier and choke-point operations and in maintaining sanitized zones of modest size. They are also highly useful for training friendly surface and air ASW units.

Their major disadvantage is that they are quintessentially weapons of war and would be able to contribute little to the accomplishment of the ancillary duties assigned to MARCOM in peacetime. Their peacetime contribution would consist of their significant deterrent capability, underwater surveillance, and the training of surface and air ASW forces. Should Canada decide to acquire some of these vessels, they ought to be equipped with modern torpedoes and submarine-to-surface missiles. Depending upon cost, some or all should probably be equipped with towed-array sonar. A data link to facilitate their co-operation with surface and air units would also be a high-priority requirement. The three older but still capable Oberon submarines currently operated by Canada need to be equipped with more modern torpedoes and submarine-to-surface missiles.

(d) Attack aircraft.

The suggestion has been made earlier that, based upon the Falklands experience, it would be useful to acquire missile-armed attack aircraft. This could be a costly proposition even if older designs were purchased off the shelf. Nevertheless, in the Sub-committee's considered view, this requirement deserves a hard look. In the interim, it would be advisable to equip some of the CF-18s already ordered with a U.S. Navy modification which would permit them to carry and fire Harpoon missiles. Canadian-based squadrons of Tactical Air Group and Fighter Group could be equipped with aircraft so fitted. Flights of two of the CF-18 squadrons will be regularly deployed to Comox and Goose Bay, areas where they might serve in an anti-shipping role. If more aircraft were required, additional units could be dispersed from Cold Lake and Bagotville to air bases on the Atlantic and Pacific coasts. However, range considerations would preclude the CF-18 from operating at significant distances off-shore.

(e) Patrol vessels and their systems.

Small high-speed patrol vessels, useful for Regular Force and Reserve training purposes, Naval-Officer-In-Charge (NOIC) duties, coastal patrol, sovereignty surveillance and control, and rounding up enemy fishing and merchant vessels in time of war, would require for those duties little more than a good radar, good communications systems and a small-calibre gun. Equipped, at more expense, with a more sophisticated radar and surface-to-surface missiles, they could provide significant opposition to surface intruders, since they are hard to detect, and the missile would give them significant punch at long-range.

(f) Minehunters, minesweepers, coastal-patrol aircraft and their systems.

As indicated earlier, minesweepers, minehunters and coastal-patrol aircraft would be useful for sovereignty duties and for rounding up enemy shipping on the outbreak of hostilities. For these purposes, the minesweepers and minehunters would need small calibre guns, while the coastal-patrol aircraft would need rockets or cannons.

The special case of the Arctic

The sub-committee noted earlier that Canada's claims to the Arctic have not been universally recognized. Therefore, it believes that Canada should strengthen its case by maintaining a significant maritime presence there. The country must be able to control access to and enforce its jurisdictional claims over Arctic waters. In peacetime, this presence should be provided by icebreakers with capabilities equal or superior to those of commercial vessels now being designed for use in the North (and likely to grow in numbers as commercial exploitation of Arctic resources increases). Polar-8 ice-breakers capable of operating nine to ten months of the year will undoubtedly be required in the next five to seven years. The first, according to Vice-Admiral A.L. Collier, Commissioner of the Canadian Coast Guard, "could be ready for service in the spring of 1989 if approval is received by April of next year (1983). It should be noted, however, that some projections (indicate) that the shipment of gas from Melville Island could commence by 1987."⁹ Surveillance by aircraft provides a needed capacity when ice-breakers cannot operate and a useful supplement when they can.

By the turn of the century at the latest, twelve-month operating capabilities will be required if Captain (N) T.C. Pullen (ret.) is right in his estimation that "year-round traffic . . . by huge ice-breaking bulk carriers is inevitable."¹⁰ To be ready for that day, Canada will have to give consideration to building a Polar-10 ice-breaker, capable of year-round operations, or constructing a permanent Arctic operations base, or both. Several witnesses before the sub-committee stressed the need for a twelve-months-a-year Canadian presence in Arctic waters, including retired Chief of the Defence Staff General Jacques Dextraze, who pressed the idea of an Arctic operations base to accommodate all three service elements:¹¹ "I think there is a great need for a continuous presence in the north, manned by regular force personnel and including the native people."¹² Certainly, if such an idea were to be pursued — a course favoured by the sub-committee — the Canadian Coast Guard should also be included.

The advent of nuclear-powered submarines has meant that the Arctic could become a major transit route for such vessels and also that they could operate to disrupt shipping activity in the north. At present, the only way of hunting for nuclear submarines under the ice is with another nuclear submarine. If Canada

⁹ *Ibid*, 23 November, 1982, p. 35:11.

¹⁰ *Ibid*, 1 February, 1983, p. 32:7.

¹¹ *Ibid*, 8 February, 1983, pp. 39:6, 8, 12-13.

¹² *Ibid*, p. 39:13.

wished to have such a capability, it would have to venture into the highly expensive business of acquiring them. Bottom-based sonar provides capacity for monitoring submarine movements, but it is vulnerable to ice scouring. In addition, installation and maintenance of such a system in those inhospitable waters could be exceedingly expensive.

Ice-breakers and patrol aircraft serve the bulk of Canada's peacetime needs in the Arctic. Purely military countermeasures would be exceedingly expensive. Whether or not such expenses should be incurred depends on the assessment one makes of the import of the threat now posed by nuclear submarines operating under the ice.

For its part, the sub-committee believes that adequate surveillance of the Northwest Passage could be provided, for the time being, by conventionally powered submarines stationed at the entrance and the exit of the passage. Obviously, the actual areas patrolled would vary with the season and ice conditions.

The sub-committee could only obtain fragmentary information on the costs of bottom-based sonar installations. It will make no recommendation concerning such installations, but wishes to observe that such a system would be desirable if costs were not so high as to seriously impair the ability to renew or add to other elements of the maritime force, and if ice noise and scouring would not render it ineffective for significant portions of time. Should the frequency of nuclear submarine transits through Arctic waters rise substantially, Canada might have to contemplate obtaining nuclear submarines of its own. Probably the only affordable way of doing so would be to persuade an ally to provide some for Canada to operate, and to write a contract with that nation for their servicing. This approach would avoid the excessively high costs of acquiring new nuclear submarines and the infrastructure they require. The only other alternative to permitting free passage would be to call upon an ally with nuclear vessels to patrol the Arctic for us. Such an approach holds real dangers, however, because Canada's claims to Arctic waters are disputed by some allies. It would, for example, seem odd to ask the United States to guard our interest in the north since, according to VAdm Timbrell,

A (U.S.) . . . "Notice to Mariners" states that waters north of 60 degrees north — which is approximately Hudson Bay, to give . . . a geographical point of reference; the waters of the Northwest Passage and the waters leading to the Northwest Passage — are, in the eyes of the United States, international waters and are not "Canadian national waters." They do not dispute our land claims; but they dispute our control of the passage through those islands . . . as do France and Russia.¹³

The sub-committee sees no compelling reason to acquire ice-breakers for MARCOM. All the evidence it heard suggests that ice-breakers would not make effective weapons-platforms. Therefore, the sub-committee sees no purpose in altering the present arrangement whereby Canada's ice-breaking fleet is operated by the Coast Guard. Should circumstances change and should it become desirable to arm ice-breakers either with ASW helicopters or missiles, for example, MARCOM could arrange for crews to be provided to operate the on-board weapons systems. Nonetheless, the sub-committee believes that MARCOM should have at

¹³ *Ibid*, 26 May, 1981, pp. 18:13-14.

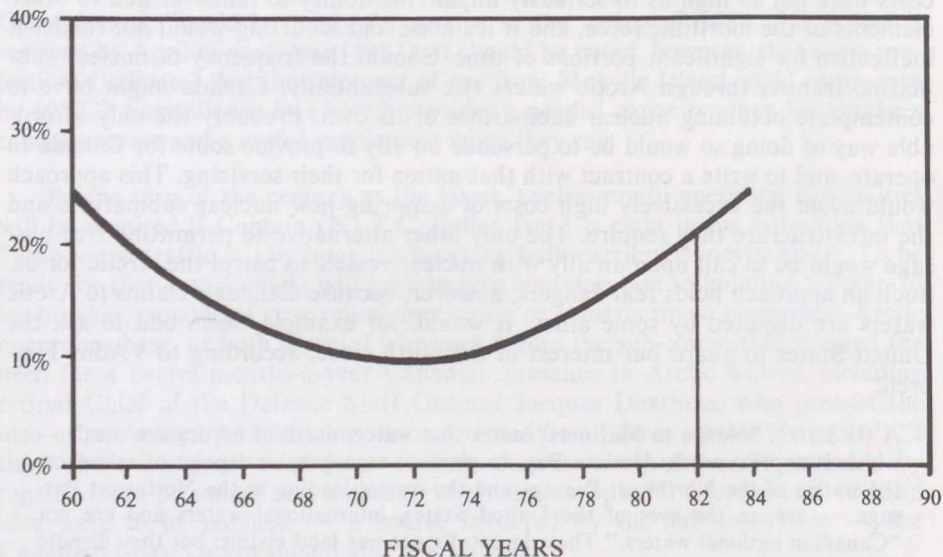
its disposal at all times a group of its own officers and enlisted personnel who are familiar with the conditions and requirements of operating vessels in the Arctic. Therefore:

The sub-committee recommends that the practice be established of regularly seconding some Maritime Command personnel to the Coast Guard for practice and training in Arctic navigation.

The current equipment situation

As previously indicated, Canada's maritime forces cannot meet requirements. Most estimates suggest they have only about one half of the major weapons-platforms they need.¹⁴ This situation developed over time, beginning in the 1960s when the money available to DND for capital acquisitions dropped to totally inadequate levels. Figure 1, taken from *Minister's Statement — Defence Estimates 1983/84*,¹⁵ shows what happened:

FIGURE 1
CAPITAL PROGRAM
AS A PERCENTAGE OF DND BUDGET



The de-emphasizing of defence by successive Canadian governments occurred at a time when detente seemed attainable; when there appeared to be "increased willingness to attempt to resolve East-West issues by negotiation".¹⁶ Optimism prevailed about prospects for the reduction of tensions. The possibility of conflict

¹⁴ See p. 43.

¹⁵ *Minister's Statement — Defence Estimates 1983/84*, *op. cit.*, p. 34, document dated 15 March 1983, tabled before the House of Commons standing Committee on External Affairs and National Defence.

¹⁶ *Defence in the 70s*, *op. cit.*, p. 4.

had grown more remote. The SALT talks seemed to be making progress. There was a loosening of the bipolar international system.¹⁷ An "increase in stability in nuclear deterrence"¹⁸ was predicted.

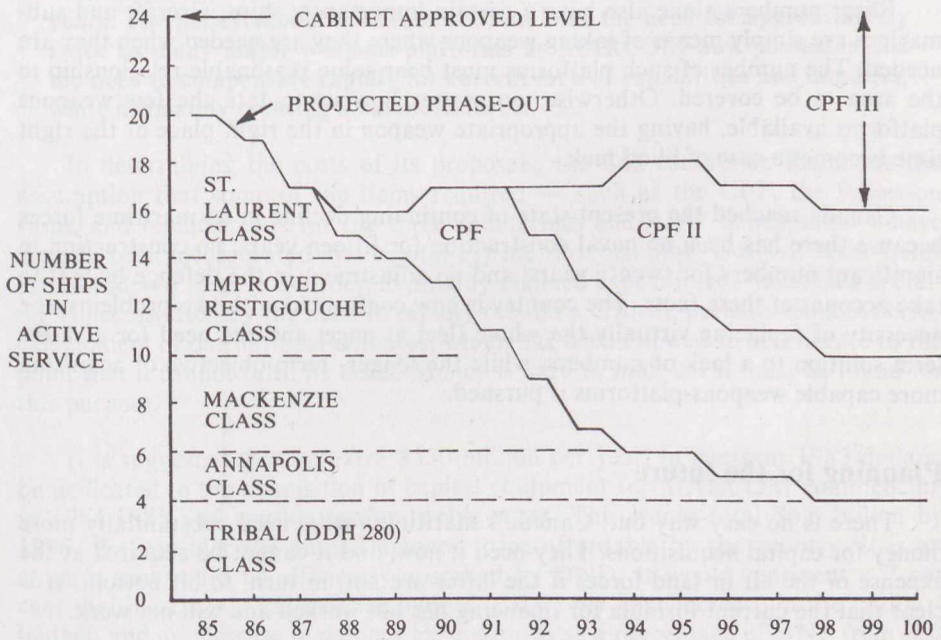
Then came Angola and increased Soviet activity around the Horn of Africa. SALT II collapsed. Afghanistan was invaded. Martial law was imposed in Poland. Confrontation once again began to characterize East-West relations. Successive oil crises and a world-wide recession shook confidence in the international economic system and threw national economies into disorder. The world was suddenly a much more dangerous place.

To give credit where it is due, the Canadian government attempted to respond to the changed situation. Equipment replacement programs for the armed forces were put into place. DND itself demonstrated real managerial skill in augmenting the portion of its total budget devoted to the capital program. However, the deterioration in capabilities had progressed too far to permit significant correction within the parameters of current budgeting constraints.

Prospects for the future

Figure 2 illustrates one element of the current long-term spending projections. It shows that the decrease in Canada's surface maritime forces will not cease until

FIGURE 2
PROJECTED SURFACE ASW FLEET



¹⁷ *Ibid*, p. 5.

¹⁸ *Ibid*, p. 4.

well into the 1990s. Then the level will stabilize at sixteen frigates (a 20 per cent reduction from the current force of surface ASW vessels). But even this assumes that the follow-on to the CPF, not yet approved by the government, will receive the required sanction.

Figure 2 also shows how many surface combatants would be available to Canada should the CPF follow-on not be approved. Projected dates of retirement shown for the older vessels take DELEX into account. Plans for a mid-life update of the Auroras and replacement of the three submarines are no more definite than those for the CPF follow-on. Current spending-projections do not offer any prospect of increasing the numbers of either of these weapons platforms.

Even under the most optimistic assumptions — 3 per cent real increases in the defence budget until 1987, higher proportions of capital expenditures as a percentage of the total, and approval of both the CPF and its follow-on — the ships and aircraft at the disposal of MARCOM by the mid-1990s will be fewer than at present. It would be 2007 before the maritime forces regained the current number of major weapons-platforms (LRPAs, frigates and submarines) under DND's current long-term programme for capital spending.

One could argue that the added capabilities of the newer ships compensate fully for the decrease in numbers. This is a specious argument in the view of the sub-committee. Certainly, the capability of the ships in general will have improved, but so have those of the likely foe, which has also added to the numbers of its ships. The relative ability of MARCOM to deal with opposing forces, beginning from a base of inadequacy, will under current plans remain at best constant.

Sheer numbers alone also have a certain importance; ships, aircraft and submarines are simply means of taking weapons where they are needed when they are needed. The number of such platforms must bear some reasonable relationship to the area to be covered. Otherwise, no matter how up-to-date the few weapons platforms available, having the appropriate weapon in the right place at the right time becomes a case of blind luck.

Canada reached the present state of continuing decline in its maritime forces because there has been no naval construction for fifteen years; no construction in significant numbers for twenty years; and no adjustment in the defence budget to take account of these facts. The country is now confronted with two problems: the necessity of replacing virtually the whole fleet at once; and the need for a short-term solution to a lack of numbers, while the longer-term objective of acquiring more capable weapons-platforms is pursued.

Planning for the future

There is no easy way out. Canada's maritime forces need substantially more money for capital acquisitions. They need it now, and it cannot be acquired at the expense of the air or land forces if the latter are not, in turn, to hit bottom. It is clear that the current formula for financing has not worked and will not work.

Decisions need to be taken now which recognize that our maritime forces are inadequate for their intended purposes; which determine the required force levels and the desired fleet mix; which take into account the need to compensate quickly

for current lack of numbers; and which set a target date for achieving these goals. Realistically, the target date cannot be nearer than a decade away, because any purchases decided upon now would not produce a lead unit in under three to five years. Next comes the problem of ordering the purchases so that, if not the desired balance, at least a tangible improvement in quality and quantity will be reached far earlier. Then the government should decide how much more money than currently projected can be realistically devoted to the defence budget and how much more the defence department can effectively absorb in the short run.

A model fleet

The needs having been analyzed, we now address the questions of desirable force level, fleet mix (how many of each), priorities (which should be acquired in what order, and why) and money.

For all of the reasons outlined at the beginning of this chapter, the specific suggestions about equipment-types and fleet which follow cannot be considered as definitive and are not intended to be recommendations as such. The actual recommendations on equipment the Sub-committee wishes to offer are to be found at the end of the chapter and do not attempt to determine the ultimate configuration of the fleet, but rather to establish a direction.

(a) Desirable force levels and costs.

In the sub-committee's view, the primary aim of Canadian maritime defence policy should be to create a renewed, balanced fleet within twelve years. The policy should take into account both the need for approximately twice as many major weapons-platforms as MARCOM now possesses and the need to compensate rapidly for current lack of capabilities and numbers, while ultimately creating a balanced force.

In determining the costs of its proposals, the Sub-committee has made the assumption that some of the items required — such as the CPF, the follow-on ships, and replacements for the three submarines and ASW helicopters — have already been incorporated into capital-expenditure planning. Costs of other items are considered to be in addition to already planned expenditures. Increased spending is necessitated by the need to rapidly rebuild a critical, perhaps *the* most critical, element of our national defences, which has been allowed to deteriorate to the point that it cannot fulfil its tasks. Money is hard to find, but it must be found for this purpose.

It is suggested that an extra \$550 million per year, in constant 1983 dollars, be dedicated to the acquisition of capital equipment for MARCOM commencing in 1984-1985 and continuing for twelve years. This would total \$6.6 billion by 1996. We consider the annual amount to be affordable by the country. It is an amount that could be efficiently absorbed by DND. It would represent a 7 per cent real increase in the defence budget, a 0.64 per cent increase in the national budget, and an increase in defence expenditures as a percentage of GNP from just over 2 per cent to about 2.2 per cent. This would still leave Canada with the lowest defence expenditures in relation to GNP of all NATO countries except Luxembourg (and Iceland, which maintains no armed forces).

(b) Suggested equipment additions to maritime forces.

With this amount of additional money, an effective, well balanced and flexible maritime force could be acquired. Assuming that current budgetary plans contain provision for the replacement or updating (or both) of all equipment currently possessed by MARCOM, an incremental \$5.9 billion (1983 constant dollars) would purchase by 1996 the following *additional* vessels and aircraft (program costs included), if orders were placed starting in 1984:

TABLE 5

Cost of proposed equipment over and above replacement program

Units	Equipment	Cost (in millions)
17	Submarines (German type 2000 or equivalent)	\$3,315.0
18	Auroras	1,125.0
4	minehunters (NATO pattern or equivalent)	400.0
9	minesweepers	265.5
12	fast patrol boats	480.0
10	ASW helicopters	280.0
		<u>\$5,865.5</u> ¹⁹

The remaining \$735 million would be available for the Harpoon modification to the CF-18; the purchase of equipment for three merchant escort ships; training equipment and additional facilities for the Naval Reserves divisions (discussed in chapter VIII); fitting the ten newest steam-driven destroyers with anti-air and anti-surface weapons; and some improved sensor systems.

Table 6 shows how this maritime force would compare with the present one and that which would exist in 1996 if current trends in capital spending, which seems to be based on one-for-one replacement remained unchanged.

¹⁹ Program costs for various platforms were estimated by DND as follows (millions of dollars):

Frigates:	\$520.0	LRPAs:	\$49.0
Operational Support Ships:	\$130.0	MRPAs:	\$14.0
Submarines:	\$195.0	ASW helicopters:	\$28.0
Minesweepers:	\$ 29.5		

On the basis of its research, the sub-committee estimated the cost of mine-hunters at \$100 million, and that of fast patrol boats at \$40 million. It decided to use a lower figure for the frigate costs (\$485 million), because of the distribution of non-recurring program costs over a longer production-run. It also decided to use a higher figure for LRPAs (\$62.5 million) so as to include in its program the cost of an additional Versatile Automatic Shop Test (VAST) unit to serve an increased number of CP-140s on the West coast and the cost of adding air-to-air and air-to-surface missile systems.

TABLE 6

Comparison of current maritime force with possible 1996 forces

TYPE	CURRENT MARITIME FORCE	1996 SPENDING UNCHANGED	1996 SUB-COMMITTEE MARITIME FORCE
Surface ASW	20	15 + 2 building*	15 + 2 building*
Submarines	3	3	20
Operational Support Ships	3	3	3
Diving Support Ship	1	1	1
Minehunters	0	0	4
Minesweepers	0	0	9
Fast Patrol boats	0	0	12
LRPAs	18	18	36
Costal Patrol Aircraft	18	18	18
ASW helicopters	35	35	45
Attack aircraft	0	0	84**
Escort Merchant ships	0	0	3

* In both models this number would stabilize at 16 in 1997/98

** Harpoon-equipped CF-18s to be drawn from Tactical Air Group and Air Defence Group

(c) Advantages of the sub-committee's proposals.

The maritime force suggested would, by 1996, have almost twice as many major weapons-platforms (surface ASW ships, LRPAs and submarines) as are currently in service or projected, along with two dozen additional smaller weapons-platforms. In addition, it would add significant new dimensions to force capabilities, such as mine countermeasures and surface warfare. It would provide Canada with a significant capability to respond alone to all maritime threats save a nuclear missile attack. It would permit the assignment of more major weapons-platforms to NATO than at present, and all forces earmarked for NATO could be stationed on the east coast. Planning would no longer need to contemplate denuding the west coast of defences (as might be the case at present). Beyond this, west coast defences would be enormously strengthened on a continuing basis. The suggested mix would permit vastly more frequent sovereignty patrols by air in the Arctic. The sub-committee's suggestion does not determine what form growth beyond 1996 should take. However, it would, if adopted, provide both MARCOM and defence industries with experience in operating and constructing a wide range of weapons-platforms, and thus ease the task of determining where future emphasis should be placed.

The variety of the weapons-platforms contemplated would enable MARCOM to tailor the forces assigned to the east and west coasts to suit the special circumstances on each. For example, one might expect the west-coast fleet to have a relatively higher proportion of submarines and fast patrol boats than the east coast, while the east coast, seized with such tasks as European re-supply, would possess the bulk of the surface ASW vessels and all of the escort merchant ships. The LRPAs might be allocated on the basis of two-thirds to the east coast and one-third to the west coast. But even that would mean a 200 per cent increase in the number of west-coast LRPAs.

The suggested mine-countermeasures force requires some explanation. The sub-committee anticipates that only the four minehunters would be permanently manned by Regular Force personnel in order to keep requirements for additional permanent personnel at a minimum.²⁰ Several of the nine minesweepers might be assigned to the Coast Guard in peacetime for search and rescue and other duties. The remainder would be assigned to the Naval Reserve and would also serve as training vessels. It is assumed that three mine-countermeasure groups could be formed out of this force of thirteen ships, with a minehunter forming the core of each. The fourth minehunter takes into account the need for refit and repair and also anticipates the possible conversion of civilian vessels to a minesweeping role in the event of an emergency.

As with minesweepers, in peacetime some of the patrol boats would be assigned to the Coast Guard, and some to the Reserves, leaving a minimal number to be manned by the Regular Force. The merchant escort ship packages would require no additional personnel in peacetime, although people would have to be trained in their use. The attack aircraft have only minor personnel implications since the number of CF-18s in service would be unchanged even if some acquired an additional weapons system.

Of the three models in figure 3, only the sub-committee's proposal could both rapidly bridge the current gap between resources and commitments and be in place by 1996, assuming a level of additional expenditures of \$550 million per year. Neither of the other two models could achieve both objectives.

(d) Financial and employment aspects.

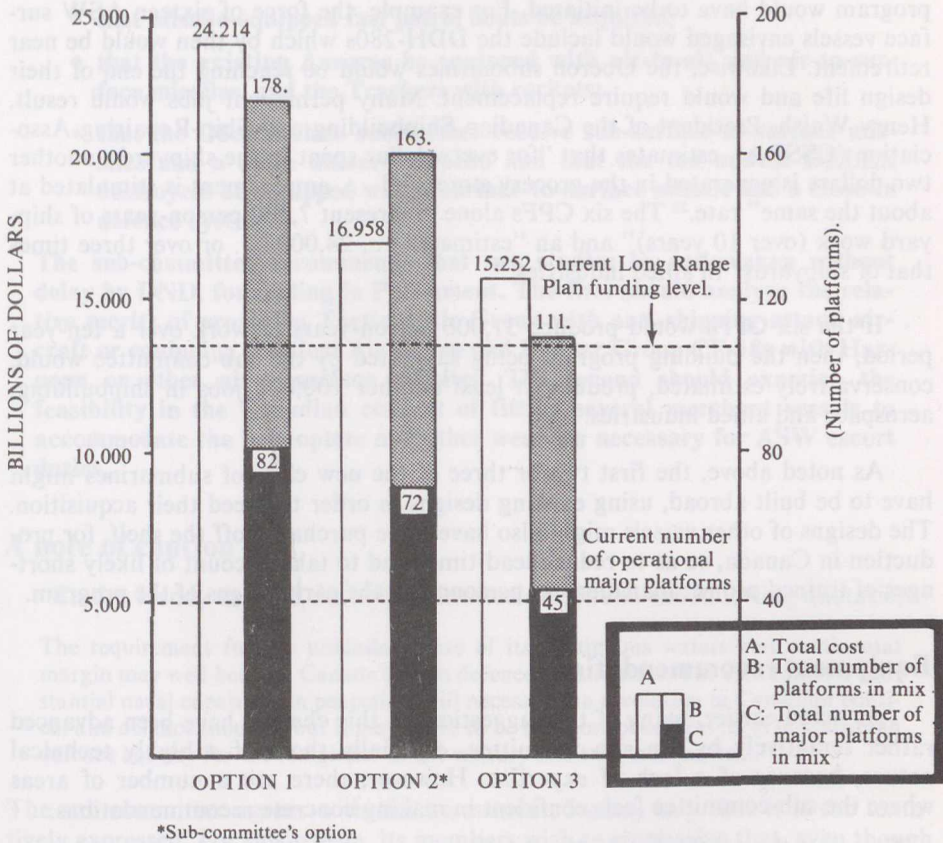
It is important to note that the money required to build this much-needed maritime force would produce important benefits to the economy. Virtually all of the weapons platforms suggested would be built in Canada. The exceptions would be the Auroras, which would be built by Lockheed in the U.S., as were the previous eighteen; and perhaps the first few submarines, until Canadian shipyards could be adapted for building these vessels and personnel could be trained to build them.²¹ In each of these cases offsets could be obtained. Not only would these orders be a boon to the shipbuilding and aerospace industries, they would also yield substantial benefits to the electronics industry and other component suppliers.

²⁰ See chapter VII, pp 73, for more details about the personnel implications of this approach.

²¹ A Canadian shipyard is currently building components for the U.S. Navy's nuclear submarines.

FIGURE 3

COMPARATIVE COSTS AND YIELDS
OF VARIOUS FLEET MIXES



NOTES:

- Not shown in the number of platforms in the sub-committee's option are the eighty-four attack aircraft and three escort merchant ships which could support the fleet in an emergency.
- In addition to a variety of auxiliary craft which they are all assumed to call for, the three fleet mixes comprise the following platforms:

	Option 1	Option 2	Option 3
Frigates	36	16	24
Operational support ships	4	3	3
Submarines	10	20	3
Minesweepers	12	9	—
Minehunters	—	4	—
Fast patrol boats	—	12	—
LRPAs	36	36	18
MRPAs	40	18	18
ASW helicopters	40	45	45

Unit prices are given in footnote 19, p. 56. In each option, the current fleet of eighteen Auroras has been costed as new equipment.

- Option 1 corresponds to the fleet suggested by VAdm Timbrell.
Option 2 corresponds to the fleet suggested in this chapter.
Option 3 corresponds to current DND long-term plans.

Such a construction program would also give the shipbuilding and allied industries long-term stability, since it would continue over a twelve-year period. Afterward, even if no further increases in force levels were contemplated, mid-life updates would begin for the vessels then in service and a long-term replacement program would have to be initiated. For example, the force of sixteen ASW surface vessels envisaged would include the DDH-280s which by then would be near retirement. Likewise, the Oberon submarines would be reaching the end of their design life and would require replacement. Many permanent jobs would result. Henry Walsh, President of the Canadian Shipbuilding and Ship-Repairing Association (CSSRA), estimates that "for every dollar spent in the shipyards, another two dollars is generated in the grocery store, and . . . employment is stimulated at about the same" rate.²² The six CPFs alone "represent 7,000 person-years of shipyard work (over 10 years)" and an "estimated . . . 24,000 . . . or over three times that of shipyards" in allied industries.²³

If the six CPFs would produce 31,000 person-years of work over a ten-year period, then the building program being suggested by the sub-committee would, conservatively estimated, produce at least another 100,000 jobs in shipbuilding, aerospace and allied industries.

As noted above, the first two or three of the new class of submarines might have to be built abroad, using existing designs in order to speed their acquisition. The designs of other vessels might also have to be purchased off the shelf, for production in Canada, so as to reduce lead-times and to take account of likely shortages of trained project management personnel in the early stages of the program.

Equipment recommendations

As noted earlier, many of the suggestions in this chapter have been advanced rather tentatively by the sub-committee, especially those of a highly technical nature, because of a lack of expertise. However, there are a number of areas where the sub-committee feels confident in making concrete recommendations.

To arrest the continuing decline in the status and readiness of our maritime forces, the sub-committee recommends that, as an increment to funding required for replacement of current equipment on a one-for-one basis, an extra \$550 million per year, in constant 1983 dollars, be dedicated to the acquisition of capital equipment for MARCOM. This would represent a 7 per cent real increase in the defence budget, a 0.64 per cent increase in the national budget, and an increase in defence expenditures as a percentage of GNP from the current just over 2 per cent to about 2.2 per cent.

The sub-committee's general recommendations for a balanced fleet are, in order of priority:

- that contracts be let immediately for the CPF program *and* for the follow-on program;
- that orders for eighteen more Aurora aircraft be placed immediately, in order significantly to improve MARCOM's capabilities in the shortest possible time, and to provide an ongoing, enhanced capability;

²² *Proceeding of the Senate sub-committee on National Defence*, 8 March, 1983, p. 40:6.

²³ *Ibid*, p. 40:12.

- that a significant mine-countermeasure capability be acquired by MARCOM;
- that more diesel-electric submarines be acquired by MARCOM;
- that missile-equipped fast patrol boats be acquired;
- that the existing Auroras be equipped with air-to-air and air-to-surface missiles, and the Trackers with rockets;
- that the Oberon-class submarines receive sub-surface-to-surface missiles and a more modern torpedo and that the ten newest DELEX destroyers be equipped with a surface-to-surface missile and a close-in defence system.

The sub-committee recommends that two studies be undertaken without delay by DND, for tabling in Parliament. The first should analyze the relative merits of providing Tactical Air Group with anti-shipping attack aircraft or equipping Tactical Air Group and Fighter Group CF-18s with Harpoon or other air-to-surface missiles. The second should examine the feasibility in the Canadian context of fitting several merchant vessels to accommodate the helicopters and other weapons necessary for ASW escort duties.

A note of caution

Cmdre Hendy drew to the sub-committee's attention the following quotation:

The requirement for the unhindered use of its contiguous waters and continental margin may well become Canada's main defence requirement. The creation of a substantial naval capability in peacetime will necessitate a revolution in Canadian political and defence thought, but it may prove to be the most beneficial form of Canadian defence activity for the remainder of the century and well into the next.²⁴

The sub-committee agrees with this assessment, feeling only that it is too tentatively expressed. For this reason, its members wish to emphasize that, even though each of the preceding recommendations has been assigned a priority, none could be set aside without danger.

²⁴Brian Cuthbertson, *Canadian Military Independence in the Age of the Superpowers*, as quoted by Commodore Hendy, *Proceedings of the Senate sub-committee on National Defence*, 22 March, 1983, p. 43:38.

Chapter VI

PROCUREMENT

Discussions of the military procurement process during the proceedings of the sub-committee frequently turned upon its complexity, the time consumed in pursuing each step and the resulting delays in equipment acquisition. In the case of the CPF program, for example, when the contract is awarded (probably in the summer of 1983), close to six years will have elapsed since approval in principle was received in December 1977. About three years' work preceded this approval. Since delivery of the first frigate will not occur until late 1987, it will have taken in excess of twelve years to get initial results — and seventeen to go from approval to completion of the six-ship CPF program. Elections and changes of government contributed their part to the extended drama. Nonetheless, "designing a new product . . . usually takes somewhere between seven and nine years," according to Mr. Killick¹, and the process for a major naval unit probably cannot be speeded up by more than two or three years, according to Cmdre Ernest Ball.²

For the sub-committee, the problems of procurement fall into two categories: process — working out purchases of equipment in conformity with current defence plans as well as government-wide and departmental procedures; and policy — the way the government goes about building and maintaining armed forces over relatively long periods of time.

The procurement process

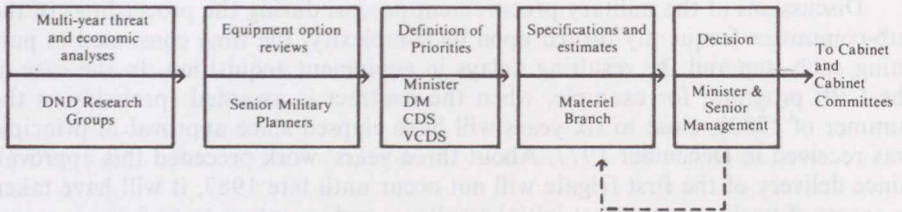
Turning first to the process, it should be noted at the outset that, to some extent, its complexity and attendant length are, the price that is paid to provide taxpayers and governments with some peace of mind. A streamlined process, with fewer reviews, intra- and inter-departmental committees, and other like hurdles, would speed up decisions. It might also result in less thoroughly thought-out decisions and less successful integration of defence considerations with other national objectives. On balance, the sub-committee is convinced that real efforts should be made to speed up the process and to insulate it to an appropriate extent from the impact of elections and changes in governments. Surely the time-savings thought to be possible — a factor of 25 to 30 per cent — are worth pursuing and surely this could be accomplished while maintaining adequate safeguards.

¹ *Proceedings of the Senate Sub-committee on National Defence*, 15 March, 1983, p. 42:16.

² *Idem*,

The present procurement process can be summarized as follows. Within DND, priorities are determined on the basis of extensive background analyses and subsequent identification of equipment required to counter perceived threats. The Materiel Branch then translates these priorities into specifications and cost estimates. Once these have the approval of DND's senior management, the Minister takes his program proposal to the Cabinet Committee on Foreign and Defence Policy for approval in principle, after which it is submitted to the Treasury Board, itself a cabinet committee, for program approval. Figure 4 illustrates, in highly simplified form, DND's internal approval process.

FIGURE 4
MILITARY PROCUREMENT PROCESS WITHIN DND



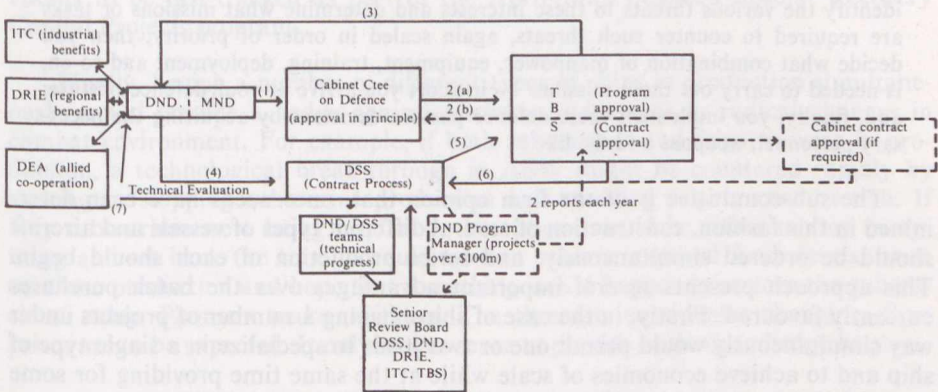
Up to this point, other departments are involved as required: the Department of Supply and Services (DSS), with a view to facilitating later phases of the process, especially in the case of major projects; the Department of Industry, Trade and Commerce/Regional Industrial Expansion (ITC/DRIE), when economic benefits to Canada or various regions are a concern; the Department of External Affairs (DEA), if allied co-operation is involved.

After cabinet and Treasury Board approvals have been secured, DND formally approaches DSS. Once that department has satisfied itself that no budgetary or other constraints will impede implementation of the proposed program, it prepares a procurement plan and proceeds with contracting. Treasury Board's approval must again be obtained before a contract can be awarded, however. Sometimes (as in the case of the CPF) this approval would follow a further cabinet review. DSS is in charge of contract management, and co-operates closely with DND, particularly in the area of technical evaluations. All major programs are examined by a Senior Review Board, on which all departments with a stake in the program are represented, including the Treasury Board Secretariat (TBS), but major crown projects involving expenditures of \$100 million or more have an additional requirement to report to TBS twice yearly.

Procurement policy

Despite its real or apparent complexity, the structure that oversees this process may not be nearly so much a cause of delays and difficulties as the constraints under which the various participants have to labour. The procurement process needs to be tightened up, but the real core of the problem lies in a lack of commitment to defence on the part of successive governments; failure to develop realistic long-term plans, looking forward over the next fifteen to twenty years or so; the subordination of defence requirements to other needs or more immediate

Figure 5
MILITARY PROCUREMENT APPROVAL
PROCESS WITHIN GOVERNMENT



political objectives; long lapses between construction programs; and the impact of unforeseen developments such as inflation, rising pay-rates, linkage of military and civil service salaries, and the breakdown of detente. These are the real villains of the piece.

Indeed, the sub-committee has been favourably impressed by the efforts made within DND over the past number of years to keep attention focussed on realistic possibilities and to promote a gradual rise in defence spending. It has been impressed as well with the department's increasing skill in managing an inadequate budget in such a way that capital outlays have begun to rise as a portion of total expenditures and specific provision is being made for readiness and sustainability.³ Time taken internally to make a decision has less to do with the ponderous nature of the process than with the nearly impossible character of the decisions to be made. How can it be decided whether a new fighter aircraft or a new class of ship is more urgently required, when both existing fighter aircraft and ships have aged to a point where they are only marginally effective in their roles and becoming a danger to their crews? The real solutions to such process problems as exist lie in larger budgets and a procurement policy based upon long-term determination of equipment needs conforming to clearly defined defence objectives.

Professor D. Middlemiss described the current funding approach and what should replace it in terms the sub-committee endorses:

... the formula funding approach, including the latest NATO 3 per cent real growth formula, suffers from inherent inadequacies, the most serious of which is that it is essentially a politically-derived symbol of alliance solidarity and commitment, and bears little or no correlation to countering the Soviet threat in either a quantitative or qualitative sense.

... these arbitrarily defined and poorly adhered-to funding arrangements have become the substitutes for well thought-out policies, rather than the financial reflections of them.⁴

³ See in particular *Minister's Statement — Defence Estimates 1983/84, op. cit.*, p. 32.

⁴ *Proceedings of the Senate Sub-committee on National Defence*, 1 June, 1982, p. 31:7-8.

What he thought should be done instead, he outlined as follows:

... first, you identify your interests and then rank them in order of priority; then you identify the various threats to these interests and determine what missions or tasks are required to counter such threats, again scaled in order of priority; then you decide what combination of manpower, equipment, training, deployment and so on, is needed to carry out these missions — in short you arrive at your defence posture; and, finally, you implement these defence posture decisions by acquiring the necessary personnel, weapons and the like.⁵

The sub-committee is of the firm opinion that, once needs have been determined in this fashion, construction of several different types of vessels and aircraft should be ordered simultaneously, and series production of each should begin. This approach presents several important advantages over the batch purchases currently favoured. Firstly, in the case of ships, having a number of projects under way simultaneously would permit one or two yards to specialize in a single type of ship and to achieve economies of scale while at the same time providing for some regional distribution of benefits. According to Mr. Walsh, of CSSRA,

... series production of ships can provide important savings. An internal CSSRA survey on commercial shipping indicates that, on the average, shipyard constant dollar cost can be 6 per cent lower on a second ship, 10 per cent lower on a third ship, and 13 per cent to 14 per cent lower on a fourth ship in a series. For subsequent ships the savings remain relatively constant ... These figures are not likely to be achieved for vessels such as the frigates which are currently planned to be built at a much reduced frequency over a longer time base. It seems more likely that the savings would be about one-half (those) cited for the commercial vessels ... Important economies can be obtained by facilities specialization and capital improvements, particularly if a shipyard can envision a long run on a particular type of ship.⁶

VAdm Porter added that, in the United States, in one yard engaged in production of the FFG-7 class ships, "which are probably about the size and complexity of our Canadian patrol frigates," cost *under-runs* on the first seven ships have reached \$37.4 million and "production man-hours on the seventh ship dropped to 68 per cent of those used on the first".⁷

Secondly, series production would give shipyards some long-term contracts, and thereby help to stabilize the boom-and-bust cycles of the shipbuilding industry, putting it on a sounder financial footing, and allowing it to introduce new construction techniques and to acquire new capital equipment which would make it more competitive in the commercial market. It would also create a larger number of permanent jobs.

Thirdly, if there were two or three naval ship construction programs continuously under way, in times of economic down-turn the government could immediately create new jobs dedicated to fulfilling a proven need simply by ordering an increase in the pace of production. This might be a considerably more cost-effective way of creating jobs than many of the *ad hoc* measures to which governments are currently obliged to resort. The Canadian Coast Guard, for example, plans for

⁵ *Ibid*, p. 31:6.

⁶ *Ibid*, 8 March, 1983, p. 40:10.

⁷ *Ibid*, 22 March, 1983, p. 43:8.

the replacement of 4 per cent of its fleet each year. It is precisely the existence of such a long-term plan which has permitted the construction or refitting of eleven vessels to be fast-tracked as part of the April 1983 budget's Special Recovery Capital Projects program.

Finally, having a number of different types of ships in production simultaneously would provide a hedge against mistaken judgement or radical changes in combat environment. For example, if both submarines and frigates were in production, a technological break-through in ASW might be countered rapidly by slowing or stopping submarine production and speeding frigate construction. If only submarines were being produced, the options would be either to stop everything and set back the time it would take to achieve required force levels, or to continue production and hope that something would happen to restore the submarines' value. Planners make mistakes. The threat is continually changing. Surprises are to be expected. It only makes sense to provide options; to hedge bets.

Needed changes

Given the constraints which exist at present, even the most thorough streamlining of organizational charts would not, on its own, yield major improvements. Policies will have to be reformulated before structural reforms can bear fruit. Consequently:

The sub-committee recommends that the government seek to lengthen its perspective on military procurement, de-emphasize formula funding and favour series production in order to shorten the procurement process and to effect economies.

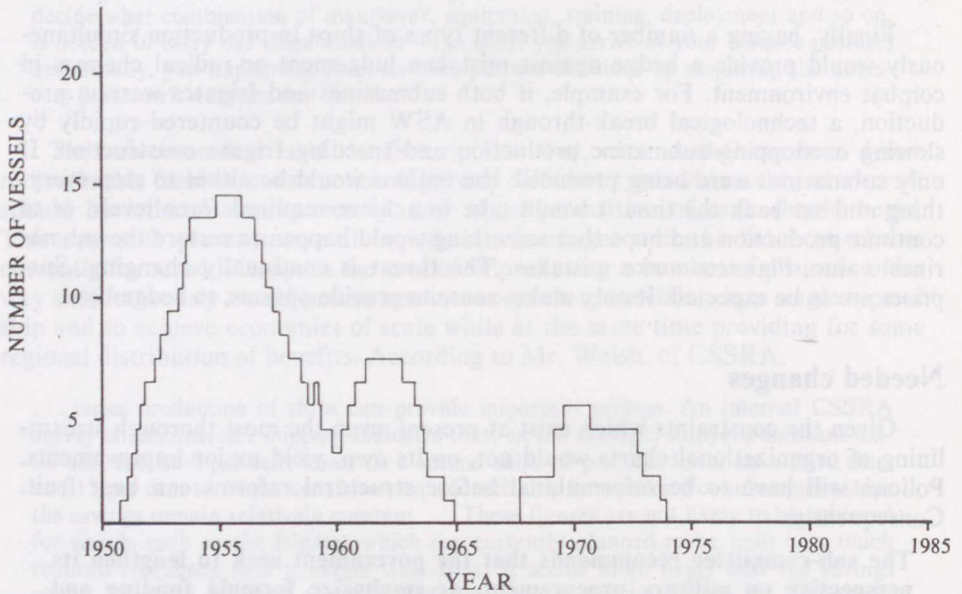
Even if the money could be found tomorrow to launch five to six new construction projects, however, it is doubtful that the Department of National Defence any longer has the requisite number of skilled personnel to manage them. As Mr. Walsh indicated, "the navy felt they did not have enough in-house capacity" even to design the CPF.⁸ No ship-building for fifteen years means not only that Canada is missing an entire generation of ships; but also that the necessary engineers and project managers have not been developed and retained inside the services.

If the decision were made to encourage development of private rather than military expertise, and not to build up DND's resources in these areas, even private industry would likely find it easier to cope if it were not asked to skip whole generations of military technology. Either way, warship design would likely take a great deal less time, and cost far less, if it did not have to be relearned at intervals of fifteen years or longer. These considerations may be more important now than they have been for several decades given recent evidence that naval architects may be on the verge of a breakthrough in hull design for surface warships which will have to be taken into account by the 1990s. Figure 6 shows the erratic pattern of naval ship construction in Canada since 1950.

⁸ *Ibid*, 8 March, 1983, p. 40:16.

FIGURE 6

NUMBER OF DESTROYERS AND OPERATIONAL
SUPPORT SHIPS UNDER CONSTRUCTION IN
CANADIAN SHIPYARDS, 1950-1985.



Source: Operational Research and Analysis Establishment, DND

If the government were to accept the sub-committee's advice and begin immediately the task of restoring Canada's maritime defences, the very urgency of the effort would preclude awaiting the redevelopment of national expertise and facilities before proceeding. It might mean, as noted earlier, purchasing designs abroad, perhaps even the lead ships, in some cases. This approach would allow time for the necessary facilities to be established in Canada without delaying progress towards a renewed fleet. Canada could, in this fashion, fairly rapidly provide MARCOM with enhanced capabilities while gradually re-acquiring lost capabilities. Moreover, this approach would hold out some prospects of increasing standardization or interoperability within NATO.

The procurement policy suggested in the preceding passages would contribute significantly to development of the industrial base that is needed to build and maintain a balanced and diversified maritime force able to meet its national and international commitments. Above all, it would get away from the mechanical one-for-one (or one-for-two) replacement of aging equipment and permit, as General Dextraze suggested, reacting "on a daily basis to the ultimate goal" rather than to short-term requirements.⁹

Undeniably there are costs involved, but these should be viewed in light of the enhanced security provided and the economic benefits derived, especially in employment and in support of high-technology industries.

⁹ *Ibid*, 3 March, 1983, p. 39:30.

As a final note on procurement policies, the sub-committee wishes to indicate its support for efforts made to distribute throughout the country, on an equitable basis, the economic benefits deriving from defence expenditures. Nonetheless, to the extent that such efforts have nothing to do with defence *per se* and add significantly to costs or make it impossible to realize important savings through, for example, economies of scale, their budgetary impact should be identified as a non-defence item. Thus if the CPFs are built in two or three shipyards rather than one, the break-down of costs should identify the amounts attributable to regional industrial development, to employment creation, and to maintaining and improving shipbuilding capabilities. This procedure would make it easier for Parliament and the public to identify the real magnitude of defence spending. It would also underscore the financial contribution that DND makes to the achieving of civil objectives. Therefore,

The sub-committee recommends that, to the extent possible, costs incurred by DND for purposes other than defence be identified as such in the spending estimates.

COMMAND STRUCTURE AND PERSONNEL

Command structure

MARCOM is one of the major operational commands of the Canadian Armed Forces. Its structure, as RAdm N.D. Brodeur informed the Sub-committee, "is dictated to a large extent by our geography".¹ It is headquartered in Halifax and commanded by a vice-admiral, who reports directly to the Chief of the Defence Staff in Ottawa. The Deputy Commander, MARCOM, is a rear-admiral located at Esquimalt. The aircraft of Air Command assigned to MARCOM are commanded by the Commander, Maritime Air Group (MAG), a brigadier-general who is also designated Chief of Staff (Air) for MARCOM. He reports operationally to the Commander, MARCOM, and functionally to the Commander, Air Command.

MARCOM operates out of seven bases, five stations and two detachments, concentrated mainly on the east and west coasts of Canada but extending from the Arctic to Bermuda. There are also eighteen Naval Reserve divisions across Canada, located in major urban centres from coast to coast.

The Commander of MARCOM commands all surface and sub-surface forces and exercises operational control over all MAG aircraft on the Atlantic and Pacific coasts. He is responsible for Canadian naval operations throughout the world. As Commander of the Atlantic Region, he is responsible for activities in the four Atlantic provinces, including administration of cadets. He has command of the Naval Reserve. Under a Canadian-American defence agreement, he exercises control of Canadian and United States maritime forces operating in Canadian waters in defence of North America. He is also Commander Canadian Atlantic (COMCANLANT), the principal subordinate command of the NATO Allied Command, Atlantic; and in certain circumstances, he would assume command of all NATO forces in the Western Atlantic as Interim Commander-in-Chief, Western Atlantic.

The Deputy Commander, as Commander of Maritime Forces Pacific (MAR-PAC), has operational command of all assigned air and surface maritime forces on the Pacific coast. He is Commander of the Pacific Region, and, under the Canadian-American defence agreement mentioned above, exercises operational control of Canadian and United States forces operating in Canadian Pacific waters in defence of North America.

¹ *Proceedings of the Senate Sub-committee on National Defence*, 9 March, 1982, p. 23:7.

While the Commander of MARCOM is directly responsible to the Chief of the Defence Staff for the operations of Canada's maritime forces, key related functions such as the development of doctrine and the identification and filling of equipment needs are carried out at National Defence headquarters by a staff under the direction of the Chief of Maritime Doctrine and Operations. This officer is a rear-admiral, who, with his land and air counterparts, reports to the Deputy Chief of the Defence Staff.

Witnesses before the sub-committee expressed a variety of reservations about the present command structure. Some suggested sweeping changes. Cmdre Hendy, for example, cited with favour the Task Force on Unification's recommendation that an organization not unlike the former Chiefs of Staff be re-established.² RAdm Hughes said that MARPAC should be restored to a separate command.³ VAdm Porter noted that the maritime commander is a very busy man, with a number of diverse responsibilities in addition to commanding the fleet. He also stated:

In an emergency . . . I do not believe he could be expected to discharge these duties and at the same time command and direct the emergency maritime operations as a national commander, a commander of Canada-United States naval forces, and a commander of NATO naval forces. We need to rethink our command organization to ensure that commanders . . . can be effective as soon as the balloon goes up.⁴

At this juncture, the sub-committee wishes to do no more than indicate that such questions have been raised and to note that the command structure of the Canadian Armed Forces may well be the subject of a later report. Members agreed that it would not be very productive to make recommendations on the command structure of MARCOM in isolation from assessments of the other main elements of the forces.

Personnel implications of the sub-committee's suggested fleet

The publication *Defence '82* showed the following numbers of personnel as being directly assigned to MARCOM:⁵

Regular force	8,811
Civilians	<u>7,479</u>
TOTAL STRENGTH	<u>16,290</u>

Definitive equivalent figures for MAG are more difficult to establish because MAG personnel are usually included in the total numbers for Air Command. The following estimates, however, were provided by DND:

Regular force	5,800
Civilians	<u>1,400</u>
TOTAL STRENGTH	<u>7,200</u>

² *Ibid*, 22 March, 1983, p. 43:39.

³ *Ibid*, p. 43:26.

⁴ *Ibid*, p. 43:9-10.

⁵ *Defence 82*, Department of National Defence, Ottawa, 1983 (ISBN 0-662- 52140-4), p. 25.

In 1982, with the above numbers of personnel, MARCOM operated twenty destroyers (plus three in reserve), three operational support ships, six training vessels, three submarines, a diving tender and some minor craft. MAG, meanwhile, had eighty-two aircraft in service including eighteen Auroras.⁶

At the time the figures were compiled, MARCOM was 1,000 personnel short of its real requirements and slightly under its authorized regular force strength of 9,351.⁷ But the authorized ceiling should increase to 9,700 by 1988, as MARCOM receives its share of the current manpower build-up, which should see the Canadian Armed Forces rise to 83,400 uniformed personnel.⁸ This will likely rectify the shortage, since manning requirements will not have increased by that time and may, indeed, have dropped with the retirement of one or two older destroyers.

If the model fleet suggested in chapter V were to be acquired, by 1996 MARCOM would need the following crews:

Table 7
**Personnel required for the fleet proposed
by the sub-committee**

Vessel Types	Crews	Total personnel required
For 16 frigates	180	2,880
For 17 submarines (e.g. German type 2000)	40	680
For 3 submarines (O-class)	70	210
For 4 minehunters	50	200
For 9 minesweepers	30	270
For 12 patrol boats	20	240
For 3 supply ships — current numbers		700
For 1 diving support ship		65
For auxiliary vessels — current numbers ⁹		20
TOTAL NUMBER OF PERSONNEL IN SHIPS		<u>5,265</u>

If this total is augmented by a factor of 70 per cent (an essential, if more generous figure than the present ratio) to cover the need for support personnel ashore and other considerations such as rotation, then the total requirement for personnel in 1996 would amount to about 9,000. This is less than the planned total for 1988, which, as earlier indicated, is 9,700. Moreover, in peacetime, a number of minesweepers and patrol boats could be manned by the Reserves or allocated,

⁶ Besides the eighteen Auroras, MAG operates eighteen Trackers; nine T-33s; thirty-five Sea Kings and two Twin-Hueys.

⁷ *Proceedings of the Senate Sub-committee on National Defence*, 10 March, 1981, p. 10:32.

⁸ It should be noted that in its first report the sub-committee identified a requirement for 92,000 uniformed personnel by 1987 (See p. 41).

⁹ The total manpower requirement for these vessels is 521. At present, only 20 of the personnel in these positions are military.

unarmed, to the Coast Guard. This would further reduce total manpower requirement. The reduction in naval personnel that would result from the changes suggested to the fleet in chapter V could thus, over time, fully compensate for the expected increase on the air side. Estimates are that Maritime Air Group would have to increase its present establishment by about 900 if an additional eighteen Auroras and ten helicopters were to be purchased.¹⁰

Thus, a much more capable air, surface and sub-surface force could be obtained with no increase in the ongoing costs associated with personnel. There might be some slight increase in the budget for naval operations and maintenance, given the larger number of vessel types. But these increased costs would be offset, to some extent, by the reduced maintenance requirements of newer vessels and their greater fuel efficiency. An increase of about 20 per cent in the 1982 operations and maintenance budget of \$157 million,¹¹ or about \$35 million in 1983 dollars, should be allowed to account for these factors. On the air side, the increase in the operations and maintenance budget could be expected to reach \$25 million by DND's estimate. The total ongoing cost implications of the model fleet would thus amount to about \$60 million a year (1983 dollars). This is a modest and affordable price to pay for vastly enhanced capabilities. It represents an ongoing increase of about 0.75 per cent in the defence budget in addition to the twelve-year 7 per cent increase for capital expenditures advocated in chapter V.

Current personnel concerns

The authorized strength of MARCOM was fixed in 1974, when it was reduced in response to budget constraints. The number of shore positions was also reduced at that time, especially on the west coast. As a result, 70 per cent of positions within MARCOM calling for naval classifications and trades are sea-going positions. On the west coast, where shore positions are fewer, this figure reaches 78 per cent. The percentage is reduced somewhat when forces-wide naval establishments are considered. With these kinds of ratios in the naval trades, personnel have fewer postings to shore duties than they ought to, given the impact upon families of such factors as prolonged periods of sea duty. The situation is exacerbated by geographical factors. West coast personnel must face long separations from their families to pursue training in Halifax, when duplication of programs or facilities cannot be justified. A simple increase in the number of personnel assigned to MARCOM would not remedy this situation, because it would not increase the number of shore billets available for naval trades even though it would in theory increase the pool available for rotation.

The sub-committee was deeply impressed by the evidence presented in support of the requirement for additional opportunities for shore duty for sea-going personnel and recommends that the Department of National Defence immediately explore means of increasing the number of shore postings available to the naval trades and allocate a larger number of positions in the training and service functions for such personnel.

¹⁰ This number of helicopters would normally be held in reserve for assignment to specially equipped civilian vessels in an emergency. Additional personnel would, therefore, not be required.

¹¹ *Defence '82, op. cit.*, p. 25.

Another major personnel problem faced by MARCOM is acute shortages in some occupational groups and some trade levels. Probably most critical, and at the same time least amenable to solution is the situation with respect to maritime engineering officers where there is currently a 24-per-cent shortfall. The likelihood is that the shortage will worsen despite the attractiveness of a service career in the current economic climate, because the new CPFs will demand even more engineering skills than current equipment. Lengthy discussions with LGen H.A. Carswell, Assistant Deputy Minister (Personnel), and his staff have convinced members of the sub-committee that all possible avenues of remedy are being explored. Regrettably, the sub-committee has no assistance to offer, except perhaps through drawing attention to the situation. Some qualified engineers or engineering students may be moved to avail themselves of this opportunity once they become aware of it. The sub-committee believes similar problems exist in the field of electronics.

The shortage of skilled tradesmen — approximately 400 in the hard sea trades — is produced by a variety of factors including fluctuations in recruitment levels which can lead to excessively fast or excessively slow progress through the system to the fully qualified level. Shortages can also be generated if unrealistic requirements are imposed upon a trade. Lack of realism can result in skills not matching requirements and generate lower-than-projected levels of productivity, creating a need for more people. Even with today's ease of recruiting, it will take time to fill current shortages because an influx of new recruits will not compensate for a lack of skilled tradesmen. MARCOM is currently embarked upon modifying some trades requirements so as to separate the technical and operational elements. This move is expected to have some beneficial impact upon the problem because training will be streamlined and shortened.

In the area of recruiting, retention and morale, the sub-committee was pleased to learn that the problem in 1983 will be to keep recruitment down so that manpower ceilings are not exceeded, and to keep attrition rates from dropping below 6 to 8 per cent, so as to permit the introduction of new blood. This is the reverse of the situation which has applied over the bulk of the past decade, where attrition often reached unacceptably high rates and recruitment was difficult. Today, recruits are not only available, but they are of extremely high calibre, while fewer trained personnel are leaving. It is unfortunate that MARCOM's windfall should be the product of a severe economic recession. Since, as was noted earlier, MARCOM's authorized strength is short of current manpower requirements by some three hundred and fifty personnel, and since there is a national concern about the creation of additional permanent jobs:

The sub-committee recommends that the projected rate of increase in MARCOM's authorized personnel establishment be accelerated.

Representation

Francophones are more poorly represented in Maritime Command than in the armed forces as a whole and suffer from a higher-than-average rate of attrition. Among major difficulties are the persistent image among Francophones of the naval service as an Anglophone preserve, and insufficient availability of intermediate and advanced training in French.

A more fundamental consideration, perhaps, is that the function MARCOM performs requires that the vast majority of its personnel be stationed in Esquimalt and Halifax. This makes it difficult for Francophone personnel in MARCOM and their dependents, to stave off assimilation, and is a definite disincentive to both recruitment and re-engagement. Problems with re-engagement, of course, undermine the prospects for proportional representation of Francophones at senior levels.

Progress is encouraging, however. In particular, Francophone representation has increased from 13 to 15 per cent overall in recent years. There is evidence that some creative thinking is being employed to rectify the situation. For example, as part of DND's ongoing plan for creating French-language units (FLUs), one of the more modern ships, the *Algonquin*, was designated as a FLU in 1982, significantly expanding promotion and other opportunities for Francophone personnel, especially in trades not found aboard the only other FLU, the *Skeena*. The decision taken to move Naval Reserve headquarters to Quebec City in order to enhance the profile of MARCOM in the province is endorsed by the sub-committee. The move was not without its risks, because it distances the reserves from the Commander of MARCOM. The close association in Halifax between the reserves and the Commander has been highly beneficial. No decision is without its trade-offs, however, and here the sub-committee believes the right balance was struck. The sub-committee also wishes to note the favourable impression many of its members obtained at first hand of the fluency in French achieved by a number of Anglophone senior naval officers. This confirms a commitment to the principles of bilingualism which augurs well for the future. On the other hand, the sub-committee noted that some key working documents are not routinely available in both languages.

Women are also under-represented in MARCOM. They represent less than 5 per cent of MARCOM's regular force establishment (against 8.2 per cent for the forces as a whole), although the comparable figure for the reserves is currently 34 per cent. The small number of women in MARCOM seems to be due to three principal factors: as in other elements of the forces, they are barred from all combat trades; they are not allowed to serve aboard ship except, on an experimental basis, in the fleet diving-support ship, the *Cormorant*; and shore billets in which to rotate sea-going servicemen are in short supply, so there is reluctance to fill them with women, who cannot be sent to sea. Women have made significant gains in some trades, however. They represent close to 50 per cent of administrative and financial personnel, for instance. Nonetheless, the number of women in MARCOM is unlikely to increase much more as long as they cannot sail as part of most ships' companies and, therefore, are barred from the sea-going trades which represent, according to RAdm Brodeur, about 6,600 of the current 8,800 positions in MARCOM.¹² As a result, the conclusions that will be drawn from the *Cormorant* experiment seem all the more important.

Service identification

It seems that no one, this sub-committee included, can go near a MARCOM establishment without at some point becoming engaged in a discussion about uni-

¹² *Proceedings of the Senate Sub-committee on National Defence*, 9 March, 1982, p. 23:17.

forms. Apart from the requirement to rebuild the fleet and to proceed with the CPF program, the need most frequently brought to the attention of the sub-committee was probably that for a clear naval identity. Although never turned into an over-riding issue, it clearly struck a basic emotional chord. Invariably, witnesses explained that no one wanted to go back to the "old blues" but, as one senior officer put it, the navy would like to go forward to a distinctly Canadian naval uniform.

It seems unnecessary to let philosophical concerns about the true nature of unification stand in the way of the practical consideration of armed forces' morale. Integration and unification have had significant positive impacts; they also have had some negative effects which ought to be acknowledged and remedied. Unit identification is an important element in the profession of arms. Uniforms should not only reflect these loyalties, but also serve to re-inforce them. Whether or not this means a return to a different colour or cut for each element of the forces, the sub-committee is not prepared to say without first having completed its studies of other major commands. However,

The sub-committee, on the basis of testimony received, recommends that MARCOM personnel be issued and permitted to wear recognizable trade badges and distinctive rank identification.

An ideal opportunity to make this change will come in 1985, when Canada's sea-going forces will be celebrating their 75th anniversary.

Sea cadets

The sub-committee's highly favourable impression of Canada's cadet movement, gained in the preparation of its first report, has been re-inforced by its closer examination of Sea Cadets, Navy League Cadets and Wrenettes during the course of its current enquiry.

As noted in the sub-committee's first report,¹³ the cadet movement is not part of the armed forces. It is supported by private associations, the general public and DND. In the case of the naval cadets, there are two main groups: the Sea Cadets, and the Navy League Cadets and Wrenettes. The Sea Cadets are grouped in 208 corps, of which 44 are Francophone. The Navy League has 117 corps of which 20 are Wrenette; 23 are Francophone. The total number of sea cadets is 14,861; they are supported by 1,376 cadet instructors. Units are to be found in every province of Canada.¹⁴

Each year a full range of activities is made available to the cadets, including regular training, summer camps, sailing instruction, deployment with the fleet and international exchanges. The movement as a whole is immensely valuable for training young Canadians in the responsibilities of citizenship and making them a part of their country's maritime tradition.

¹³ *Manpower in Canada's Armed Forces*, op. cit., p. 30.

¹⁴ For a complete breakdown of numbers, geographic distribution and male/female representation, see *Proceedings of the Sub-committee on National Defence*, 25 May 1982 pp. 30A:10-11.

The cadets also provide excellent recruits for MARCOM, both the Regular Force component and the reserves. However, the Sub-committee heard testimony which indicated that the enlistment rate of former cadets in the Naval Reserve is surprisingly low and the attrition rate high.¹⁵ One reason seems to be that young people who have achieved senior rank in the cadets, such as petty officer, are not attracted to starting over again at the most junior level in the Naval Reserve, where they once again have to work their way up. Also Naval Reserve units are less widely distributed across the country, and far more stringently restricted in their establishments than are cadet corps. Even more serious, perhaps, is that the antiquated boats and other equipment now employed by the Naval Reserve are simply not likely to hold the enthusiasm of youth, especially young men and women who have already learned many of the basic maritime skills in the cadet movement.

¹⁵ *Proceedings of the Senate Sub-committee on National Defence*, 18 May, 1982, pp. 29:33-34.

Chapter VIII

THE NAVAL RESERVES

Overview

The recently published *Minister's Statement — Defence Estimates 1983/84* makes a compelling case for strong, numerous, well trained and well equipped reserve forces:

... the idea that only 'forces-in-being' ... were useful as a deterrent to aggression or to provide the necessary defence in the event of a war between NATO and the Warsaw Pact is no longer appropriate or adequate in the strategic circumstances of the 1980s ... The nuclear threshold needs to be raised and the conventional leg of the deterrent triad improved and strengthened.

In these circumstances our forces must be improved in terms of sustainability ... This will over time have a considerable effect on force structure, leading to a new emphasis on a 'total force' concept ... that includes the Regular Force and all sub-components of the Reserve Force ...¹

Yet, from everything that the sub-committee has seen and heard, it appears the "new emphasis" will lack impact because of the government's unwillingness to commit the necessary funds. As the House Sub-committee on Armed Forces Reserves² and this sub-committee itself³ concluded in two studies published fully eighteen months ago, despite the admirable dedication of the officers and the remarkable commitment of the other ranks, the Naval Reserve remains in urgent need of attention.

The tasks of the Naval Reserve

The Naval Reserve is divided into eighteen units (known as divisions), located in major centres across the country. As an integral part of MARCOM, the Naval Reserve's main tasks in an emergency are: to provide personnel for the augmentation of the Regular Force in all types of operational units ashore and afloat; to provide a base for further mobilization; to provide *all* the personnel for the Naval Control of Shipping organization (NCS); to crew or augment the crews of the vessels of other departments; to provide liaison teams for fast sea-lift container

¹ *Minister's statement — Defence Estimates 1983/84, op. cit.*, p. 20.

² Issue no. 49 of the *Minutes of proceedings and evidence of the Standing Committee on External Affairs and National Defence*, Seventh Report to the House of Commons, also published under the title *Action for Reserves*, December 1981.

³ *Manpower in Canada's Armed Forces, op. cit.*

ships; and to supply the bulk of the personnel for the Naval-Officer-in-Charge organization (NOIC). NCS is the organization responsible for such matters as the assembly of convoys and the routing of shipping. NOIC is the body which would in an emergency provide security, protection, seaward defences and logistics for all major Canadian ports. It is estimated that about one hundred small vessels will be needed to support the NOIC organization alone, and that the personnel to man these vessels will have to come from the Naval Reserve.

In peacetime, the Naval Reserve is expected to prepare for its wartime tasks; to augment the fleet as required; to provide personnel and support for peace-keeping and truce supervisory operations; to provide personnel for aid to the civil power and to civil emergency organizations; and to support national development projects "including ceremonial representation and community sport and other activities".⁴

The personnel situation

The House of Commons Standing Committee on External Affairs and National Defence estimated that MARCOM would need 8,000 augmentation personnel on the outbreak of hostilities.⁵ In recent years, the primary Naval Reserve has habitually numbered less than its 3,250 strength paid ceiling, and not all of these people would be available in the event of hostilities. Some officers estimate the gap between the augmentation requirement and available reserves at 6,000 personnel. Others, taking into account chronic shortfalls of up to 1,000 trained regulars in trades that often require relatively rare skills, put the figure higher, for example at "8,000 trained specified positions and locations" for the first level of mobilization alone, which does not take into account fleet augmentation requirements.⁶ Further assessments mentioned 6,000 or 8,000 people, not including those required for "augmenting the fleet or providing for naval control of shipping . . . just the experts taking over and controlling our major ports".⁷ Even if it were more than just a list of names, the Supplementary Reserve could not provide anywhere near the number of individuals required to take up the slack.

The training situation

The Naval Reserve is equipped with ancient vessels which are woefully inadequate for training. As a result, it is doubtful whether the reserves could cope properly with all their wartime missions. Some individuals would undoubtedly perform superbly, but the evidence presented to the sub-committee suggests that few reserve officers could immediately take on more than limited responsibilities aboard front-line warships. Because little more than threshold training is possible in the lower ranks, reserve divisions would be unable to provide the regular navy with more than a small number of the augmentation personnel it requires — especially skilled men in the sea-going trades. In particular, the reserves would not be

⁴ NDHQ Policy Directive P-26, 11 January, 1978, Section 12, sub-section a.1.f.

⁵ *Action for Reserves*, *op. cit.*, p. 35.

⁶ *Proceedings of the Senate Sub-committee on National Defence*, 1 June, 1982, p. 31:22.

⁷ *Ibid*, 8 February, 1983, p. 38:31.

in a position to provide much-needed specialists in the engineering, radar, helmsman and communications trades. Even if it would take little time to acquire the skills needed in a large number of positions, the combined effect of inadequate establishments and insufficient training would make it next to impossible for the reserves to provide at short notice the manpower and skills required for even NCS and NOIC operations. Yet, both these activities would be immensely important at a time when vast fleets of civilian shipping were being brought together and assembled into convoys; when large numbers of enemy fishing, commercial and other vessels were being rounded up at sea and escorted into port; and when detection of surreptitious hostile acts such as intelligence-gathering and mine-laying would be a major task.

For the foreseeable future, the primary Naval Reserve will continue to train aboard antiquated vessels and with one-of-a-kind hand-me-downs from the Coast Guard or the RCMP. The reserves will have to devote a great deal of energy to overcoming maintenance problems, but this will not serve to provide suitable training for technical personnel such as engineers. Distinct reserve vessels have, once again, disappeared into the dense fog of DND's "unfunded" list. Reserve training classes are given in old buildings, "with a few bits of museum-piece naval hardware";⁸ and the Naval Reserve has not been allocated even the modest sums that would allow it to train on simulators available in civilian educational establishments which make no use of them in the evening and on weekends. As a result, when economic conditions are not such that individuals will cling to any source of income, the Naval Reserve loses a large portion of its recruits before they can be trained to adequate levels of military proficiency.

The Supplementary Reserve

The Supplementary Reserve is in an even worse state. For all intents and purposes, it is nothing more than a list of names collected over many years. The subcommittee was even told that attempts to turn it into more had not yet reached even the "weeding-out" stage. At present, it provides nothing substantial beyond a cadre of retired officers for NCS operations. It could be made to yield far more, however. With 75 per cent of released personnel signing up for Supplementary Reserve service, annual attrition should provide a large pool of *fully trained* personnel who could be expected to remain proficient in their military trades for at least five years even without refresher training.

Possible solutions

There are various possible solutions to the problem of personnel shortages in an emergency, the first issue mentioned above. The most straightforward would be to increase authorized ceilings, so as to close the gap between authorized strength and wartime requirements. The influx could be accommodated by re-opening naval divisions closed some years ago, opening new ones, operating more than one division unit in various establishments (by assigning different drill nights) and re-instituting programs such as the University Naval Training Division (UNTD) to ensure a continuing supply of officers. This is the approach most

⁸ *Ibid*, 18 May, 1982, p. 29:13.

witnesses favour. The Supplementary Reserve, properly organized, could also provide many of the needed numbers.

Inexpensive additions to naval resources in an emergency could be provided by the creation of a Fishermen's Reserve, organized along the lines of the Canadian Rangers. Training for this reserve could be conducted in the off-season, with a view to assigning these volunteers and their vessels to NOIC, NCS and other duties in the waters and communities they know best.

All the evidence points to an urgent need to increase the size of the Naval Reserve. The following recommendations supply a formula that could make the needed expansion possible at reasonable cost.

In order to fill the gap between the size of the Regular Force in peacetime and the immediate requirement for trained personnel in the event of war, the sub-committee recommends that:

- **the number of identified Naval Reservists from all components of the Naval Reserve be increased to a minimum of 8,000;**
- **four additional Naval Reserve divisions be established in communities where no division exists at present;**
- **a Fishermen's Reserve be created;**
- **as recommended in the sub-committee's first report, the Supplementary Reserve be provided with some minimal training and that arrangements for its mobilization be put in place;**
- **each component of the Naval Reserve provide personnel in the following numbers:**

Primary Reserve	4,500
Supplementary Reserve	2,300
Fishermen's Reserve	<u>1,200</u>
Total	8,000

The second problem, lack of equipment and facilities, lends itself less easily to inexpensive solutions. Buildings are needed; ships are needed; training aids are needed. Captain (N)(R) W. N. Fox-Decent, Senior Staff Officer to the Chief of Reserves, suggested that meeting basic requirements alone would cost close to \$43 million, including only a small number of tenders.⁹ The buildings for four new reserve divisions would cost approximately \$32 million.¹⁰ Should this money not be made available, imaginative ideas exist among reserve personnel for providing some remedy. Two excellent examples of possible inexpensive solutions were suggested at HMCS *Discovery*: renting the simulators of civilian institutions at a nominal fee and, if need be, making greater use of unused civilian facilities to house additional recruits. To take advantage of such ideas, however, standard contracting practices at DND would have to be modified to allow some flexibility and permit unusual solutions.

⁹ *Ibid*, 23 November, 1983, p. 35A:19.

¹⁰ *Ibid*, 11 May, 1982, p. 28:31.

The sub-committee recommends that the government consider adding \$75 million to the capital budget of DND for procurement of essential training aids; upgrading of accommodation for some existing Naval Reserve units; and construction of four new Naval Reserve divisions.

There is, quite obviously, a costly requirement for reserve vessels — and the sub-committee wishes to make the most urgent plea for them. They are invariably described as vessels that should and could perform *bona fide* wartime missions; minesweeping is frequently mentioned. As noted in chapter V, the sub-committee believes orders for minesweepers and fast patrol boats should be placed immediately. Failing this action, Reserves could perhaps be helped to acquire hands-on experience at sea by serving aboard existing civilian government ships. This would be especially useful if a number of units in the Coast Guard and the Fisheries and Oceans fleets could, in case of hostilities, be equipped with lift-aboard weapons and detection systems and be transformed into adequate craft for rounding up enemy merchant and fishing vessels and for Arctic or other coastal patrolling as recommended in chapter IX.

The sub-committee recommends that the Naval Reserve be provided with suitable training vessels on a priority basis and that, to the maximum extent possible, reservists be trained in peacetime aboard classes of vessels which they would be called upon to operate in wartime.¹¹

The third set of problems, related to training, will be brought much closer to a solution if questions of personnel and equipment are treated as discussed above. Additional improvements could be achieved if more assiduous efforts were made to convince employers to release reservists for annual training periods without using up their vacations and inconveniencing their families.

The sub-committee recommends that, in order to encourage all other employers to grant leave for reserve training, the Government of Canada make it mandatory for federal departments and crown corporations to allow reservists up to two weeks special leave a year for purposes of reserve training.

Cost of an increased Naval Reserve

The costs associated with the preceding recommendations should be low. The long overdue minimum investment in Primary Reserve facilities and equipment calculated for the sub-committee by Captain (N) (R) Fox-Decent and acquisition of four additional Naval Reserve divisions — perhaps in the communities where they were closed some years ago — would require the already noted non-recurring expenditure of up to \$75 million. But additional personnel, operations and maintenance costs could be kept to \$15 million a year.¹²

¹¹ If the earlier recommendation to acquire minesweepers and fast patrol boats (some of which would be assigned to the reserves for training purposes) is not implemented, DND's capital budget should make provision for the construction of 6 new training vessels for the reserves, at an estimated total cost of \$114 million. (See the document cited in footnote 9 above).

¹² Figure derived from information provided to the House Sub-committee on Armed Forces Reserves (Proceedings, p. 2A:26, 22 October, 1981) and in *1983-84 Estimates — Part I: The Government Expenditure Plan*, ISBN-0-662-52328-8, p. 33.

The costs of a Fishermen's Reserve and of a functional Supplementary Reserve would, of course, vary with the length of training periods. On the basis of figures provided by DND, calling up a Supplementary Reserve of 2,300 for twelve days each year would cost just over \$2 million in personnel expenditures. This figure could be lowered if the period of call-up were shortened.

Using the same figures, a Fishermen's Reserve of 1,200 would cost \$90,000 a day, or \$2.7 million for a whole month. While a defence budget reflecting this expenditure would increase, the UIC budget could be relieved by at least half as much if the exercise was conducted in the fishermen's off-season. Little would thus be added to total federal expenditures.

These solutions would allow the government to create an effective Naval Reserve of 8,000; to improve considerably the Canadian Armed Forces' posture; and to reduce marginally the hardship of unemployment among fishermen for about \$20 million in additional annual personnel, operations and maintenance expenditures. This seems a small amount to pay for major results.

Creation of a Standing Reserve

The sub-committee welcomes the Finance Minister's announcement of 20 April 1983 that \$75 million will be expended to provide employment for approximately 5,000 young people, in a military reserve context, for a period of about a year. Canada's armed forces are undoubtedly in need of additional personnel, and more use ought to be made of the reserves to bring strength up to the levels that would be required in an emergency. However, the sub-committee wishes to note that while this program will create needed jobs and provide valuable experience for the individuals involved, it will make only a limited contribution to the resolution of military problems.

The sub-committee sees great potential value, in the concept of a Standing Reserve which would provide a year or more of full-time employment and training for a set number of young people. Once established, the Standing Reserve could be rapidly expanded to accommodate additional personnel in times of high unemployment. Such a plan would contribute more directly to military goals as well as to employment objectives than the currently favoured *ad hoc* programs. In addition, the sub-committee believes that volunteers for the Standing Reserve should be required rather than "invited" to serve for three to five years in the Primary Reserve upon completion of the program. If this were the case, DND could more easily justify dedicating scarce resources to training of the Standing Reserve. As a result, the training provided would likely be more advanced and of greater value to participants in their civilian lives.

The sub-committee does not wish to make a recommendation at this time concerning possible substitution of a Standing Reserve for the program in the budget speech. It wishes, however, to urge the government to take note of its observations in implementing the ideas put forward by the Finance Minister.

Final comments on the Naval Reserve

As in all other matters relating to defence forces, however, the over-riding concern must remain the combat-readiness of the reserve forces on which DND places such great hopes for a credible total force. The sub-committee has offered some suggestions for improvements at modest cost. Perhaps they or others like them can help bridge the gap. But in the end, money will have to be spent to rebuild the reserves. They have been the victims of very serious neglect — “an attempt to stamp them out”,¹³ in one view — and they cannot be nursed back to health without a major injection of some of the funds denied them during long years of neglect. It is the sub-committee’s fervent hope that the highly-deserving men and women in the Naval Reserves will not have to wait any longer.

The importance of non-military resources

Canada does not require a large military force in peacetime, but it is necessary to ensure that machinery exist to permit the mobilization and mobilization of civilian resources in a crisis or during military operations.

The importance of such mobilization arrangements was stressed by witnesses before the sub-committee. VADM Power, for example, stressed in his report, saying that what is required is the mobilization of civilian resources. He noted the extraordinary contribution which was made by the Red Cross in the Falkland Islands and the support provided to the British Parliament by the Secretary of State in October 1982. The campaign brought forth the significant contribution which resources can make to the nation's security.

Military augmentation, reinforcement and mobilization

Unfortunately, Canada's planning in this area has been inadequate. Canada has accepted responsibility for the total defence of the North Atlantic region of Canadian Forces Europe, but the sub-committee was surprised to find in its first report that in the event of a major crisis, Canada would not have the means to meet its own needs in the event of a major crisis. Canada would have to rely on the United States for its augmentation and reinforcement. The sub-committee noted that the United States has a large and well-trained reserve force and that it has a long history of mobilizing its reserves in times of crisis. The sub-committee noted that the United States has a long history of mobilizing its reserves in times of crisis. The sub-committee noted that the United States has a long history of mobilizing its reserves in times of crisis. The sub-committee noted that the United States has a long history of mobilizing its reserves in times of crisis.

Proceedings of the Senate Sub-committee on National Defence, 18 March 1982.

¹³ Proceedings of the Senate Sub-committee on National Defence, 18 May, 1982, p. 29:7.

THE MOBILIZATION OF NON-MILITARY RESOURCES

The importance of non-military resources

Canada does not require a large military force in peacetime. It is therefore doubly necessary to ensure that mechanisms exist to permit the rapid and effective mobilization of civilian resources in a crisis or on the outbreak of hostilities.

The importance of such mobilization arrangements was mentioned by several witnesses before the sub-committee. VAdm Porter, for example, drew particular attention to this need, saying that what is required is the resources and a plan to mobilize them.¹ He noted the extraordinary contribution which the British merchant marine had made to success in the Falklands, and quoted from the report presented to the British Parliament by the Secretary of State for Defence in December 1982: "The campaign brought home the significant contribution which civil resources can make to the nation's strength in a crisis."²

Military augmentation, reinforcement and mobilization

Unfortunately, Canadian planning for crisis situations is virtually non-existent. Canada has accepted responsibility for the CAST commitment and augmentation of Canadian Forces Europe, but the sub-committee was obliged to comment in its first report that in neither case have proper support arrangements been made. In a major crisis, Canada would probably have difficulty in finding the ships it needs for the sea-transportable element of CAST. It would likely find it hard to transport all its augmentation troops to the Central Front in time to join their units before armed conflict broke out. In fact no augmentation exercise for Europe has ever even been conducted.³ The sub-committee has received no testimony in the eighteen months since its first report was presented that would cause it to revise these observations. In addition, the Canadian Armed Forces do not yet possess a government-approved mobilization plan — or if they do, the Sub-committee has still seen no evidence of its existence. Over the past three

¹ *Proceedings of the Senate Sub-committee on National Defence*, 22 March, 1983, p. 43:9.

² *Idem*.

³ *Manpower in the Canadian Armed Forces*, p. 14.

years, frequent reference has been made to work on such a plan by DND witnesses who have appeared before this sub-committee and its House of Commons counterpart; but the most recent testimony suggests it is still incomplete. W.B. Snarr, Assistant Secretary to the cabinet (Emergency Planning), said:

It is my understanding that the Department of National Defence has underway a number of studies related to various aspects of mobilization, but that these have not led to any definitive policy as yet on mobilization as a part of Canada's defence posture.⁴

Given the current state of the Regular Forces, the need for a well understood and well tested plan for augmenting and re-inforcing them in a crisis becomes critical. Therefore,

The sub-committee recommends that a mobilization plan for Canada's armed forces be adopted and promulgated forthwith so that Canadians may be re-assured by more than bland assertions.

Mobilization of civil resources

On the civil side, planning for a crisis or a war emergency is in an even worse state. The civil objectives of defence planning have been well defined by Mr. Snarr:

... firstly it is to support and maintain the Canadian Armed Forces; secondly, to meet additional burdens placed by war upon the civil structure, which includes support of Canada's allies; thirdly, to meet civil commitments to NATO, including North America; and finally, to mitigate the effects of attack on population, essential industries and services. . . .

Because of the potential 'totality' of war, the civil structure involved in defence planning is, in effect, the whole of the social and economic infrastructure of Canada less the Canadian Armed Forces. . . .⁵

Planning to undertake this immense task was set under way only recently, and then in a most preliminary fashion. Order-in-Council 1981-1305, promulgated in June 1981, gave directions for the establishment of eleven national emergency agencies (NEA), which may be brought into operation in the event of major peacetime or wartime emergencies (see appendix D). Departments were instructed to review their requirements on the assumption that planning and arrangements would have to be completed within five years from the beginning of fiscal year 1982/83. "The precise timing and the level of completeness of the planning activity that is envisaged is a matter still to be decided," however, according to Mr. Snarr.⁶ The planning premise was that the NEAs would have a minimum of thirty days' notice to become operational in the event of a crisis.⁷ Testimony indicated:

... that the planning in relation to the national emergency agencies in most cases is in a very early and preliminary stage. There is only one for which a skeleton organi-

⁴ *Proceedings of the Senate Sub-committee on National Defence*, 4 May, 1982, p. 27:25.

⁵ *Ibid*, p. 27:6.

⁶ *Ibid*, p. 27:15.

⁷ *Ibid*, p. 27:10.

zation has been set out and people are actually devoted full-time to detailed planning activities. That is in relation to energy. In fact, it is under the rubric of the Energy Supply Allocation Board, which we view as a component or element of what would be a national emergency agency for energy.

With regard to the priorities for the further development of planning in relation to national emergency agencies, that is a matter which is at present under consideration by the government. . . .⁸

It is only after this process is complete that the necessary complex arrangements with the private sector will be made.

As for the National Emergency Agency for Transportation, which has greatest relevance to this report, such planning would be carried out within Transport Canada by an emergency planning unit. Transport Canada in testimony said:

. . . while we are making initial progress in emergency planning since the issue of the government order referred to earlier, there are a total of ten vacant positions which have been identified as necessary if planning is to proceed further. A forecast of new financial requirements, beyond that now scheduled for the department, is for an additional \$1 million in 1982. Unless these funds are forthcoming, we project that the five-year plan will have to be delayed.⁹

However, some of the plans which would be required of a Transportation NEA were set in place several years ago, in response to NATO requirements. For example, Transport Canada regularly exercises its Civil Direction of Shipping Organization in some aspects of its duties, in co-operation with NCS officers from MARCOM. The sub-committee was given an opportunity to observe a portion of one of the international exercises which form part of the training for an emergency;¹⁰ but when asked specifically if mechanisms were in place to give effect to whatever plans would ultimately develop — and the example of pressing a merchant ship into military service in a crisis was cited specifically — the response from a witness was: “We could through the invocation of the *War Measures Act*, if one were talking about a war emergency. The general answer to (this) question is that the need for authorities and the drafting of regulations, and so on, is an integral part of all emergency planning.”¹¹

The general state of Canada’s civil mobilization planning is summarized in the following exchange between a member of the sub-committee and the witness:

QUESTION: So you are really telling me that the policy is still undecided. We have an order-in-council that provides a framework for this work to be done, but really the policy as to whether or not it should be done, and with what priority, has yet to be established. In the case of a busy department, what priority will it assign this kind of task unless someone tells it what the priorities are? Perhaps I am asking you this too early in the game. You might have a better notion of where the thing was going a little later on.

⁸ *Ibid*, p. 27:9.

⁹ *Proceedings of the Sub-committee on National Defence*, 4 May, 1982, p. 27:19.

¹⁰ Other countries involved in this exercise were: Argentina, Australia, Brazil, France, New Zealand, Paraguay, the United Kingdom, the U.S. and Uruguay.

¹¹ *Ibid*, p. 27:29.

ANSWER: I think that is a fair statement, senator.¹²

Given the state of Canada's military defences, it is extremely unsettling to discover that planning on the civil side of defence is in an embryonic stage. Therefore:

The sub-committee recommends that planning and organization of the national emergency agencies defined in Order-in-Council 1981-1305 be proceeded with on a priority basis, and that the resources necessary to complete such arrangements in no more than four years from the commencement of the current fiscal year be allocated to the relevant departments.

Apart from the *Energy Supplies Emergency Act* and a handful of scattered references to emergencies in other legislation, the federal government has nothing at its disposal that would enable it to draw on the country's civilian resources in a crisis period. Canadian action of this kind would be dependent on the proclamation of the *War Measures Act*, which is so sweeping in its removal of protections of civil liberties and in its potential for government intrusions into society that it cannot realistically be invoked unless there is a perceived immediate danger to the security of the state. Canadians have to believe that they are actually in the process of going to war with another country or facing armed insurrection before it is conceivable to declare the measures stipulated under this act. No comprehensive federal legislation exists which would permit a measured response or prudent preparations in a situation of rising tensions short of war.¹³ Similarly, there is no system to permit a graduated response when something less than placing the whole country on a war footing is required — as was the case for the British during the Falklands crisis.

This problem has been noted elsewhere, for example in the 1981 report on armed forces reserves of the House of Commons Standing Committee on External Affairs and National Defence. Dealing with the specific problem of the armed forces' requirements for air transport, the report noted: "this country at present lacks the necessary arrangements between government and airline companies to make aircraft and crews available when needed," for example in the event of a major crisis in Europe. "Indications are that solution of this problem might ultimately require new legislation," the report suggested.¹⁴ What is true in the air transport field is equally true, if not more so, with respect to maritime forces, which are responsible for the defence and protection of Canada's territory and territorial seas.

Although not insensitive to the difficulties involved, the sub-committee cannot refrain from voicing its incredulity that virtually nothing has been done in this regard even after the domestic experiences of 1970:

The sub-committee recommends that new legislation be presented to Parliament for early enactment to permit graduated government responses in crisis situations; to enable the government to draw on civilian capabilities in

¹² *Ibid.*, pp. 27:17-18.

¹³ Some provinces have legislation to allow them to contend with emergencies within their own borders.

¹⁴ *Action for Reserves*, *op. cit.*, p. 44.

crisis situations short of war; and to authorize the mobilization of reserve forces and civilian capabilities as required by crisis situations or the outbreak of war.

One specific question which the government should examine when it is considering new legislation of this kind, the sub-committee believes, concerns the large number of merchant ships owned by Canadians or Canadian companies, but flying flags of convenience. Several witnesses mentioned the existence of a sizeable fleet of such vessels. Mr. Anderson even went so far as to state that a growing proportion of those ships flying flags of convenience are Canadian-owned,¹⁵ a phenomenon which Mr. Walsh attributed to two major reasons: higher wage rates and corporate taxes in Canada.¹⁶

The sub-committee believes that the question of the status, in crisis period or wartime, of Canadian vessels operated under foreign flag requires examination. Because of the important commercial and transportation considerations involved, the sub-committee recommends that this matter, in its civilian and military aspects, be referred to the Senate Committee on Transportation and Communications for study and report.

Co-ordination of government fleets

Although the government of Canada operates more than nine hundred vessels in addition to those of MARCOM, the vast majority are too small or too highly specialized in civilian tasks to make an effective contribution to active duties in wartime. Moreover, neither the Coast Guard nor any other civilian government vessels are armed or, at present, charged with military or para-military duties of any kind, nor have they been designed with such use in mind. The Canadian Coast Guard is quite unlike the United States Coast Guard in this respect.

Despite the different roles and traditions of the various Canadian government fleets, the sub-committee believes that ways of strengthening co-operation among them should be continually sought. According to Vice-Admiral A.L. Collier, Commissioner of the Coast Guard, the Department of National Defence has indicated no specific armament preparations requirements¹⁷, and progress is slow even in working out memoranda of agreement concerning relatively minor matters.¹⁸ VAdm Collier told the sub-committee that Coast Guard ships are not even built for enforcement of our national laws.¹⁹ The sub-committee believes that more attention should be paid to interoperability, at least when the ships are being designed. Indeed, as suggested in chapter V, it might make a great deal of sense to turn over minesweepers and other smaller warships to the civilian departments for use in peacetime, so as to ensure both the availability of specialized types in the event of hostilities and their most cost-effective use in peacetime. Great care would have to be taken, however, not to divert essential resources away from vital aid to-navigation duties or similar duties which are as crucial in conflict as in peace. VAdm Collier put this problem in perspective when he reminded the sub-

¹⁵ *Proceedings of the Senate Sub-committee on National Defence*, 2 March, 1982, p. 22:29.

¹⁶ *Ibid*, 8 March, 1983, p. 40:31.

¹⁷ *Ibid*, 23 November, 1982, p. 35:8.

¹⁸ *Ibid*, p. 35:9.

¹⁹ *Ibid*, p. 35:14.

committee that even "in a national emergency, the Coast Guard would continue to perform many of its peacetime tasks ... basic vessel requirements would remain the same."²⁰ This cautionary note should be kept in mind.

The sub-committee recommends that the feasibility of modification for military use be studied before any new government vessel is constructed, acquired or refitted and that, where possible, the design incorporate the necessary features up to and including the fitting for, but not with, the necessary weapons, communications and sensor systems. Such systems should, however, be acquired and stored in appropriate locations for rapid installation as required.

The sub-committee also recommends that any resulting additional costs be financed by commensurate increases to the capital budget of the Department of National Defence, so that the already inadequate re-equipment program for the Canadian Armed Forces will not be further retarded.

The process of strengthening co-ordination between MARCOM and other government fleets should not be seen as in any way bringing the latter under the control of DND. In fact, all existing government fleets appear to be heavily utilized and in need of additional units to make them fully efficient. Considering that Canada's maritime boundaries and off-shore activities have increased dramatically in the past fifteen years, it is scarcely surprising that this is so. Consequently, there is ample room for each department to carry out a full range of activities without jurisdictional disputes. Each fleet contributes, in its own functional area, to the overall national effort at sea.

The sub-committee reiterates the recommendation from its first report that a comprehensive system for the mobilization of Canada's non-military maritime resources be established and that, as a first step towards this end, plans be developed for full integration of all government operations at sea in times of hostilities.

The Arctic

Nowhere is the contribution of other government fleets greater than in the north. Here the Coast Guard, with its ice-breakers and supply vessels, carries the main burden of assisting local communities, controlling Canadian and foreign activities, assisting navigation and generally asserting Canadian sovereignty. This is a task which MARCOM would have to do — with surface vessels as well as LRPA patrols — if the Coast Guard were not already engaged in the task. As noted in chapter V, the sub-committee anticipates that the Coast Guard will continue to carry out the great bulk of Canadian maritime tasks in the Arctic in the years ahead, building new ice-breakers — the Polar-8 and then perhaps the nuclear-powered Polar-10 — to keep pace with and control over the growth of commercial development. In keeping with the preceding recommendation, consideration should be given to constructing new Coast Guard ice-breakers so that they can take military helicopters and containerized weapons systems if necessary.

Maritime Command probably should also increase its activity in the north to some extent by the end of this decade — and would find it useful to have a central

²⁰ *Ibid*, p. 35:8.

supply and repair base, perhaps along the lines of the facilities General Dextraze suggested be built on Devon Island some years ago²¹ — but the bulk of the work is likely to remain with the Coast Guard.

Keeping in mind the need to continually assert sovereignty, the sub-committee recommends that the government examine the need for a year-round Arctic base to provide support for air, land and sea operations of all departments with responsibilities in the North.

Crewing

A central problem with efforts to establish greater co-ordination between the government's civilian and military fleets, however, is in the area of crewing. Coast Guard and Department of Fisheries and Oceans crews are not required to go into danger zones in the performance of their duties and are not covered by the compensation systems which apply to the armed forces. As VAdm Collier pointed out, their collective agreements would make it very difficult to replace their civilian crews with military personnel,²² and unions may not be particularly well-disposed to efforts to make Coast Guard or Department of Fisheries and Oceans vessels into military or para-military instruments. Ways out of this difficulty should be possible with sufficient imagination and careful consultation, however, provided that the government takes the initiative in developing the necessary legislation and other arrangements for the mobilization of non-military resources when needed. Some devices to solve the crewing problem which have been suggested are to withhold the installation of actual weapons (as opposed to their fittings) until the government has decreed a heightened state of national alert (short of the *War Measures Act*, under new legislation), or to crew some Coast Guard or Fisheries vessels with personnel who are also volunteer naval reservists.

Search and rescue

Although a discussion of Canada's Search and Rescue Organization does not fit neatly into this chapter, it does provide a graphic example of the kind of co-operation that would be required between civilian and military organizations in a crisis, and it demonstrates both the degree of success and the kind of shortcomings that might be expected.

Overall responsibility for search and rescue rests with an Interdepartmental Committee on Search and Rescue whose chairman is a senior military officer and whose vice-chairman is the Commissioner of the Coast Guard. Representatives from other concerned government departments and agencies form the rest of the committee.²³ It has a small secretariat. A single cabinet minister has overall

²¹ *Ibid*, 3 March, 1983, p. 39:13.

²² *Ibid*, 23 November, 1982, p. 35:14.

²³ The Committee comprises members representing the Department of National Defence; the Canadian Coast Guard; the Canadian Air Transport Administration; the Department of Fisheries and Oceans; the Department of Energy, Mines and Resources; the Department of Indian and Northern Affairs; the Atmospheric Environmental Service; and the RCMP. Also attending its meetings are observers representing the Privy Council Office; the Foreign and Defence Committee of Cabinet Secretariat; the Treasury Board Secretariat; and the Ministry of State for Economic and Regional Development.

responsibility for search and rescue; at the present time, this is the Minister of National Defence. Resources permanently assigned to search and rescue duties are supplied, on the air side, by the Department of National Defence and, on the water, by the Coast Guard. In case of need, the Search and Rescue Organization is able to call upon all resources of the Department of National Defence and those of other government departments, and to request assistance from private vessels, aircraft and individuals. To supplement its permanent resources the Department of National Defence is currently engaged in forming a volunteer Civil Air Search and Rescue Association (CASARA), through which private aircraft owners and operators would take part in searches to locate downed aircraft. The Coast Guard is developing an organization called the Canadian Marine Rescue Auxiliary (CMRA), which brings into the search and rescue field many people who operate boats commercially and for pleasure. The Department of National Defence directs air searches and the Coast Guard searches at sea. The SAR rescue co-ordination centres (RCCs) are jointly staffed. A high degree of co-operation seems to characterize the organization.

With respect to the organization of search and rescue, the sub-committee generally concurs in the major conclusions and recommendations of the recently published, thorough and thoughtful study of search and rescue in Canada known as the Cross Report.²⁴ However, the sub-committee does wish to sound a note of caution about the danger of empire-building on the part of the secretariat of the interdepartmental committee and the dangers of fragmentation and duplication of effort that could result. Having visited rescue co-ordination centres on both coasts, the Sub-committee also wishes to observe that these units would benefit from being better quartered.

Although harsh criticisms have been voiced in Parliament and the press, on occasion, about the deployment of SAR resources, the balance of evidence presented to the sub-committee seems to suggest that these criticisms are not totally deserved. On the air side, for example, problems appear to result from long delays in notifying rescue co-ordination centres and from weather conditions making it impossible for aircraft to fly, rather than from actual response time.

Undoubtedly, ships and airplanes would reach the scene of accidents faster if they could be located everywhere incidents may occur. But, given finite resources, choices have to be made, and scarce dollars are perhaps better allocated to safety education, prevention, upgrading of existing RCC facilities, and supporting promising new ventures such as the volunteer SAR associations than to increasing the number of SAR bases.

An exciting innovation is the experimental search and rescue satellite system involving Canada, the United States, France and the Soviet Union. This programme, which permits the precise location of downed aircraft and ships in distress (by satellite, aided by emergency locator transmitters on ships and aircraft), has given definite proof of its high potential and cost effectiveness.

Partly to help compensate for the fact that good news is usually not newsworthy while bad news, however rare, invariably is, the Sub-committee wishes to

²⁴ *Report on an evaluation of search and rescue*, Cabinet Committee on Foreign and Defence Policy, September 1982, ISBN 0-660-11219-1.

make a point of commending the men and women in the armed forces and the Coast Guard and the many volunteers for their gallant and dedicated service to search and rescue and for the admirable rate of success they have achieved over the years under conditions of severity that are unsurpassed anywhere in the world.

The sub-committee hopes that the special contribution of the armed forces will be recognized under any new search and rescue arrangements and **recommends that the Canadian Armed Forces continue to be assigned search and rescue as a major task.**

With personnel on duty twenty-four hours a day, seven days a week, and with sizeable numbers of ships and aircraft, the forces seem ideally suited for it.

Strategic materials

One other area of planning which must be given urgent consideration concerns strategic materials, especially those vital to the economy of Canada and shipped to this country by sea. The government should determine which are most vital and then establish plans of action for stockpiling and usage in crises or wartime. For security of supply, Canada may wish to consider stockpiling amounts of such strategic materials so as to avoid an over-reliance upon maritime defence forces which, even with the kind of improvements suggested in this report, might not be able to rule out interruptions. As a consequence:

The sub-committee recommends that the government immediately undertake a study to determine which strategic materials are vital to Canada and which depend on uninterrupted sea lines of communications. It should also seek to determine the feasibility and costs of creating stockpiles of strategic materials for which substitutes are not available in Canada.

The sub-committee cannot over-emphasize the importance of planning carefully for the mobilization of certain resources for-crises or wartime: this could be vital for the defence of the nation. Nor can it over-state its distress at discovering just how little has been accomplished thus far, nor over-stress how critical it is to proceed immediately with this task.

CONCLUSIONS

This report ends where it began — with Canada's interests and obligations at sea. RAdm Martin put the sub-committee's position in a nutshell:

... we are a maritime nation. Not many Canadians realize it, but it is a fact. World trade is vital to our economy and to our growth and our interests on and under the sea adjacent to our coast are becoming increasingly important. We must be able to exert our influence and hold on to that which is ours, and be able to move freely on the oceans in times of tension and to trade with whomever we wish in peacetime.¹

Unfortunately, we live in a world where the accomplishment of these aims depends all too frequently upon a demonstrable will to fight for them and the ability to do so. More unfortunately, money is the key to acquiring that ability.

The sub-committee is fully conscious that the implications of the recommendations contained in this report involve increases in defence expenditures. Pains have been taken to spell out these costs. The report argues that, to rebuild Canada's maritime forces, an additional \$550 million a year in constant 1983 dollars must be added to the capital budget of the Department of National Defence over the next twelve years and earmarked for this purpose. The ongoing costs for personnel, operations and maintenance of implementing the recommendations would be approximately \$80 million a year (in constant 1983 dollars). In the sub-committee's first study, *Manpower in Canada's Armed Forces*, the cost implications of the recommendations amounted to \$350 million a year (approximately \$400 million in 1983 dollars). Taken together, these recommendations of the two reports would see defence expenditures mount, in relation to Canada's GNP, from about 2 per cent to about 2.3 per cent. The sub-committee has not completed its studies of Canada's armed forces. As it looks at other commands, such as Mobile Command and Air Command, the sub-committee fully expects to encounter situations demanding additional expenditures. The sub-committee finds it is being drawn inexorably towards recommendations which would ultimately see Canada's defence expenditures rising to somewhere between 2.5 per cent and 3 per cent of its GNP.

¹ *Proceedings of the Senate Sub-committee on National Defence*, 8 February, 1983, p. 38:25.

Few industrialized nations devote less resources to defence than does Canada. Should Canada's expenditures rise to the level of 3 per cent of GNP, it would join the company of other nations such as Sweden (3.1 per cent), the Netherlands (3.4 per cent) and Australia (3.0 per cent).²

It is the view of the sub-committee that the current Canadian level of expenditure on defence does little more than buy the country the worst of both worlds. While the expenditures are large enough to represent a significant charge on the national exchequer, they are too small to produce worthwhile results. Today, Canada finds itself in the position where it is obliged not only to spend to maintain current capabilities, but also to recover the immense amount of ground lost through years of under-funding.

Let us be clear: what is sought is not the kind of military strength that will allow Canada to flex its muscles on the world's stage, nor to become an important element in the calculation of the world's military balance. What is sought is the minimum necessary to permit Canada's armed forces to fulfil their peacetime obligations, to satisfy the country's alliance commitments, to meet Canada's current political objectives in Europe and elsewhere and to allow its men and women in uniform to carry out their wartime tasks with some reasonable prospect of success.

What is also sought is a means of making an effective contribution towards weaning the Western Alliance from its dependency upon nuclear weapons as the deterrent to Warsaw Pact aggression.

Both alliances have built up huge arsenals of nuclear weapons. In the case of the Warsaw Pact countries, these are exclusively under the control of the USSR. In NATO three member nations possess their own nuclear weapons, but the overwhelming preponderance is in the hands of the United States. The consequences of resorting to nuclear weapons are, for most, too terrible to contemplate. Two circumstances would militate against their use. The first, which is currently the subject of intense debate, is the maintenance of a balance between the nuclear forces of both sides such that neither will find it expedient to resort to them for fear of the consequences of the other's retaliation. The second is a certain comparability of conventional forces, which provides each side with some prospect of defending itself with non-nuclear weapons, at least for several days, weeks or months. The West in particular is now engaged in a keen debate over the possibility of adopting a policy of "no first use" of nuclear weapons. The adoption of this policy seems unlikely until the Alliance has strengthened its conventional forces to a point where they are no longer at a marked disadvantage in relation to those of the Warsaw Pact.

Such a strategy can only be adopted whole-heartedly if the West can feel reasonably confident that its strength in conventional arms is sufficient to meet the Warsaw Pact's conventional forces on a basis of equality. To do this requires more than a simple change in plans. It demands vastly improved conventional capabilities — more and better trained manpower, and more state-of-the-art aircraft, ships, tanks and other materiel. It also means that the North American members

² *The Military Balance 1982-1983, op. cit.*, (1981 figures).

of the Alliance must demonstrate the will and, just as important, the capacity to meet their commitments in Europe. This implies forces in position in Europe and a demonstrated capability to sustain them — an ability to move replacements, reinforcements and replenishments across the intervening ocean against opposition.

Modern conventional weapons are expensive. For NATO to possess them in sufficient quantities to enable it to avoid first resort to nuclear weapons requires increased expenditures on defence. The Supreme Allied Commander, Europe, General Bernard Rogers, and others estimate that the annual NATO-wide increase which would be necessary would be of the order of 4 to 4.5 per cent, on the average, in real terms. General Rogers was careful to emphasize, however, that this figure was an average and that, given their past records, some allies would have to do better than others.

For years, Canada has placed great emphasis upon reducing the risk of nuclear conflict. Canada has been singularly active in pursuing this goal in international forums and through informal consultations. In addition, this country has sought to distance itself more and more from employment of nuclear weapons. First, Canada refused to develop them itself. Later, Canadian forces were withdrawn from nuclear roles. Shortly, the last nuclear weapons held by Canada, those deployed with its NORAD forces, will be replaced by conventional systems. It would be utterly inconsistent with Canada's past attitudes and present policies not to continue to act in a manner which has the ultimate effect of reinforcing efforts within the Alliance to minimize the possibility of nuclear war. Canada should, in particular, do everything possible to enable the Alliance to espouse a strategy of "no early use" of nuclear weapons. By running down its forces, as it did in the late 1960s and through the 1970s, Canada contributed not to raising but to lowering the nuclear threshold.

A period when resources are scarce and when unusually heavy demands are being made upon the nation's social support systems is hardly the most propitious time to advocate greater outlays on defence. There is ultimately, however, no greater contribution to be made to the well-being of Canadians than to reduce the danger of nuclear war. Concrete and significant moves by some key allies to demonstrate that they are willing to shoulder a fair share of the costs involved in raising the threshold of nuclear war could well change the tone, character and outcome of the current debate in the United States. That, in turn, could help to determine whether or not the long journey begun with SALT I could be resumed.

Reducing the risk of nuclear war will cost more than intellectual effort. The sub-committee can think of no more practical route to follow in current circumstances than that of enhancing NATO's conventional strength.

In the course of his exchange with the sub-committee, former Chief of the Defence Staff General Jacques Dextraze (ret.) said:

I have always been of the opinion that the defence of our country is not only the responsibility of the man in uniform, it is the responsibility of every citizen in the

country. It is also the responsibility of bodies such as this sub-committee and other responsible bodies within government.³

The sub-committee from its inception has seen its most effective potential contribution to be that of promoting informed, dispassionate discussion about defence — a subject some have termed the first responsibility of a state. It is the profound hope of all members that this, the sub-committee's second report, will aid in that objective. If in so doing the report also prompts needed action, the reward to its authors would be beyond measure.

³ *Proceedings of the Senate Sub-committee on National Defence*, 3 March, 1983, p. 39:10.

Appendix A

THE DND ROLES, OBJECTIVES AND TASKS*

Background

1. The current DND Roles were first expressed by the Prime Minister in 1969 as a result of a review of defence and foreign policy. During the Defence Structure Review of 1975, six roles were defined; however, the first three were grouped together with the following results:
 - a. Sovereignty, Internal Security and National Development;
 - b. Defence of North America;
 - c. NATO;
 - d. Peacekeeping
2. Since 1975 wording of the roles has varied slightly from year to year; however, the following best reflects the current interpretation:
 - a. Role 1 — the protection of Canada and Canadian national interests at home and abroad (short title, Sovereignty);
 - b. Role 2 — the defence of North America in cooperation with the United States (short title, Defence of North America or Defence of Canada);
 - c. Role 3 — the fulfilment of NATO commitments as may be agreed upon (short title, NATO); and
 - d. Role 4 — the performance of such international peacekeeping duties as Canada may from time to time assume (short title, Peacekeeping).
3. To further define the roles, the Defence Structure Review of 1975 enumerated 15 "Objectives" which in turn were divided into 55 operational and 11 miscellaneous "tasks".

Outline

4. Within the pages which follow the roles, objectives and tasks are listed without priorities being assigned. At Appendix B is a chart which shows graphically the organization of the roles, objectives and tasks.

Limitations

5. The user of this document is cautioned that although the objectives and tasks give a general indication of the type of activity which the Government expects of the Canadian Forces they must in all cases be interpreted with judgement. The existence of a task does not necessarily mean that the Department has been able to assign resources to the task.

* Provided by DND

ROLE 1 *The protection of Canada and Canadian national interests at home and abroad*

OBJECTIVE 1 — *To ensure an adequate overall capability for surveillance of Canadian territory, airspace and sea approaches*

- 1.01 To conduct surface surveillance of Canada's offshore waters to provide a continuing intelligence picture of shipping activities.
- 1.02 To deter or counter challenges to territorial sovereignty including the conduct of surveillance of specific areas to detect contraventions of Canadian laws and interests.
- 1.03 To provide surveillance in conjunction with other government departments, of waters over which Canada exercises jurisdiction, to detect the discharge of pollutants from ships, fishing violations, and unauthorized exploration or exploitation of the resources of the sea bed.
- 1.04 To provide surveillance of land and sea areas north of 60°N latitude to reinforce Canadian presence, and to detect and identify unauthorized activities.
- 1.05 To provide jointly, or in close cooperation with the Ministry of Transport, national means of surveillance and detection to discourage breaches by foreign aircraft of Canadian laws and regulations.
- 1.06 To assist the Department of the Environment in ice surveillance.
- 1.07 To provide reconnaissance of areas in which trans-oceanic cable breaks occur to determine the cause and, if appropriate, to identify the ships responsible for the break, in areas under Canadian jurisdictional authority.

Objective 1 also served by Task 7.01

OBJECTIVE 2 — *To reinforce, through military involvement, respect for and compliance with Canadian territorial and jurisdictional authority*

- 2.01 To support other government departments in the exercise of their maritime regulatory responsibilities over surface and sub-surface vessels operating in waters over which Canada exercises jurisdiction and if necessary military control over these vessels.
- 2.02 To detect, identify, and control non-compliant foreign aircraft detected in Canadian airspace.
- 2.03 To airlift and airdrop personnel, equipment and materiel within Canada and overseas in support of military operations.
- 2.04 To provide a national presence in conjunction with other government departments, in support of sovereign jurisdiction over remote areas.

Objective 2 also served by Tasks 1.01, 1.02, 1.03, 1.04, 1.05, 5.12 and 9.04

OBJECTIVE 3 — To provide aid to civil law enforcement agencies on request in execution of their constitutional responsibilities

3.01 To provide sea, land and air combat forces to aid civil law enforcement agencies in situations of insurrection, civil unrest, riots in penitentiaries or any civil emergency beyond the capacity of civil law enforcement agencies.

Objective 3 also served by Tasks 1.02, 1.03, 1.04, 1.05, 2.01, 2.02, 2.03, 5.12, 9.01 and 11.01

OBJECTIVE 4 — To promote canadian unity and identity

4.01 To perform public duties and ceremonial on behalf of the Crown in Canada and to provide the necessary administrative and logistic support for these duties.

4.02 To provide bilingual and bicultural programs within the Canadian Armed Forces.

4.03 Provide sea, land and air transportation of freight and passengers to other government departments, and outside agencies.

4.04 Provide administrative and logistic services in support of scientific, operational, and R&D projects for other governments and departments.

4.05 To participate in and provide administrative and logistic support for national and international events, displays and exhibitions.

4.06 To provide the use of DND personnel, buildings, equipment and facilities to other government agencies and to the private sector.

4.07 To provide construction services and support to other government departments in emergency situations and in remote areas.

4.08 To support the DIAND in the development of Inuit and Indian peoples.

4.09 To provide a Canadian presence abroad by operational, informal and formal visits in foreign countries.

Objective 4 also served by Tasks 2.04, and 5.11

OBJECTIVE 5 — To support emergency relief and search and rescue (sar)

5.01 To coordinate, control and conduct search and rescue operations for aircraft in distress within the Canadian assigned area of responsibility.

5.02 To coordinate and, in collaboration with the Canadian Coast Guard, control and conduct SAR operations for ships in distress within the Canadian assigned area of responsibility.

- 5.03 To provide sea, land and air forces to aid civil authorities in instances of civil disaster and emergency situations, including emergency ordnance disposal and accidents involving nuclear materials.
- 5.04 To conduct mercy flights and other miscellaneous humanitarian tasks.
- 5.05 To conduct ground searches.
- 5.06 To provide the National Attack Warning System.
- 5.07 Provide assistance to other Government Departments and Provincial governments in the planning, operation and manning of EPC activities.
- 5.08 To determine the effects of nuclear detonations and to provide fallout warning.
- 5.09 To provide an emergency communications system for the government.
- 5.10 To assist in survival operations associated tasks in damaged areas.
- 5.11 To participate in the Canadian response to international disasters and distress.
- 5.12 To assist in the evacuation of Canadian nationals from foreign countries during times of tension or emergency.

OBJECTIVE 6 — To foster economic growth, social justice, and quality of life and the preservation of an harmonious national environment

- 6.01 Provision of training and logistic support to youth development through SYEP and other activities.
- 6.02 To support community activities such as St. John's Ambulance, Red Cross and recreational programs.

Objective 6 also served by Tasks 1.03, 4.02, 4.03, 4.04, 4.05, 4.06, 4.07, 4.08, 5.01, 5.02, 5.03, 5.04, 5.05, 5.11, and 11.02

ROLE 2 *The defence of North America in cooperation with US Forces*

OBJECTIVE 7 — To deny the advantage of surprise in armed attack on North America

- 7.01 To conduct sub-surface surveillance, in conjunction with US forces, of shallow and deep water areas of the seaward approaches to North America, including the Canadian Arctic and the Denmark Strait, to provide a continuing intelligence picture of potentially hostile submarine activities.
- 7.02 To conduct aerospace surveillance and warning, in conjunction with US forces, for the defence of North America.

Objective 7 also served by Task 1.01

OBJECTIVE 8 — *To contribute to the protection of the land-based US retaliatory capability against neutralization*

8.01 In conjunction with US Forces, to detect, identify and if necessary destroy hostile military aircraft that enter North American airspace.

Objective 8 also served by Tasks 7.01 and 7.02

OBJECTIVE 9 — *To provide response to other military threats to North America*

9.01 To locate and neutralize mines laid in Canadian waters.

9.02 In the event of hostilities involving Canada, to carry out operations in conjunction with US forces, to deter and counter hostile action against shipping in North American waters.

9.03 To provide sea, land and air combat forces, in conjunction with US forces, to deter military threats to North America.

9.04 To counter small incursions in isolated areas.

9.05 To provide Naval Control of Shipping in Canadian ports and seaward approaches in times of tension or hostilities.

Objective 9 also served by Tasks 1.01, 2.03, 7.01, 7.02, 8.01, 10.01, and 11.01

ROLE 3 *The fulfilment of such NATO commitments as may be agreed upon*

OBJECTIVE 10 — *To prevent or contain armed attack against the NATO area (Europe, North Atlantic, and North America)*

10.01 To provide distant and close protection for military and merchant convoys in transit across the North Atlantic, off the east and west coasts of North America, and in Northern European waters.

10.02 To escort the seaborne elements of the CAST Brigade Group to Northern European waters.

10.03 To make an identifiable Canadian contribution to the NATO conventional deterrence in Central Europe.

10.04 To provide a contribution to deterrence on NATO's northern flank.

10.05 To provide sea, land and air combat forces in Canada for deployment overseas in times of crisis in support of alliances.

10.06 To provide a mobilization capability.

Objective 10 also served by Tasks 1.01, 2.03, 7.01, 7.02, 8.01, 9.01, 9.02, 9.03, 9.05, and 11.01

OBJECTIVE 11 — *To sustain the confidence of the US and other allies*

11.01 To provide operational training for all environments.

11.02 To provide logistics support to foreign armed forces training in Canada.

Objective 11 also served by Tasks 2.03, 4.09, 7.01, 7.02, 8.01, 9.03, 9.05, 10.03, 10.04, 10.05, and 10.06

OBJECTIVE 12 — *To ensure that allied policies include provision for Canada's security interests*

12.01 To participate in the provision and manning of NATO and NORAD command and control facilities.

Objective 12 also served by Tasks 7.01, 7.02, 8.01, 10.03, 10.04 and 10.05

ROLE 4 *The performance of such international peacekeeping roles as Canada may from time to time assume*

OBJECTIVE 13 — *To avoid great power confrontation in local conflict*

13.01 To provide military observers to peace observation missions of the United Nations or other agencies.

13.02 To provide maritime, land and air forces and the necessary operational support for deployments of peacekeeping operations in support of the United Nations or other agencies.

Objective 13 also served by Task 2.03

OBJECTIVE 14 — *To prevent the outbreak of hostilities in other areas of tension*

14.01 To prevent the outbreak or spread of hostilities in areas of tension.

Objective 14 served by Tasks 2.03, 11.01, and 13.02

OBJECTIVE 15 — *To contribute to the promotion of internal stability in selected non-NATO countries*

15.01 To provide military training for foreign military personnel under Military Assistance Programs in Canada and abroad.

Objective 15 also served by Tasks 2.03, 5.11, 13.01, and 13.02

Infrastructure objectives

- To provide effective control management and administration of all activities of the department and the CF.*
- To provide the services necessary to ensure adequate supply and technical support of the department and the CF.*
- To provide for all levels of training of the CF.*
- To maintain and advance Canadian scientific and technological knowledge and analytical capability for defence.*

Infrastructure tasks

- IN 1 To provide for command and control of the Canadian Armed Forces.
- IN 2 To provide for policy development, planning, programming, and evaluation services.
- IN 3 To provide personnel management services including recruiting, individual common training, and personnel development.
- IN 4 To provide materiel management services including research, development, engineering, supply, maintenance, and other logistic support activities.
- IN 5 To provide financial, management and administrative services.
- IN 6 To provide legal services.
- IN 7 To provide information services.
- IN 8 To provide intelligence, foreign liaison and security services.
- IN 9 To provide military communications systems.
- IN 10 To provide medical and dental services.
- IN 11 To provide education for the dependant children of military personnel.

Appendix B*

RELATIONSHIPS BETWEEN CURRENT COMMITMENTS AND TASK (SEE APPENDIX A FOR NUMBERS)

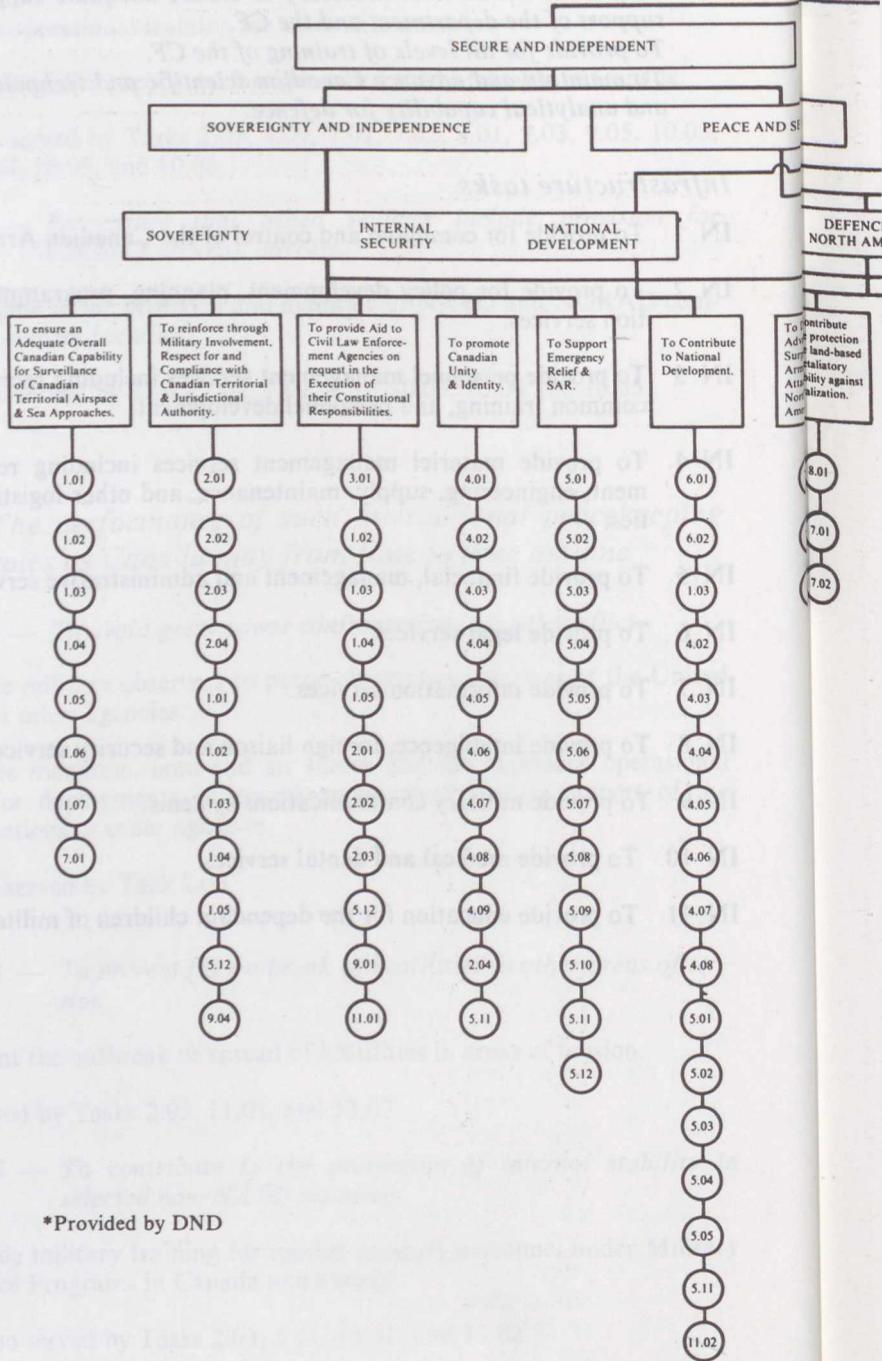
NATIONAL AIMS

POLICY THEMES

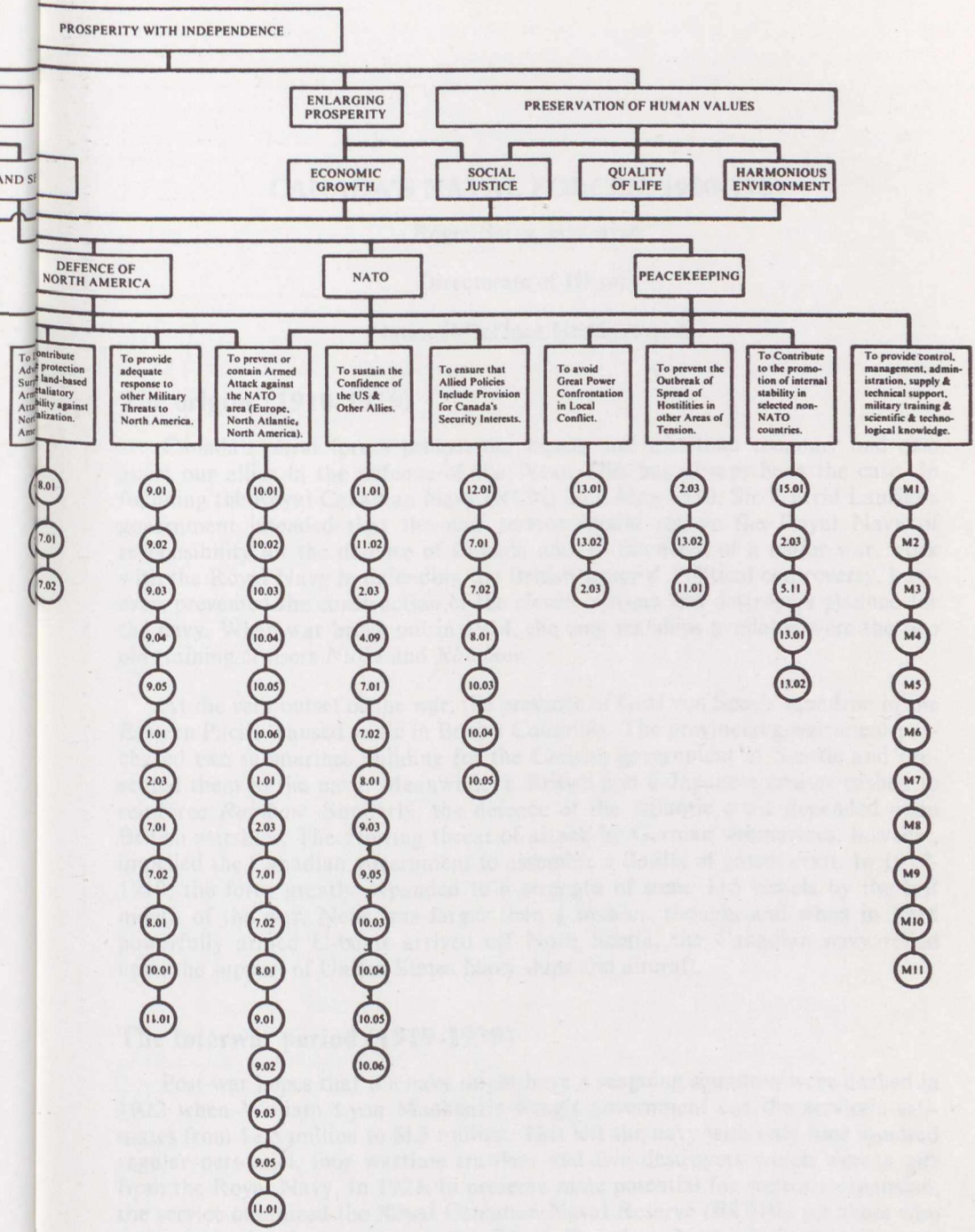
DND ROLES

DND OBJECTIVES

DND TASKS



*Provided by DND



CANADA'S NAVAL FORCES, 1910-1981

Roger Sarty, Historian

Directorate of History

National Defence Headquarters

The origins (1910-1919)

Canada's naval forces protect our coasts and maritime economy and also assist our allies in the defence of the West. This has always been the case. In founding the Royal Canadian Navy (RCN) on 4 May 1910, Sir Wilfrid Laurier's government intended that the new service should relieve the Royal Navy of responsibility for the defence of Canada and, in the event of a major war, work with the Royal Navy in defending the British Empire. Political controversy, however, prevented the construction of the eleven cruisers and destroyers planned for the navy. When war broke out in 1914, the only warships available were the two old training cruisers *Niobe* and *Rainbow*.

At the very outset of the war, the presence of Graf von Spee's squadron in the Eastern Pacific caused panic in British Columbia. The provincial government purchased two submarines building for the Chilean government at Seattle and presented them to the navy. Meanwhile, a British and a Japanese cruiser rushed to reinforce *Rainbow*. Similarly, the defence of the Atlantic coast depended upon British warships. The growing threat of attack by German submarines, however, impelled the Canadian government to assemble a flotilla of patrol craft. In 1917-1918, the force greatly expanded to a strength of some 115 vessels by the last month of the war. None was larger than a trawler, though, and when in 1918 powerfully armed U-boats arrived off Nova Scotia, the Canadian navy relied upon the support of United States Navy ships and aircraft.

The interwar period (1919-1939)

Post-war hopes that the navy might have a seagoing squadron were dashed in 1922 when William Lyon Mackenzie King's government cut the service's estimates from \$2.5 million to \$1.5 million. This left the navy with only four hundred regular personnel, four wartime trawlers and two destroyers which were a gift from the Royal Navy. In 1923, to preserve some potential for wartime expansion, the service organized the Royal Canadian Naval Reserve (RCNR) for those who were professional seamen and the Royal Canadian Naval Volunteer Reserve (RCNVR), with divisions across the country, for those who were not. In 1931 the

strength of the fleet grew to four destroyers with the arrival of *Skeena* and *Saguenay* which had been built for the RCN in England.

The Depression nearly killed the service. In 1933, the Chief of the General Staff proposed to absorb cuts in defence spending by paying off the navy, but better times were ahead. The RCN had a high priority in the King government's limited re-armament programme of 1936-1939. By the time war broke out in September 1939 the regular force was about seventeen hundred strong and the fleet's modern warships comprised six destroyers and four minesweepers. This was the bare minimum the Naval Staff had recommended for the defence of one coast only.

World War II (1939-1945)

On 16 September 1939, HMCS *Saguenay* and HMCS *St. Laurent* sailed as escort to HX-1, the first convoy to sail from Halifax to the United Kingdom. Thus began the major operational task that the RCN was to perform in World War II. From very modest beginnings the navy's effort expanded until, by December 1942, the service was providing 48 per cent of the North Atlantic convoy escorts, largely with ships produced in Canadian shipyards. In recognition of this achievement, the RCN, whose escorts had functioned under the direction of the Royal Navy and then the United States Navy, was given full control of the north-west Atlantic from 30 April 1943. Difficult and critical as was the job of holding the sea lanes against the U-boats, Canadian warships also served in most of the other theatres of war, escorting convoys to north Russia, patrolling the English Channel, assisting in the defence of Alaska, and participating in landings in the Mediterranean and Normandy. HMCS *Uganda*, a cruiser taken over from the Royal Navy, saw action against the Japanese in the south-west Pacific just before the end of the war.

In the period 1939-1945, the RCN enlisted 99,688 men, largely through the RCNVR, and about 6,500 women, and manned 471 warships. There was a price to be paid, however, for the tremendous expansion of the tiny pre-war regular navy. During the first four years of the war many ships sailed with partially trained crews and without the latest equipment and armament. Some convoys with Canadian escorts suffered extremely heavy losses.

The Cold War (1945-1960)

Plans to build up a balanced post-war fleet fell to budget cuts and recruiting problems. By 1 April 1948, the regular force had a strength of 6,860 and only 10 warships were in commission, though one of these was an aircraft-carrier whose air squadrons formed part of the increasingly important naval aviation organization that had been established in 1945. From this low point, expansion began again as the result of the deepening Cold War. Canada's adherence to the North Atlantic Treaty in 1949 and the North Korean invasion of South Korea in 1950 further fuelled re-armament. Between 1950 and 1954, the RCN kept three destroyers on station with the United Nations forces in Korea.

The 1960 and unification

In the meantime the government had decided that the RCN would concentrate on its wartime specialty — anti-submarine operations — to aid NATO in keeping the sea lanes open and to co-operate with the United States in the defence of North America. New ships and modernized wartime vessels brought the fleet to a strength of forty five warships (frigates and larger) by January 1960. These included the aircraft carrier *Bonaventure* and fourteen Canadian-designed and -built destroyer escorts of the St. Laurent and Restigouche classes. Six more destroyer escorts of a similar type were commissioned between 1962 and 1964.

As the RCN reached a peak of nearly 21,000 regulars in the early 1960s, major organizational changes took place. Army, Navy and Air Force headquarters in Ottawa were amalgamated under a single Chief of the Defence Staff in 1964. Unification of the three services proceeded, and Maritime Command, with headquarters at Halifax, came into existence on 17 January 1966, incorporating the RCN's Atlantic and Pacific commands and the RCAF's Maritime Air Command. On 1 February 1968, the RCN disappeared and the unified Canadian Forces came into being.

The 1970s

The new organization had scarcely been set in place when the government began to review defence priorities. The resulting white paper on defence, *Defence in the 70s*, which appeared in August 1971, gave precedence to “the surveillance of our own territory and coastlines, i.e., the protection of our sovereignty” over the commitments to NATO and North American defence. This involved new responsibilities and suggested that Maritime Command should broaden its capabilities. But escalating costs for equipment, operations and personnel, and ceilings on defence spending have brought a reduction in the size of Canada's maritime forces since the early 1960s. The strength of the RCN's Regular Force fell to 18,255 by March 1966. On 1 January 1968, Maritime Command had 14,390 regulars. By 1981 this had fallen to 8,781, though the loss was partly balanced by an increase in civilian personnel from 3,228 in 1968 to 7,542 in 1981. The number of warships has also declined over the last two decades. Plans to replace the 1940s vintage destroyers and frigates with eight general purpose frigates were cancelled in 1963 and the *Bonaventure* was sold for scrap in 1970, even though she had just undergone a half-life refit. In 1981, the fleet's major warships comprised three operational support ships, three submarines, four modern helicopter destroyers of the Iroquois class (DDH-280), and sixteen destroyer escorts whose elderly hulls, launched between 1952 and 1963, are being refurbished under the Destroyer Life Extension (DELEX) programme. Maritime Command continues to be a bulwark of Canadian sovereignty and an important asset to NATO and North American defence.

Table C-1

**Uniformed personnel on full-time service in
the Royal Canadian Navy
on representative dates, 1939-1966**

Date	Strength
1939 (23 September)	2,673
1945 (30 April)	94,212
1946 (June)	11,140
1948 (31 March)	6,860
1950 (31 March)	9,259
1955 (31 March)	19,207
1960 (31 March)	20,045
1963 (31 March)	20,863
1966 (March)	18,255

Table C-2

Maritime command: regular personnel and civilian personnel

Date	Regular	Civilians
1968 (1 January)	14,390	3,228
1973 (31 December) approximately	14,000	5,421
1977 (31 December) approximately	9,000	6,410
1981		7,542

Table C-3

**Major warships in commission in Canada's Naval Forces
on representative dates, 1939-1981**

Date	Numbers of Warships
1939 (September)	6
1945 (30 April)	211
1948	10
1951 (17 December)	13
1955 (7 January)	22
1960 (18 January)	45
1965 (15 January)	39
1967 (12 December)	25
1971	26
1975	26
1981	26

Note: Figures do not include minesweepers and smaller vessels.

Table C-4

Canadian naval and maritime patrol aircraft, 1939-1983

RCAF Maritime Patrol Aircraft on Representative Dates, 1939-1964		RCN Aircraft on Representative Dates, 1951-1966			
Date	Numbers	Date	Fixed-wing aircraft		Helicopters Anti-submarine
			Fighter	Anti-submarine	
1939 (5 September)	14*				
1943 (1 December)	240				
1950 (1 April)	2	1951 (10 December)	19	24	—
1955	48	1955 (12 April)	12	51	2
1959 (1 October)	52	1959 (21 October)	12	37	10
1964	53	1964 (15 August)	—	36	8
		1966 (15 September)	—	46	20
Maritime command maritime patrol and anti-submarine aircraft, 1972 and 1983					
		<u>Year</u>	<u>Fixed-wing aircraft</u>		<u>Helicopters Anti-Submarine</u>
		1972	32 CP 107 Argus 40 CP 121 Tracker		34 CH 124 Sea King
		1983	18 CP 140 Aurora 18 CP 121 Tracker		35 CH 124 Sea King

* Does not include civil aircraft used for maritime reconnaissance.

NOTE: The figures are approximate, as the method of compilation varied from year to year.
Search and rescue aircraft are not included.

Registration
SI/81-76 10 June, 1981

OTHER THAN STATUTORY AUTHORITY

Emergency Planning Order

P.C. 1981-1305 21 May, 1981

His Excellency the Governor General in Council, on the recommendation of the Prime Minister, is pleased hereby,

- (a) pursuant to section 2 of the Public Service Rearrangement and Transfer of Duties Act, to revoke the Civil Emergency Measures Planning Order, C.R.C., c. 1334; and
- (b) to issue the annexed Order respecting emergency planning.

ORDER RESPECTING EMERGENCY PLANNING

Short Title

1. This Order may be cited as the *Emergency Planning Order*.

Interpretation

2. In this Order,
“emergency” means an abnormal situation that requires prompt action beyond normal procedures to prevent or limit injury to persons or damage to property or the environment;
“emergency planning” includes the preparation of plans and arrangements of those exceptional measures to be put into effect that have as their purpose the mitigation of the adverse effects of an imminent or actual emergency.

General Emergency Planning

3. Every Minister appointed to preside over a Department or responsible for the administration of an agency of the Crown or a Crown Corporation shall

- (a) be responsible for the identification of possible types of emergencies within or directly related to his area of responsibility and for the preparation, evaluation, testing and implementation, when required, of appropriate related emergency plans and arrangements;

(b) where he is assigned lead responsibility for an emergency, coordinate federal government planning in respect of that emergency and be prepared to secure and control, to the extent required, the utilization of any assistance provided by any other Minister; and

(c) at all times be prepared to provide, from the resources of the Department over which he presides or the agency of the Crown or Crown Corporation for which he is responsible, such assistance to any Minister who has been assigned responsibility for an emergency as that Minister may require.

4. The emergency plans and arrangements referred to in paragraph 3(a) shall include plans and arrangements for

(a) the provision of emergency planning assistance and advice to the governments of the provinces and, through such governments, the provision of emergency planning assistance and advice to the governments of the municipalities of those provinces;

(b) the provision of assistance in any joint federal-provincial development of regional emergency plans and arrangements;

(c) the safety and welfare, during an emergency, of the employees of the Department over which the Minister presides and the employees of any agency of the Crown or Crown Corporation for which he is responsible;

(d) the development and maintenance of plans and arrangements for war that, when implemented,

(i) provide the necessary and appropriate support for the defence of Canada,

(ii) meet Canada's collective defence obligations,

(iii) provide appropriate and timely support to the Canadian Forces and to the armed forces of Canada's allies in the conduct of military operations within Canada, at sea and abroad,

(iv) enable Canada to meet its military and civilian wartime obligations to its Allies under the North Atlantic Treaty and other applicable agreements and arrangements, including those with the United States for the Joint Defence of North America, and

(v) mitigate the effects of any military attack on persons in Canada and on the essential industries and services of Canada; and

(e) the provision of such assistance as may be necessary

(i) to those Ministers set out in column I of an item in Part I of the schedule in their planning for the National Emergency Agency set out in column II of that item,

(ii) to those Ministers set out in column I of an item in Part II of the schedule who have the additional emergency powers, duties and functions set out in column II of that item, and

(iii) to the Minister of Fisheries and Oceans in that Minister's planning to carry out the powers, duties and functions set out in Part III of the schedule.

Responsibilities of a Minister

5. Each Minister set out in column I of an item of Part I of the schedule shall, in addition to those responsibilities referred to in section 3,

(a) develop and maintain plans for the establishment and operation of the National Emergency Agency set out in column II of that item and take such measures as are necessary to prepare for

(i) the establishment of the Agency,

(ii) the effective operation of the Agency in any region of Canada in time of national emergency, and

(iii) the exercise of the powers, duties, and functions of the Agency set out in column III of that item; and

(b) to the extent possible and desirable, secure the cooperation and active support of the private sector and the governments of the provinces and through such governments, secure the cooperation and active support of the governments of the municipalities of those provinces for such joint studies, plans, and preparations as may be necessary to discharge the responsibilities set out in paragraph (a).

6. The Minister of Labour shall collaborate with the Minister of Employment and Immigration in the development and maintenance of plans and measures necessary to prepare for the exercise of the powers, duties and functions of the National Emergency Agency for Manpower set out in section 3 of column III of item 3 of Part I of the schedule.

7. The Minister of Supply and Services, in exercising or performing the powers, duties and functions under the *Defence Production Act*, shall collaborate with the Minister of Industry, Trade and Commerce in the development and maintenance of plans and measures necessary to prepare for the exercise of the powers, duties and functions of the National Emergency Agency for Industrial Production set out in section I of column III of item 7 of Part I of the schedule.

8. Notwithstanding section 5 and item 1 of Part I of the schedule, the Minister of Fisheries and Oceans shall develop and maintain plans and take such measures as are necessary to prepare for the exercise of the powers, duties and functions set out in Part III of the schedule.

9. Each Minister set out in an item in column I of Part II of the schedule shall, in addition to those responsibilities referred to in sections 3 and 5, plan and prepare for the implementation of the emergency powers, duties and functions set out in column II of that item.

SCHEDULE

PART I

Establishment and Responsibilities of National Emergency Agencies

Item	Column I Minister	Column II National Emergency Agency	Column III Powers, Duties and Functions
11	Minister of Transport	National Emergency Agency for Transportation	<ol style="list-style-type: none"> 1. Control, regulate and direct the operation of all modes or systems of transportation, including air, sea, rail and road, other than those systems operated by or on behalf of the Canadian Forces, or any forces cooperating therewith, or the Royal Canadian Mounted Police and other than those vessels, facilities and services under the control of the Minister of Fisheries and Oceans. 2. Coordinate, manage and direct <ol style="list-style-type: none"> (a) the allocation of transportation equipment; and (b) the use of transportation facilities, including the use of airports, ports, harbours, terminals and inland waterways. 3. Assess national and regional transportation requirements, based on demands submitted by Ministers, National Emergency Agencies and by commercial carriers, compare those requirements with available resources and establish priorities. 4. Maintain effective liaison with transportation agencies established by the United States and by the members of NATO under the NATO Agreement. 5. Determine the nature and extent of any damages to any transportation network, corridor, terminal, equipment, fleet or transportation resource and identify priorities for its repair, replacement, reactivation and augmentation.

Appendix E

List of persons who appeared before the Subcommittee, showing the issue number and date of the proceedings in which their evidence appeared.

Name	Issue Number	Date
Allan, Vice-Admiral John (Retired) (Former Vice-Chief of the Defence Staff)	39	3 March, 1983
Anderson, John Assistant Deputy Minister (Policy) Department of National Defence	22	2 March, 1982
Anderson, John M. Director Operations Review and Emergency Planning Canadian Marine Transportation (Administration) Transport Canada	27	4 May, 1982
Applebaum, B. Director International Fisheries Relations Branch Department of Fisheries & Oceans	21	23 February, 1982
Beckett, Christopher J. Chief, Emergency Planning Department of Transport	24 <i>In Camera</i>	16 March, 1982 23 March, 1982
Ball, Commodore E.C. Director General, Maritime Engineering and Maintenance	<i>In Camera</i> 42 <i>In Camera</i>	17 February, 1983 15 March, 1983 5 May, 1983
Bartlett, Sam Senior Advisor, Enforcement Department of Fisheries and Oceans	21	23 February, 1982
Bell, Brigadier General George G. (Retired) President The Canadian Institute of Strategic Studies Toronto	25	23 March, 1982
Braconnier, Commander (R) Joseph HMCS <i>Discovery</i> Vancouver.	<i>in Camera</i>	24 February, 1983
Bobyn, Edward J. Chief of Research and Development Department of National Defence	36 37	27 January, 1983 1 February, 1983

Name	Issue Number	Date
Boyle, Captain D. Chief of Staff, Personnel & Training MARCOM, Halifax	<i>In Camera</i>	26 April, 1982
Brodeur, Rear-Admiral N.D. Deputy Chief of the Defence Staff Department of National Defence	23	9 March, 1982
Brygadyr, Lieutenant-Colonel Stan Commanding Officer of the 407 Squadron CFB Comox	<i>In Camera</i>	24 February, 1983
Buchanan, Herbert Regional Director General Kitsilano SAR Centre Vancouver	<i>In Camera</i>	24 February, 1983
Byers, Dr. R.B. Director Research Programme in Strategic Studies York University Toronto	34	21 June, 1982
Caldwell, Group Captain D.E. Air Advisor British High Commission	<i>In Camera</i>	28 June, 1982
Cameron, R.P. Assistant Under Secretary International Security Policy and Arms Control Affairs Department of External Affairs	<i>In Camera</i>	16 December, 1982
Carswell, Lieutenant-General H.A. Assistant Deputy Minister (Personnel) Department of National Defence	<i>In Camera</i>	1 March, 1983
Charbonneau, Bernard Assistant Deputy Minister, Supply Management Sector Department of Supply and Services	42	15 March, 1983
Cogdon, Commander D. Director, Maritime Force Development Department of National Defence	<i>In Camera</i>	18 November, 1982
Collier, Vice-Admiral A.L. Commissioner Canadian Coast Guard Transport Canada	35 41 <i>In Camera</i>	23 November, 1982 9 March, 1983 5 May, 1983

Name	Issue Number	Date
Critchley, Dr. Harriet Program Director of the Strategic Studies program and the Northern Political Studies program, and Associate Professor of Political Science, University of Calgary Calgary, Alberta	32	8 June, 1982
Cumming, Commodore J.M. Chief of Staff Plans and Operations MARCOM, Halifax	<i>In Camera</i>	26 April, 1982
Cutts, J.M. Director, Ship Branch Department of Fisheries & Oceans	24	16 March, 1982
Darlington, Captain (N) R. Acting Chief of Staff Material MARCOM, Halifax	<i>In Camera</i>	27 April, 1982
Dewar, D.B. Deputy Minister Department of National Defence	44	19 April, 1983
Dextraze, General Jacques (Retired) (Former Chief of the Defence Staff)	39	3 March, 1983
Dillon Captain John Squadron Planning Officer (SPLANSO)	<i>In Camera</i>	24 February, 1983
Dobson, Colonel R.W. Base Commander MARPAC Air Group CFB Comox	<i>In Camera</i>	24 February, 1983
Draper, Captain (N) W. MARCOM CFB Esquimalt	<i>In Camera</i>	23 February, 1983
Edwards, Rear-Admiral G. Commander, MARPAC CFB Esquimalt	<i>In Camera</i>	22 February, 1983
Essery, Lieutenant-Commander T.A. Regular Support Staff for the Naval Reserve Training Centre CFB Esquimalt	<i>In Camera</i>	23 February, 1983
Ewing, G.N. Assistant Deputy Minister Department of Fisheries & Oceans	24	16 March, 1982
Fox-Decent, Captain (N) (R) W. Senior Staff Officer to the Chief of Reserves	29	18 May, 1982

Name	Issue Number	Date
Francino, Michael E. Director, External Affairs Defence, Science and Environment Division Program Branch Treasury Board	42	15 March, 1983
Fulton, Vice-Admiral J.A. Commander Maritime Command MARCOM, Halifax	<i>In Camera</i>	26 April, 1982
Godin, J.P. Regional Director (Laurentian Region) Canadian Coast Guard Transport Canada	26	30 March, 1982
Golden, Captain Peter Canadian Coast Guard Kitsilano SAR Centre Vancouver	<i>In Camera</i>	24 February, 1983
Hadley, Captain (N) M.L. President Maritime Defence Association of Canada	31	1 June, 1982
Hasek, Major John (Retired)	34	21 June, 1982
Hendel, Commander H.W. Directorate, Maritime requirements (Sea) Department of National Defence	<i>In Camera</i> <i>In Camera</i>	18 November, 1982 25 November, 1982
Hendy, Commodore Robert I. (Retired)	43	22 March, 1983
Herman, Brian Head, NATO Section Defence Relations Division Department of National Defence	<i>In Camera</i>	16 December, 1982
Hughes, Rear-Admiral William (Retired) (Former Commander of MARPAC)	43	22 March, 1983
Hunt, Dr. Barry Professor, Department of History Royal Military College Kingston	21	21 February, 1982
Kennedy, Captain Trevor Executive Assistant to the Base Commander CFB Comox	<i>In Camera</i>	24 February, 1983
Kerrigan, Lieutenant-Commander S. Senior Staff Officer, Plans, MARPAAC CFB Esquimalt	<i>In Camera</i>	22 February, 1983

Name	Issue Number	Date
Killick, John Assistant Deputy Minister (Materiel) Department of National Defence	42	15 March, 1983
Kinley, J.J. Immediate Past National President Navy League of Canada	30	25 May, 1982
Lamontagne, The Honourable J. Gilles, P.C., M.P. Minister of National Defence Department of National Defence	44	19 April, 1983
Lane, Lieutenant-General R.J. (Retired) National Chairman Federation of Military and United Services Institutes of Canada Former Deputy Commander of NORAD	30	25 May, 1982
Lewis, Lieutenant-General K.E. Commander Air Command HQ Winnipeg	<i>In Camera</i>	21 February, 1983
Lindsey, Dr. G.R. Chief, Operational Research and Analysis Establishment Department of National Defence	22	2 March, 1982
Little, James H. National President Naval Officers Associations of Canada	33	15 June, 1982
Logan, Colonel G.L. Commandant Royal Roads Military College Victoria	<i>In Camera</i>	23 February, 1983
Mainguy, Vice-Admiral Daniel N. Deputy Chief of the Defence Staff Department of National Defence	<i>In Camera</i>	2 November, 1982
	<i>In Camera</i>	17 February, 1983
	44	19 April, 1983
Manson, Major-General Paul D. Chairman Interdepartmental Committee on Search and Rescue in Canada (also Chief, Air Doctrine and Operations, NDHQ)	41	9 March, 1983
Martin, Rear-Admiral Michael A. (Retired) (Former Commander of MARPAC)	38	8 February, 1983
Mason, Commander L. CO HMCS <i>Iroquois</i>	<i>In Camera</i>	27 April, 1982
McCwire, Michael The Brookings Institution Washington	25	23 March, 1982

Name	Issue Number	Date
McKee, F.M. (as) National 1st Vice President and Chairman National Committee on Maritime Affairs Navy League of Canada	30	25 May, 1982
(as) Director of Information Naval Officers Associations of Canada	33	15 June, 1982
Michaud, Captain Claude Harbour Master Port of Quebec Transport Canada	<i>In Camera</i>	23 March, 1982
Middlemiss, Dr. D. Associate Professor of Political Science Dalhousie University Halifax	31	1 June, 1982
Millar, Brigadier-General S.A. Director General, Organization and Manpower Department of National Defence	<i>In Camera</i>	1 March, 1983
Neadow, Lieutenant-Colonel A.J.R.H. Director of Reserves, HQ Department of National Defence	28	11 May, 1982
Nethercott, Commander J. CO HMCS Annapolis MARCOM Halifax	<i>In Camera</i>	28 April, 1982
Newbury, Capt. (N) John E. Commander, HMCS <i>Discovery</i> Vancouver	<i>In Camera</i>	24 February, 1983
O'Reilly, Captain J.B. Director Marine Operations Plans and Reserves Transport Canada	<i>In Camera</i>	23 March, 1982
Oliver, Craig Assistant Deputy Minister, Capital and Industrial Goods Industry Trade and Commerce and Regional Economic Development	42	15 March, 1983
Paquette, N. Aids to Navigation Canadian Coast Guard (Laurentian Region) Transport Canada	26	30 March, 1982
Patrick, Colonel E.I. Canadian Services Commandant CF Maritime Warfare School MARCOM, Halifax	<i>In Camera</i>	27 April, 1982

Name	Issue Number	Date
Pelletier, Capt. E. Fleet Systems (Laurentian Region) Transport Canada Canadian Coast Guard	26	30 March, 1982
Perks, Commander R. Commander 1st Canadian Submarine Squadron MARCOM, Halifax	<i>In Camera</i>	27 April, 1982
Pettman, Captain K.T. MARPAAC CFB Esquimalt	<i>In Camera</i>	22 February, 1983
Pickering, Brigadier-General A. Commander Maritime Air Group MARCOM, Greenwood	<i>In Camera</i>	29 April, 1982
Porter, Vice-Admiral H.S. (Retired) (Former Commander of Maritime Command)	43	22 March, 1983
Pullen, Captain (N) T.C. (Retired) Consultant on Arctic navigation	32	8 June, 1982
Quail, R.A. Deputy Commissioner Canadian Coast Guard Department of Transport	24	16 March, 1982
Read, Colonel W. Deputy Chief of Staff Operations MARCOM, Halifax	<i>In Camera</i>	27 April, 1982
Ringma, Major General R. Chief of Finance Services Department of National Defence	<i>In Camera</i>	1 March, 1983
Rose, Clifford A. Director International Relations Transport Canada Coordination Branch Transport Canada	27	4 May, 1982
Ryan, D.P. National President Navy League of Canada (Former Commander of the First Canadian Destroyer Squadron)	30	25 May, 1982
Scherber, Commander F. Directorate, Maritime requirements (Sea) Department of National Defence	<i>In Camera</i>	18 November, 1982
	<i>In Camera</i>	25 November, 1982

Name	Issue Number	Date
Schoefield, Dr. D. Deputy Chief Research and Development Department of National Defence	36 37	27 January, 1983 1 February, 1983
Schramm, R.R. Assistant Commissioner Director of Criminal Investigations Royal Canadian Mounted Police	24	16 March, 1982
Schurman, Dr. Donald M. Head, Department of History Royal Military College Kingston	21	23 February, 1982
Smith, Commodore T. Senior Naval Reserve Advisor	29	18 May, 1982
Snarr, W.B. Assistant Secretary to the Cabinet (Emergency Planning) Privy Council Office	27	4 May, 1982
Stevenson, Lieutenant-Colonel G.F. Directorate of Maritime Aviation Department of National Defence	<i>In Camera</i>	18 November, 1982
Taggart, Colonel P.J. Deputy Chief of Staff, Intelligence Plans and requirements Air Command HQ Winnipeg	<i>In Camera</i>	21 February, 1983
Thomas, Commodore C.M. Director General Maritime Doctrine and Operations Department of National Defence	<i>In Camera</i> <i>In Camera</i> <i>In Camera</i>	2 November, 1982 18 November, 1982 25 November, 1982
Timbrell, Vice-Admiral R.W. (Retired) (Former Commander of Maritime Command)	38	8 February, 1983
Traves, Capt. (N) P.J. Director of Naval Reserves MARCOM, Halifax	28	11 May, 1982
Walsh, Mr. Henry President and Chief Executive Officer Canadian Shipbuilding and Ship Repairing Association	40	8 March, 1983
Watts, R.N., Captain D.F. Naval Advisor British High Commission	<i>In Camera</i>	28 June, 1982

Name	Issue Number	Date
Westropp, Captain (N) Canadian Services Commandant, CF Fleet School MARCOM, Halifax	<i>In Camera</i>	27 April, 1982
White, Lieutenant-Colonel L.R. Directorate of Maritime Aviation Department of National Defence	<i>In Camera</i>	18 November, 1982
	<i>In Camera</i>	25 November, 1982
Williams, Brigadier-General F.A. Director General, Manpower Utilization Department of National Defence	<i>In Camera</i>	1 March, 1983
Willis, L.A. Constitutional and International Law Section, Department of Justice	21	23 February, 1982
Withers, General R.M. Chief of the Defence Staff Department of National Defence	44	19 April, 1983
Wood, Rear-Admiral J.C. Chief, Maritime Doctrine and Operations Department of National Defence	23	9 March, 1982
	28	11 May, 1982
	<i>In Camera</i>	17 February, 1983
	44	19 April, 1983

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As part of their visit to MARCOM — east coast, the subcommittee visited SACLANT HQ in Norfolk, Virginia, U.S.A. on April 30, 1982. Admiral Harry D. Train II, USN, Supreme Allied Commander Atlantic and his staff briefed members on all aspects of the SACLANT operations. Another briefing was held by Admiral Train in his capacity as CINCLANT with his USN staff.

Similarly, when the subcommittee visited MARCOM — west coast, Commodore T.E. Lewin, USN, Commander, Naval Base Seattle, Washington, U.S.A. also briefed members on the overall situation in the Pacific.

